

An Analysis of Urban Households Poverty and Forecasting its Average Exit Time: The Case of Selected Towns in Southern Ethiopia

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Abstract: *Global organizations and development practitioners aspire to see “a world free of poverty”; hence, set their objectives based on time. The foremost objective post-2015 Sustainable Development Goals (SDGs) is a theme of end poverty, with stated numerical targets of ending poverty and hunger by 2030. The accurate conceptualization and measurement of poverty is the first step in dealing with poverty reduction efforts. Forecasting the average poverty exit time is certainly valuable exercise to guide poverty reduction policies and strategies. The present study attempts to analyze urban household poverty and predict its average exit time in the Southern Ethiopia, which is relied on unidimensional poverty indices and average real gross domestic product. A pre-tested structured questionnaire was used to collect the primary data from 508 randomly selected households following multistage random sampling techniques while the secondary data were collected from concerned offices and pertinent documents. Distributive Analysis Stata Package (DASP) was used to estimate various indices and curves of urban poverty. The study found that the proportion of income poor people in the regional study urbans is 28.36 percent with standard error of 0.0221, which is higher than the recent macrolevel reports, but lower than the microlevel evidences. This means that above 28 percent of the sample respondents are under the poverty line in the study urbans; thus, unable to meet at least the minimum per adult consumption expenditure per year required for basic necessities. The index is a signal for high incidence of absolute poverty at micro-level as compared to macro-level. The study further found that nearly four and half years are required to uplift the poor households of the regional urbans to the understated national poverty line of US dollar of 0.7 per day per adult equivalence, this is so only if the regional average real gross domestic product growth rate of 10.4 percent is maintained. Astoundingly, even with the same growth rate, the poor households in Walaita Sodo town should wait at least six years to exit from the short-sighted consumption poverty. This implies that in relative terms, in this town real efforts are required to uplift the poor at least to the minimum poverty threshold. Thus, the urban development strategies put the poor at the heart of development endeavors and the poverty reduction efforts relied on the growth sensitive indices should ensure the ways that benefit the marginalized urban dwellers. Above all, promoting sustained and pro-poor growth, extending the social security and safety nets programs, and use of appropriate redistributive policies that contemplate the extreme urban poor households are recommended to fight against the acute household poverty so as to realize palpable poverty reduction.*

Keywords: Urban Poverty, Poverty exit time, DASP, Southern Ethiopia

1. Introduction

Poverty is a noticeable characteristic of underdevelopment and human deprivation in social, economic and political dimensions. It is multidimensional and worldwide complex problems that challenge the development efforts that badly affects the developing countries in particular. Though the proportion of the developing world's population living in extreme income poverty fell considerably, still the problem is persistent and deep-rooted in South Asia and Sub-Saharan Africa countries (World Bank, 2015; CPAN, 2015). Thus, for these giant economies, poverty reduction is still an unfinished task and become an on-going overriding problem of the development interventions.

Ethiopia, one of the Sub-Saharan Africa countries, is the second most populous country in Africa next to Nigeria and 13th in the world with a population near to 100 million (World Bank, 2015). Poverty in Ethiopia has been the focus of government policies and many development partners. Through different historical avenues of the country, different regimes have pursued different policies and development strategies. Poverty reduction is also the central element of the current Ethiopian governments' development policy agenda and the government has implemented a number of initiatives and policies so as to meet a core objective of poverty reduction. In Ethiopia, like any other developing

countries, unidimensional approach (income or consumption expenditure) is commonly used to measure poverty status (material deprivation). Based on this measurement, the proportion of people living below the national poverty line in Ethiopia has declined from 45.5 percent in 1995/96 to 23.5 percent in 2011/12 (MoFED, 2011/12, as cited by Ethiopia MDGs report, 2012). Nonetheless the unidimensional poverty incidence has substantially declined at the national level, still the country is one of the poorest countries in the world with increasing poverty severity that indicate a need to focus on the poorest of the poor (UNDP report, 2014). This is also ingrained by the latest poverty assessment study result of Lenhardt et al., (2015) that revealed the growth in Ethiopia was pro-poor between 2005 and 2011, some households today are substantially poorer than any household in 2005.

The accurate conceptualization and measurement of poverty is the first step in dealing with poverty reduction efforts. The pace and extent of poverty reduction is dependent on the combination of factors that involve overall economic growth of the national economy, the growth rate of the average income of poor households, the distribution of income across household (Abu Girma, 2013). Nevertheless, the most important poverty exits time concept, which has meaningful contribution and directive role to exert efforts to end absolute poverty (post-15 goal) in a stipulated time period is

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overlooked in most poverty analysis. The concept of poverty exit time is used to describe what it takes in terms of the growth rate of income for poor households to eliminate their income shortfall from the poverty line. A concept of an average exit time that makes use of a modified version of Watts measure, both sensitive to distribution of income and decomposable across subgroups of the population (Murdoch, 1998).

