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Consumption Over Life Cycle of Remittances Recipients In Indonesia

Ade Jamal Mirdad[1)] Sutyastie Sumitro Remi[2)] Ferry Hadiyanto[3)] Bagdja Muljarijadi[4)]
[1 2 3 4] Faculty of Economics and Business, Padjadjaran University, Indonesia
*E-mail: ade.jamal@binus.ac.id

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ABSTRACT

Purpose of this study is to examine and analyze the consumption patterns of remittance recipient households using the Life Cycle Hypothesis (LCH) model. Using data from three periods of the IFLS (IFLS 2000, IFLS 2007 and IFLS 2014) and the decomposition of cohort and age effects on consumption, the results show that consumption behavior is not as described as in the LCH theory. The curve of average consumption-age in this remittance recipient household has a "hump shape" pattern.

Keywords: Age; cohort; consumption pattern

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INTRODUCTION

Research on the consumption patterns of remittance recipient households shows varying results (Adams and Cuecuecha, 2010). The results of research by Nguyen (2009) state that remittance recipient households in Vietnam have a greater tendency to spend on health, education and housing due to international remittances and a greater tendency to consume food due to domestic remittances. Adam (1998) shows that rural households in Pakistan tend to increase assets such as irrigated land, rain-fed land, livestock and non-agricultural assets due to obtaining international remittances. Another study in Pakistan conducted by Ahmed and Mughal (2014) showed results that international remittances were used for food consumption and domestic remittances for education expenses. The results of Clement's (2011) research on households in Tajikistan show that remittances do not encourage productive spending. And the results of a study in Senegal show that households tend to use domestic remittances for housing expenses (Randazzo and Poracha, 2014). Research results in Indonesia show that households receiving remittances have a greater tendency to consume food than others (Adam and Cuecuecha, 2010 and Lu, 2013). On the other hand, the research results of Dartanto and Nurcholis (2010) are slightly different, namely that households use remittances to guard against shocks to consumption such as crop failure or illness and death, here households save remittances first.

Empirical studies regarding the consumption patterns of remittance recipient households generally attempt to explain the allocation patterns of household expenditure on several expenditure groups for goods and services. There have not been many empirical studies regarding the consumption patterns of remittance recipient households using an inter-time allocation approach. An empirical study of household consumption and savings patterns using an inter-time allocation approach was carried out by Hadiyanto (2011) in Indonesia, the study covered all households.

In contrast to previous research, this research will try to examine consumption patterns more specifically by using an inter-time allocation approach or a consumption behavior approach in remittance recipient households. The economic theory and model with an inter-time allocation approach and based on individual/household behavior is the Life Cycle Hypothesis (LCH) Model. This LCH model was pioneered by Modigliani and Brumberg (1954) and then developed further with different assumptions by Freadman (1957). LCH theory can identify household consumption behavior based on the length of its life span and how this household adjusts consumption over time until the marginal substitute for consumption is the same (Deaton, 1997). In the LCH theory and model it is assumed that households have a forward looking view in their consumption decisions. In addition, this theory states that current consumption is influenced by lifetime income, not current income. With the LCH model, consumption behavior can be identified dynamically. This LCH model can capture behavior dynamically. In the LCH theory, household allocation will be described over time, and in this allocation there tends to be a process of smoothing consumption throughout life.

It is hoped that the application of the LCH model to households receiving remittances can complement previous research information regarding remittances and consumption which tends to use an allocative approach according to type of expenditure. Apart from that, it can be seen whether remittance recipient households follow a life cycle pattern in their consumption behavior where remittance recipient households have a forward looking view in their consumption. In other words, the application of the LCH model also tests its reliability in explaining consumption behavior.

Based on the description above, this research seeks to obtain empirical information regarding the consumption behavior of remittance recipient households and the role of remittances in these household consumption. For this reason, this study will use Indonesia Family Life Survey (ILFS) data, namely the results of surveys in 2000, 2007 and 2014 to capture the dynamic consumption behavior of remittance recipient households. Thus, this research asks the question whether the consumption patterns of remittance recipient households in Indonesia follow the Life Cycle Hypothesis consumption patterns.