The goal of international organizations and development practitioners is to see “a world free of poverty”; hence, set their objectives based on time. The foremost objective post-2015 Sustainable Development Goals (SDGs) is a theme of ending poverty with stated numerical targets of ending poverty and hunger by 2030. In their backdrop, there is an alarming need to have meaningful poverty analysis that supplement the time required to escape the poverty trap under sustainable growth scenarios. Under this umbrella, governments of respective countries set their own targets to poverty reduction. Compatibly to this ambitious mission, the Ethiopian government has also set the targets in development plans; thus, prediction of average poverty exit time is necessary to fight against poverty so as to make adjustments in policy.

Therefore, for the complete poverty appraisal and policy implementation, in addition to poverty measurement, this particular study pays attention to estimation of average poverty exit time of the sample households, following the Morduch approach that relied on the average growth rate, Watts and head count indices. Thus, given the country's policy direction and poverty measurement practice, this study aimed at analyzing urban household poverty status using FGT approach and forecasting average poverty exit time of the study urban following Morduch approach can contribute its part to the existing literature.

2. Research Design and Methods

2.1 Data

The present study used cross-sectional survey design to collect the primary data required for the analysis. The primary data was obtained from the household survey using structured and pre-tested questionnaire. In addition, the secondary data comprising relevant information for the topic of interest were collected from concerned offices, magazines and pertinent documents to substantiate the primary data.

2.2 Sampling Techniques and Sample Size Determination

Given the prior information on the topic of interest, feedbacks from preliminary regional survey and representation issue two zonal towns (Wolaita Sodo and Arba Minch) categorized under the red zones in terms of poverty as per previous studies and the regional prime city (Hawassa) were purposively selected. As per the triangulation of CSA projection, district and grass root level village information, the total household head as of

2015/16 in Hawassa, Wolaita Sodo and Arba Minch cities are 45,371, 19,056 and 18,123, respectively (BoFED, 2015). In order to calculate the required actual sample size for finite population, Yamane (1967) formula was employed. After determining the adjusted sample size, the multistage sampling techniques were carried out to select 508 sampled households for the final analysis. Sub-cities of respective towns and kebeles were categorized into two categories based on their heterogeneous characteristics of residence and selected following the stratified random sampling techniques. Accordingly, 7 sub-cities (3 sub-cities from Hawassa and 4 sub-cities from Wolaita Sodo and Arba Minch, 2 from each) and 6 sample kebeles from Hawassa (2 kebeles from each), 5 from Wolaita Sodo and 4 from Arba Minch were selected following two-stage stratified random sampling techniques by applying proportionate to size sampling technique. Finally, using the respective kebele's lists of household heads as a sampling frame, the ultimate sample households were selected using systematic sampling technique. The reason behind using these multistage random samplings is to have a good representative sample of the population for the inferential purpose and to avoid subjectivity and personal errors (C.R Kothari, 2004; Yogesh Kumar Singh, 2006). Accordingly, a total of 508 sampled households (207 from Hawassa, 162 from Wolaita Sodo and 139 from Arba Minch) were selected for the final survey.

2.3 Methods of Data Analysis

2.3.1 Measuring Consumption Poverty

Once, the data collected from different sources was first triangulated and organized into thematic areas, the data management (editing, coding, decoding and entering) were handled using appropriate software packages and specifically, a STATA add in feature, called Distributive Analysis Stata Package (DASP version-2.3) was used to estimate the most popular statistics such as indices and curves used for the analysis of poverty. Based on data from households, this study tried to estimate the three poverty indices that were identified by Foster, Greer, and Thorbecke, FGT, (1984) to achieve the objectives. These included share of the population whose annual per adult consumption expenditure is below the poverty line and cannot afford to buy a basic basket of goods, measured by headcount index (P_0), the depth of poverty or the poverty gap index (P_1), and severity index (P_2) that takes into consideration both the distance separating the poor from the poverty line (the poverty gap) and the inequality among the poor.

The mathematical expression of the model in Foster, Greer, and Thorbecke (FGT, 1984) for poverty measure is explained by considering, P_α as class of poverty measures.

Then, P_α is given by

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^\alpha$$

Where,

P_α = is the Poverty measure

Z = is the Poverty line

n = Population size/total sample households

q = Number of poor persons/households below the poverty line

Y_i = Per adult annual consumption expenditure, in the equation, $Z - Y_i = 0$ if $Y_i > Z$.

α = is the weight attached to the severity of the poor which takes the value 0, 1, 2 depending on the degree of concern about poverty.

2.3.2 Measuring Average Exit time of Poverty

The most widely used poverty measures of Foster-Greer-Thorbecke (FGT) do not show when poverty might be eliminated. Thus, in this section we will try to answer for the question how long the poor households are going to stay in poverty by computing average exit time following Morduch (1998) approach that founded on real GDP growth, Watts poverty index and FGT indices. To derive the average exit time measure of poverty, Morduch (1998) starts with an existing distributional sensitive Watts measure. The original Watts index, W , is defined as:

$$W = \frac{1}{N} \sum_{i=1}^q [(\ln(Z) - \ln(y_i))]^2$$

Where, there are i sample households in the regional urban runs from 1 to N in ascending (positive) order of income (per adult annual consumption expenditure) and q is the number of people with expenditure y below the poverty line z .