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LITERATURE REVIEW, FRAMEWORK AND HYPOTHESIS

Motivation

Individual or household consumption behavior that is based on an anticipatory (forward looking) strategy in determining consumption allocation is faced with periodic choices, for example consumption for the current period or for the future. Two important consumption theories that include forward-looking in consumption behavior are the life cycle hypothesis theory from Modigliani (1954) and the permanent income hypothesis theory from Milton Freadman (1957). Based on this theory, individuals or households will tend to smooth their consumption by saving in one period and using it for consumption in the next period.

Referring to the life cycle hypothesis (LCH) theory, individuals or households will determine consumption over time, individuals will even out consumption throughout their lives, where when income is growing they will increase their savings, while at retirement they will use these savings for consumption (Deaton , 1985). Therefore, consumption or savings behavior will differ for different individuals or households at different stages of their life cycle and between cohorts as a representation of economic growth and as certain fluctuations impact individuals at the same time (Gibson and Scobie, 2009).

By following the LCH model, if the pattern in LCH theory indeed occurs in remittance recipient households and if uncertainty is not important, then the level of individual consumption is proportional to lifetime resources with a proportional factor that depends on age (Deaton, 1985). Assuming that individual i was born in year b and observed in year t, mathematically the framework is as follows:

$$c_{ibt} = g_i(t-b)W_{ib} \quad \text{..... (1)}$$

The symbol W is lifetime wealth which is invariant to age, t-b is age obtained from the difference in years of age with the current age. In this simple model it is assumed that there is no uncertainty. Lifetime wealth does not vary over time, and we think of the individual/household as having its lifetime resources fixed at birth and then choosing how to allocate its consumption over time depending on the preferences of the individual/household over time. this or the future. In general, the function also depends on the real interest rate, with higher rates causing consumption to grow along the age profile.

By forming a logarithm in the equation, then averaging based on a particular year cohort and observed in year t, the results are as follows:

$$\overline{\ln c_{bt}} = \overline{\ln g}\,(t-b) + \overline{\ln W_b} \quad \text{.....(2)}$$

Equation 2 shows that the logarithm of average consumption per cohort is the sum of two components that depend on age and cohort respectively.

To estimate equation 2, you need to regress the logarithm of consumption per cohort against the age dummy and household head cohort. The age dummy in this equation will show how the household is referenced in allocation over time and with the cohort dummy it will be known what the lifetime asset level of each cohort is (Deaton, 1997). Thus, the function of the consumption behavior equation (behavioral function) with reference to equation 2 is as follows:

$$lnC = f(D\_age, D\_cohort,) \quad \text{.....(3)}$$

InC is the average consumption per cohort at a certain time, D_age is a dummy age of the head of the household according to age group, D_cohort is a dummy cohort year of birth per cohort group, and D_year is a dummy year per year of sample data.

Consumption tendencies will vary according to differences in household characteristics. So in the consumption model it is necessary to include household characteristics as control variables. More specifically, these household characteristics can be in the form of household demographic characteristics. These household characteristic variables can be the number of household members, number of young family members, education of family members, education of the head of the family (Deaton, 1997;

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Villaverde and Krueger, 2007; and Alba, 2006). So the next consumption model specification in this research becomes:

$$InC = f(D_{age}, D_{cohort}, \text{Zk}\ ) \quad \text{..... (4)}$$

Zk is the household characteristics.

METHODS

Research Data

This research uses micro data, namely individual or household data that shows their activities in both social and economic aspects. based on the results of an empirical study from Attanasio and Browning (1992) that micro data is more appropriate to use in seeing the extent to which consumption behavior based on the Life Cycle Hypothesis (LCH) or Permanent Income Hypothesis (PIH) occurs in the economy. In addition, many empirical studies related to LCH and PIH use household micro data.

The use of micro data is more appropriate in the study of consumption behavior because the theories from LCH and PIH represent individual or household behavior. Apart from that, in the micro data there are necessary variables related to LCH and PIH theories. The required variables related to this theory include the characteristics and attributes of the head of the household, household consumption, permanent income (labor income), remittances and transitory income (non-labor income) of each individual head of household. characteristics of household members and regional characteristics.