Specifically, Morduch (1998) shows that simply dividing the Watts poverty measure by some hypothetical growth rate g , where $g > 0$, gives it an interesting cardinal interpretation. This transformed index reflects the average number of years that it would take the poor population to exit poverty if it were possible to ensure that all incomes grow at positive rate g . If the income of household i grow at a constant positive rate g per year, the relationship of the poverty line to current income can be written as:

$$Z = y_i(1 + g)^{t_g^i}$$

Taking the logarithm and solving for t_g^i yields the number of years it will take for the household to reach the poverty line and is given by:

$$t_g^i \cong \frac{\ln(Z) - \ln(y_i)}{g}$$

More interesting is that, Morduch's transformation of Watts poverty index has enables us not only to estimate the average time to exit poverty for individual i , but we also could estimate the average time to exit poverty for the total households, N (including those who are not poor; i.e. for households above the poverty line, $t_g^i = 0$). Therefore, the average exit time for total households is simply t_g^i averaged over the whole population. Accordingly, the average exit time for urban household poverty of the study area (T_g) is calculated as:

$$T_g = \frac{1}{N} \sum_{i=1}^q t_g^i = \frac{1}{N} \frac{\sum_{i=1}^q [(\ln(Z) - \ln(y_i))]^2}{g} = \frac{1}{N} \frac{\sum_{i=1}^q [(\ln(Z) - \ln(y_i))]^2}{g} = \frac{W}{g}$$

In addition to the average exit time across the whole population, T_g , the average time to exit poverty among the poor, $(T_g)^p$, could be obtained by dividing T_g with the poverty headcount ratio, P_0 , as follows:

$$(T_g)^p = \frac{T_g}{P_0}$$

Moreover, following the same fashion, economists suggest the use of the exit time for the average poor household (t_g^{ave}) as a simple poverty measure that is calculated using the following formula:

$$t_g^{ave} \cong \frac{\ln(Z) - \ln(\mu_p)}{g}$$

Where, μ_p is the average income of poor households.

In contrast, this measure is not sensitive to the distribution of income below the poverty line since, like the poverty gap, it is based on the average income of the poor.

3. Results and Discussion

3.1 National Poverty Status and Trends

Customarily, the Ethiopian national poverty line is constructed based on the consumption expenditure approach, an aggregate measure of poverty that consider both the food and non-food requirements. As compared to consumption expenditure, income is so erratic and seasonal that it may be difficult for the respondents to recall. In addition, households may understate income while reporting in the fear of some government taxes and other hidden reasons. In this case, its mirror image, consumption is better measurement in reflecting the actual standard of living or welfare (National Planning Commission, 2017, MoFED, 2012). Hence, income poverty measures, or unidimensional FGT indices (the head count ratio, poverty gap ratio, and the squared poverty gap ratio) are computed based on consumption rather than income in the conduct of poverty analysis. Accordingly, the absolute poverty line (required cost to meet basic needs) for 2015/16 at average price is determined to be ETB 7184, which is equivalent to 0.72 USD per day per adult equivalence (National Planning Commission, 2017). Therefore, the present study also used

this line as a threshold in order to calculate the aforementioned FGT indices.

Before dealing with regional urban poverty, let us start the trend analysis of poverty at macrolevel so that to see how the change in poverty environment of the country and the urban changes in the decades where the data available.

As it is clearly stated in the table 1 and figure 1, the absolute poverty measured by unidimensional FGT indices has shown a general declining trend (continuously decreasing or linear downward trend) at national level. Even though there are some ups and downs, the urban poverty has also shown a decreasing trend (of course non-linear). To be specific, the proportion of poor people (poverty head count index) in the country was estimated to be 23.5 percent in 2015/16, which was 45.5 percent in 1995/96 base year. That is, the country's absolute poverty incidence has declined in a substantial manner if the latter fiscal year take in to account. However, the rate of decrement in urban poverty incidence was comparably slow even it has been increasing in the first decade. That is, the urban poverty incidence of 2004/05 was 35.1 percent which was 33.2 percent in 1995/96. The first decade rate of change (decrement) in national absolute poverty incidence was above 14 percent while the urban incidence was surprisingly increased by 5.72 percent in that particular decade. Though only unidimensional, the second decade rate of change (decrement) in urban income poverty was promising, and estimated to be 25.7 percent in 2010/11, which was 36.9 percent in 1999/00's. Though, in the second decade the urban poverty too has decreased by above 30 percent but still the rate of change was below the national incidence of 33.03 percent. It could be argued that this result is a cumulative sum effect of the government efforts in implementing poverty-oriented policy reforms, particularly late 1990's as well as policy changes in poverty environment of the global arena. Nevertheless, in both case the most powerful argument against these official reports is that, in first place the national poverty line of not more than 0.7 USD per day per adult equivalence is too low from

international standard and cannot meet the basic needs of the households, given the increasing inflation in urban areas, especially in consumer goods and services. Thus, it is not poverty rather number of poor that has decreased. In line with this, even there was a declining trend in national poverty, mainly due to a decline in rural poverty where most policy reforms biased towards it, the urban poverty has shown increasing trend in the middle of the first decade which might be resulted from imported rural poverty among others.

Within the two decades unlike the poverty incidence, the decline in poverty gap (depth) and severity of the absolute poverty was sluggish. That is, the rate of change (decrement) in absolute poverty incidence during the second 10 years period at national level was 33.03 percent, which was only 14.5 percent in the first decade. However, the rate of change (decrease) in poverty gap and poverty severity in the same two decades were from 35.66 to 34.45 percent, and from 47.06 to 31.11 percent, respectively, where in both cases the rate of change is at decreasing rate. Besides, the decline in poverty is also much higher after 2004/05 on wards than as compared to before 2004/05). Similarly, the 2010/11 urban poverty head count and poverty gap are lower than that of 2004/05 by 27 percent and 10 percent, respectively; however, the poverty severity of 2010/11 is higher than that of 2004/05 and is exceedingly by 5 percent.

In the urban context, the rate of change in poverty indices is not as smooth as that of national, rather the trend has shown a non-linear rate of change. Though non-linear, during the second decade, poverty incidence and poverty gap have shown substantial decrement; however, the rate of change in poverty severity was lethargic (from 36.9 to 30.77 percent). That is, during the period 2004/05 to 2010/11, unlike poverty incidence and gap, the urban poverty severity has increased by more than 3.85 percent, but it shows a decreasing trend in the first Growth and transformation period.

Table 1: Trends of Absolute Poverty Lines and Indices

Year	Poverty lines		Poverty indices					
	Kilocalorie per day per adult	Absolute poverty line (ETB)	National			Urban		
			P ₀	P ₁	P ₂	P ₀	P ₁	P ₂
1995/96	2200	1075	0.455	0.129	0.051	0.332	0.099	0.041
1999/00			0.442	0.119	0.045	0.369	0.101	0.039
2004/05			0.387	0.083	0.027	0.351	0.077	0.026
2010/11	2200	3781	0.296	0.078	0.031	0.257	0.069	0.027
2015/16	2200	7184	0.235	0.067	0.028	0.148	0.037	0.014
1995/96 to 2004/05 (% change)			-14.95	-35.66	-47.06	5.72	-22.22	-36.59
1999/00 to 2010/11 (% change)			-33.03	-34.45	-31.11	-30.35	-31.68	-30.77
2004/05 to 2015/16 (% change)			-39.28	-19.28	3.72	-57.81	-51.94	-46.15

Source: National Planning Commission (2015/16)

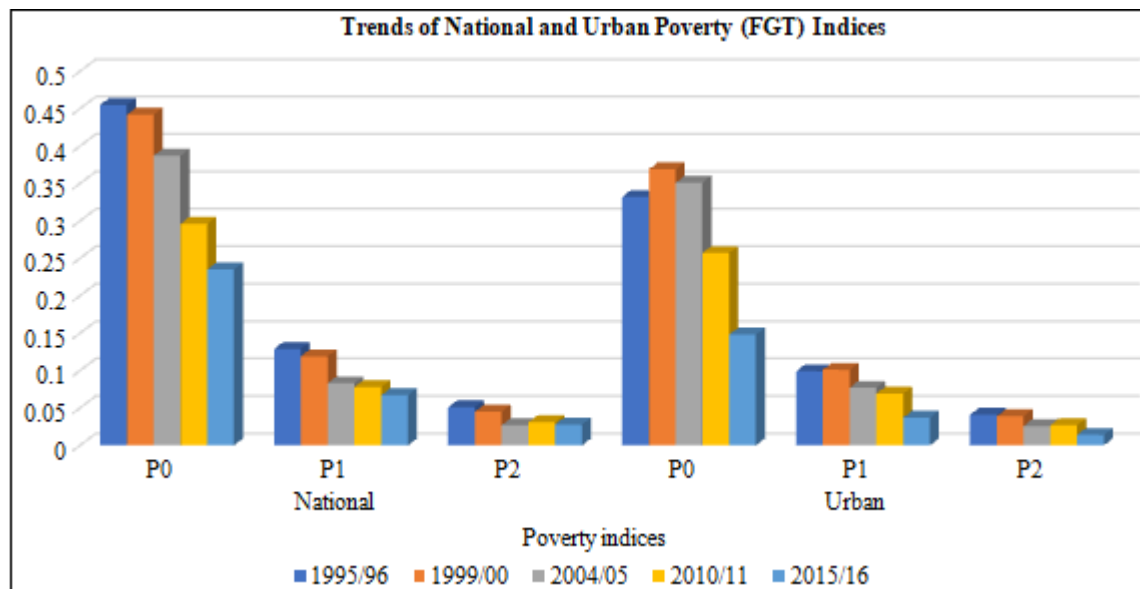


Figure 1: Trends of National and Urban Poverty

Source: National Planning Commission (2015/16)

3.2 Status of Urban Household Poverty in the study urbans

The discussions we made so far shows the poverty environment at macrolevel based on secondary data. However, there are strong claims that at microlevel, poverty is persistent and become ongoing development challenge.

Consequently, table 2 depicts the results of FGT indices that show the unidimensional poverty indices estimates and standard errors(STE) of the sample households under consideration. The study found that the proportion of income poor people (poverty headcount index) in the study regional urbans is 28.36 percent with standard error of 0.0221. It means that above 28 percent of the sample respondents are below the poverty line so that unable to satisfy at least the minimum per adult consumption expenditure per year as a result they live under absolute poverty. Similarly, the proportions of sample households below the poverty line are 24.58 percent with standard error of 0.0216in Hawassa city administration where as that of WolaitaSodo and Arba Minch towns are 32.09 and 28.23 percent, respectively. As compared to the MoFED results of 1999/00 and 2004/05, the present study result shows the decreasing trend of the nationalregional urban poverty. However, the results of overall regional as well as the specific urbans are higher than the finding of MoFED (2012) and National Planning Commission (2017), which is an apparent signal of high incidence of absolute poverty at lower micro-level (household) as compared to macro-level. Though the indices are higher, they are lower and/or closer to theAbduljelil's (2013) finding of 30.54 percent of the Hawassa city administration. The high index values should not be startling given the study areas are urban in which monetized economy predominantly characterizes society's life and the high inflation threatening the life of the dwellers who invest their lions share income on food items. Moreover, in the urban context, the non-food consumption also has considerable proportion in total consumption of households. Since the index comprises both food and non-food cost of consumption, the price hikes of consumer goods and high

living costs of urban challenged the households in meeting the consumption expenditure; thus, pushed them below the poverty line and increased vulnerable to poverty.

The result from the survey shows that the poverty gap index that reflects the total proportion of per adult equivalent income required to enable poor households below the poverty line moving to the poverty line of the regional urban is estimated to be higher than 10percent. It implies the amount of income transfer needed to close up the average gap or distance separating the poor from the poverty line and if the regional urban government (municipal) is able to mobilizes resources exceedingly 10 percent of the poverty line for every adult equivalent individuals and distribute these resources to the poor in the amount needed, it is possible to move each per adult equivalent to poverty line; thus, assuming other things maintain constant, at least in principle; poverty could be mitigated so that the income poor households pushed-up to the constructed poverty line. The study further found the high poverty gap (above 14 percent) in WolaitaSodo town that require at least 14 percent of poverty line resource mobilization to push the poor households to at least this poverty line. However, the poverty gap of Hawassa city administration and Arba Minch town are comparably low, which are 4.5 percent and 8.9 percent, respectively (table2). In addition, the study result shows that the poverty severity index of the sample urban households is 4.8 percent with standard error of 0.005, which confirms the severity of poverty in the study areas. The highest index is registered in WolaitaSodo,where the income inequality among the poor is high followed by Arba Minch and Hawassa (table 2). Thus, these indexes infer the need of efforts to be exerted and due attention to narrow down the gap. As indicated in table2, the study found the huge expenditure gap between poor and non-poor households in terms of average consumption expenditure per adult per year. That is the average per adult per annum consumption expenditure of the regional urban poor households is only ETB 3301 while their non-poor's counterpart is ETB 12,136. Hence, the average poverty gap (the gap between the poor and the poverty line) is ETB

3883. The disparity is more worsening in the case of WolaitaSodo where the non-poor average expenditure is nearly 4.4 times higher than that of the poor households and the average poverty gap of ETB 4277 is the highest. Parallely, the per adult per year average consumption expenditure of poor households in Hawassa city

administration is relatively better (ETB 3571) followed by those in Arba Minch town (ETB 3378) while their non-poor counterparts are about ETB 13,035 and ETB 10,402, respectively and the minimum average poverty gap is registered in the former case.

Table 2: Unidimensional Poverty Indices of Sample Households

Poverty Indices	Poverty index value of study urbans			
	Overall	Hawassa	WolaitaSodo	Arba Minch
	Estimate STE	Estimate STE	Estimate STE	Estimate STE
Head count index	0.2836 0.0221	0.2458 0.0216	0.3209 0.0360	0.2823 0.0370
Poverty gap index	0.1006 0.0096	0.0446 0.0059	0.1415 0.0178	0.0891 0.0147
Poverty severity index	0.0487 0.0057	0.0133 0.0019	0.0759 0.0115	0.0404 0.0081
Average per adult consumption Expenditure of poor and non-poor				
Average annual per adult consumption expenditure of poor (in ETB)	3301	3571	2907	3378
Average annual per adult consumption expenditure of non-poor (in ETB)	12136	13035	12718	10402
Average poverty Gap	3883	3613	4277	3806
Poverty line				
Kilocalorie per adult per day			2200	
Absolute poverty line per adult per annum (ETB)			7184	

Source: Computed from Own Household Survey, 2017

3.3 Forecasting Average Exit Time of Poverty

The most widely used poverty measures (FGT indices) as well as the multidimensional poverty indices do not show the estimated time in which poverty might be eliminated. For complete and meaningful poverty analysis, estimating the time required to reach the income poverty line under sustainable growth scenarios has a paramount value addition for the topic of interest. Thus, the poverty analysis discussed so far is complete if the unidimensional FGT indices of poverty are supplemented with a cardinally meaningful measure, average poverty exit time, which is necessary for policy issues aimed at fighting against poverty in optimizing resource utilization and directing the way forward. This particular section deals with the results of forecasted average exit time needed for the sampled poor households to escape from poverty assuming the hypothetical and the average economic growth rate of the region following Morduch (1998) approach outlined in methodology section. Table 3 portrays the hypothetical economic growth rates which ranges from 5 percent to 12 percent and the corresponding forecasted average exit time for overall regional urban and specific urbans under consideration. Actually, the minimum hypothetical economic growth rate (5%) is based on the recent empirical claims that the country growth is too low due to the multiplier effect of Elino (weather fluctuation or drought) of 2015/16 while the maximum growth of 11 percent is the upper limit as per the official government reports, the Ethiopian economy has shown the double digit that near to aforementioned rate for more than a decade. Thus, it is within these two ranges that the country growth rate oscillates. For instance, the government itself declared the current reduced growth rate (around 8%) due to Elino effect and the growth rate of 10.4 percent is the national average. Thus, given these different growth rates, the average exit time of sample poor households to escape from

income poverty was estimated and the results from Morduch (1998) approach are given below in the table 3. As it is clearly indicated in the table, in general when the economic growth rate increase, the average exit time of poor households to be above national poverty line become declining; thus, there is an inverse relationship between the two variables and their relationship is explained by the downward sloping curve (figure 2). This implies the strong impacting power of increased and sustained economic growth in reducing poverty, though it is only a necessary condition. The study result shows that if the unexpectedly lowest possible average growth rate (5%) is maintained in the economy, more than 9 years are required to lift the entire sample poor households of regional urbans at least to the national poverty line so as to meet at least the minimum basic needs for living. However, if the economy is able to grow at rate of 11 percent, the average exit time required for the poor to reach at least national poverty line will be reduced only to 4.2 years. Within these two ranges we observe smooth relationship in which the poverty exit time shows decreasing trend as economic growth rate gets increasing. For instance, if the growth rate is maintained at 6 percent, the average exit time required for the poor to catch the national poverty line becomes 7.7 years and if the growth rate is increased by one more unit (become seven years), the average exit time of poverty required is reduced to 6.6 years and this trend works linearly.

Furthermore, if the regional average growth rate of 10.4 percent is maintained, at least 4.4 years are required for the poor to escape from unidimensional poverty. However, with the same growth rate, the poor households in WalaitaSodo town should wait nearly six years to exit from even the understated consumption poverty. This implies that in relative terms, in this town real efforts are required to uplift the poor at least to the minimum poverty threshold. If the

economic growth is maintained at lowest rate of 5 percent, more years are required for WolaitaSodo town poor households to exit from poverty while poor households of Hawassa can escape in relatively lesser time periods. Specifically, given the lowest average growth rate, almost twelve and half years are needed for the WolaitaSodo poor households to reach the national poverty line while nearly 9 years and 7 years are required for Arba Minch town and Hawassa city administration poor households, respectively to escape from income poverty measured by national poverty line. In relative terms, for the WolaitaSodo poor households more years are expected to reach and/or cross the national poverty line as compared to those in Hawassa city administration followed by Arba Minch town counterparts. Given the increasing trend in economic growth, the average exit time become declining, but the growth impact is better in Hawassa city case. In other words, the relationship between average economic growth rate and the required poverty exit time in years can be explained using the graphical representation, which is the mirror image of the tabular information. As it can be observed from figure 2, all the curves are down-ward sloping showing that the inverse relationship between the growth rate and the required time to exit from poverty. Generally, the higher the

average exit time curve, the more time is required to reach to the national poverty line. Accordingly, the average exit time for WolaitaSodo town sample households is higher; thus, more time is required for them to exit from poverty as compared to other urbans. In contrary, the average exit time curve for the sample households of Hawassa city administration is below all other's curve; thus, it implies relatively short time period is required to exit them from poverty followed by Arba Minch town counterpart.

Table 3: Results of Forecasted average exit time for poor Sample households

Hypothetical economic growth (%)	Forecasted average exit time (years)			
	Regional overall	Hawassa	Wolaita Sodo	Arba Minch
5	9.2	6.9	12.4	8.7
6	7.7	5.8	10.3	7.3
7	6.6	4.9	8.8	6.2
8	5.7	4.3	7.7	5.5
9	5.1	3.8	6.9	4.9
10	4.6	3.5	6.2	4.4
10.4	4.4	3.3	5.9	4.2
11	4.2	3.1	5.6	4

Source: Computed from own household survey, 2017

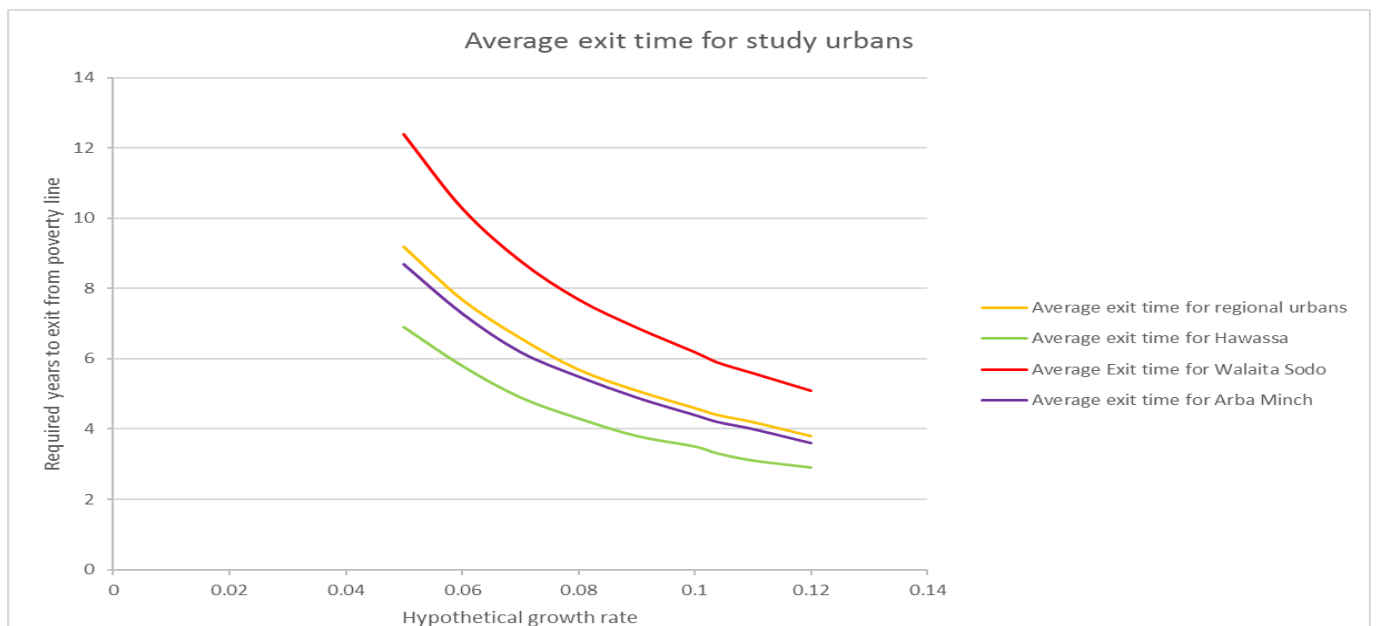


Figure 2: Average Exit Time Curves for Study Urbans

Source: Constructed from own household survey, 2017

Since the present study focus is microlevel analysis, the discussion is based on the regional average growth rate. According to the regional BoFED (2015) report, the real gross domestic product growth (RGDP) of the region for the year 2012 at 2011 (2003 Ethiopian fiscal year constant price) base year was 9.4 percent while that of 2013, 2014 and 2015 are 10.9, 10.4 and 10.2 percent, respectively. Thus, the average growth of these four consecutive years is estimated to be 10.225 and this growth rate was used to forecast the average poverty exit time of the sample households.

Following the Morduch (1998) approach explained in methodological section, the average exit time across the whole respondents (which is based on the transformed Watts index), the average exit time among the poor (dependent on

head count ratio) and the average poverty exit time for average poor household (based on average income of poor households) were calculated from the household survey data and the results have shown in the table 5.5. One of the advantages of both Watts Index and headcount ratio is the ability to decompose their measures by sub-population like residents of different specific micro-level urbans. The critical feature for decomposition is that the sub-groups are distinct from each other, so that there is no overlap and that together they encompass the entire population. All additive indexes are decomposable, and all of the measures discussed below share the decomposability feature.

The study result shows the calculated Watts poverty index is the highest in the WolaitaSodo town, where the poverty head count ratio (incidence) is also among the highest next

to Hawassa city administration. That is, the Watts index of the former is 0.2518 that boosted the overall regional index to 0.1744 while that of the latter is 0.1401, while in both cases the poverty incidence (number of poor households below the poverty line), are among the highest. This means that the lions share poor households in the former case are far from the poverty line and/or the majority are in abject poverty so that much time is required to escape them even from the income poverty measured by the national poverty line. Thus, the high Watts poverty index, that is, consistent with high headcount index for overall sampled respondents in the study areas are the signals of poverty severity. Based on the Watts index, calculated for the entire sample, and the average regional RGDP growth, average exit time of poverty across the whole sample respondents of the regional overall and specific urbans were estimated for the sake of comparison and the results are described in the table 5.5. Thus, if the regional average growth of 10.225 percent is maintained in the forthcoming years, the regional urban poor households will escape from the extreme poverty in less than two years from the study period on wards, but the WolaitaSodo town sample households are obliged to wait at least two and half years to reach or cross the national poverty line. However, given the respective watts indices and the average RGDP growth, relatively shorter time periods are required for the dwellers of Hawassa city administration (1.4) and Arba Minch town (1.3) to exit from the absolute poverty.

Nevertheless, the average exit time of poverty founded on Watts index masks the truth and the actual situation of the poor households; thus, understates the time required to exit from unidimensional poverty. In this case we can look for another alternative, the average exit time of poverty for the poor households which is deflated against poverty head count ratios of respective towns showing the exact time required for those lagging behind. An attractive and more convenient indicator for policy discussions may be the average exit time amongst the poor than the average exit time of all sample households because if policy-makers

might devise pro-poor policies based on the later, poverty can be rapidly eliminated, but not in actual sense since many households are already non-poor using the national poverty line. Accordingly, the average time needed for the poor households to exit poverty was estimated assuming that this regional average growth rate is sustained. Thus, it will take on average 4.5 years to push the poor households out of poverty or at least to bring them to the poverty line if the RGDP growth of the region maintained a positive growth rate of 10.225 percent per year on average. However, maintaining this high growth rate in sustained manner is by itself a challenging given the nexus between small-scale rainfed agriculture susceptible to external shocks as a base for the entire economy and the market-oriented urban economy. At disaggregate level, given the same growth rate, at least 6 years are compulsory for the poor households of WolaitaSodo town to exit from poverty while 4.3 years and 3.4 years are enough for the poor households in Arba Minch town and Hawassa city administration to escape from the absolute poverty. That means additional years are necessary to lift the poor households of the former town that require additional resources (energy, finance and other transaction costs). In the same fashion, the average exit time of poverty for average poor household can be estimated using average income of the poor households and this measure is not sensitive to distribution, unlike the former two. Thus, neglecting the distributional issue, assuming the regional average RGDP growth rate of (10.225%) is sustained, the average poor household in the regional urbans will exit from absolute poverty, on average within 4 years' time period (table 5.5). In the same talk, the average poor household in the WolaitaSodo town should wait at least 5.3 years to escape from consumption poverty, assuming the steady regional average RGDP growth of 10.225 percent. However, the same average poor household residing in Hawassa city administration require more than 3 years to reach or cross the national poverty line while to push the Arba Minch town counterpart, nearly 4 years are obligatory, assuming the same growth rate.

Table 4: Forecasted Average Poverty exit time based on Regional Average RGDP

Poverty exit time measures	Forecasted average exit time (years) at 10.225 percent			
	Regional overall	Hawassa	WolaitaSodo	Arba Minch
Average exit time of poverty for entire sample households ($T_{10.225\%}$)	1.7	1.4	2.5	1.3
Average exit time of poverty for all poor households ($t_{10.225\%}$)	4.5	3.4	6	4.3
Exit time of poverty for the average poor household ($t_{10.225\%}^{\text{average}}$)	4.0	3.2	5.3	3.8
Watts Index (W)				
Estimate	0.1431	0.0533	0.2119	0.1221
STE	0.0148	0.0071	0.0291	0.0217
Head count Index	0.2836	0.2458	0.3209	0.2823

Source: Computed from own survey, 2017 based on the regional RGDP data of BoFED (2015)

4. Conclusion and Recommendation

The discussion we made so far shows that the country's objective of poverty reduction will only be successful if the economy grows in sustained manner and at the same time the poor groups of the urban households are at heart of development policy makings. The concept of average time needed to exit poverty is central in substantiating how much economic growth lift majority of the poor households from poverty in stipulated time and on a more planned basis so as

to avoid resource wastage. In addition, the concept is certainly useful in identifying opportunities and constraints so that to guide poverty reduction policies and strategies. If there are policies that promote the growth of income of the urban poor, then the absolute poverty status of the urban dwellers could be reduced or even eliminated within a specific period of time. However, this justification assumes that the poor have equal opportunities to improve their income or consumption expenditure and this might not be the case in actual sense. Even though fair income distribution is the central issue in growth and poverty

reduction goal, still the poverty exit time estimation provides tools to summarize data in ways that can inform policy debate on growth-based poverty strategies so that its contribution to comprehensive poverty analysis is worth mentioning. Based on the study findings, the recommendations forwarded for further interventions are; 1) The high poverty indices of study areas assert that poverty is still unfinished task in the region; hence, putting the urban poor at the heart of development policy making is a viable strategy to materialize the real poverty reduction. Thus, the urban development strategies put the poor at the heart of development endeavors and the poverty reduction efforts based on this growth sensitive indices should give due attention to sustained and pro-poor growth. 2) The present study also tried to estimate the average exit time for the poor households, a more attractive and convenient index for policy interventions, and the study findings show that, on average nearly five years are required to uplift the poor households at least from the short-sighted and understated absolute poverty measured at NPL and provided that the average RGDP growth of exceeding 10 percent per annum is maintained. However, for the poor households of Wolaita Sodo town even at this higher growth rate, require relatively additional time periods to exit from absolute poverty measured at national poverty that demand additional resources (energy, finance and other transaction costs). Thus, focusing on the poorest of poor by exerting coordinated efforts in stipulated time period is an efficient and effective policy option to fight against persistent poverty. Above all, promoting sustained and pro-poor growth, extending the social security and safety nets programs, and use of appropriate redistributive policies that contemplate the extreme urban poor households are recommended to fight against the acute household poverty so as to realize palpable poverty reduction.

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