The household data used in this research comes from the Indonesian Family Life Survey (IFLS). IFLS data is survey data conducted on households in several provinces in Indonesia, so it is micro data. The survey conducted at IFLS is a longitudinal survey of household and community groups, meaning that respondents who have been enumerated or interviewed in 1993 (IFLS1) will continue to be followed and become respondents again in the following years of survey activities, so that the information obtained in side varies between observation units and also between times. The data used in this research is IFLS 3 data, namely data from the 2000 IFLS survey, IFLS 4, namely data from the 2007 IFLS survey and IFLS 5, which is data from the 2014 IFLS survey.

Research Model Specifications

In this research, there are two main group models whose parameters will be estimated, namely: 1) a consumption model for remittance recipient households based on the LCH model by adding demographic characteristics; and 2) remittance recipient household consumption model based on the LCH-PH model by adding demographic characteristics based on the LCH model by adding demographic characteristics. In its estimation, this research model will use panel data or in other words it is estimated per IFLS year, namely 2000, 2007 and 2014. The econometric model specification for this research will use the Decomposition Model function of the Effect of Cohort and Age on Consumption.

$$lnC_{it} = \alpha_0 + \sum_{j=1982}^{<1936} \alpha_{1.j}\, Dcohort_j^{KRT} + \sum_{j=16}^{60+} \alpha_{2.j}\, Dage_j^{KRT} + \alpha_3 Pnd_{it}^{krt} + \alpha_4 A_{it}^{age<6} + \alpha_5 A_{it}^{(6-18)} + \beta 1 hhsize_{it} + e_{i.t}$$

$C_{i,t}$: Consumption;
hhsize : Number of household members
Age : Age of head of household
$DPnd_i^{krt}$: Dummy of head of family's education. Where, $DPnd_i^{krt}$= 1 if $Pnd_i^{krt} \geq$ high school graduate or $DPnd_i^{krt}$= 0 if other
$DA_i^{age<6}$: Dummy for the presence of children under five years of age. Where, $DA_i^{age<6}$ = 1 if $A_i^{age<6}$ = children under six years of age or $DA_i^{usia<6}$ = 0 if other

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$DA_i^{age\,(6-18)}$: Dummy for the presence of children aged between 6 – 18 years. Where, $DA_i^{age\,(6-18)}$ = 1 if $A_i^{age\,(6-18)}$= age of children between 6 – 18 years or $DA_i^{age\,(6-18)}$= 0 if other

$D\ age_i^{KRT}$: The dummy age of the head of the family is between 20 – 65+ years

$D\ cohort_i^{KRT}$: Dummy cohort of heads of family

i : Households receiving remittances

RESULTS AND DISCUSSION

Based on the estimation results of the model above, it can be seen the consumption patterns of remittance recipient households throughout the age profile (Deaton, 1997; Gaurinchas and Parker, 2002; Alba, 2006; Villaverde and Dirk Krueger, 2007; Bussolo et al, 2017; and Alexandre, 2019). This pattern is known from consumption patterns according to age profile after controlling for the influence of cohort and household characteristics. Then it can be seen whether it is in accordance with the LCH theory, whether it is flat or forms a "hump shape" pattern throughout the age profile.

Table 1 presents the estimation results of four LCH models, namely the total model, informal model, formal model and non-remunerated model. The estimation results show that in general there are differences in the magnitude of consumption tendencies both according to cohort and age. Apart from that, younger and younger cohorts have a higher consumption tendency compared to older ones. By comparing between models, the magnitude of the coefficients and the number of significant variables of the independent variables are different. The formal model tends to have larger coefficient values, except for the variable RT members aged 6 – 18 years.

The age group coefficient shows consumption tendencies according to age. Based on the sign and magnitude of the coefficient, the trend of consumption increases with increasing age until around 60 years of age, then decreases at the following age. This shows that there are differences in preferences according to age, where household consumption preferences tend to be greater at older ages compared to previous ages before the age of 60 years, then after the age of 60 years the consumption preferences are greater at younger ages.

Table 3. LCH Model Estimation Results

Variable	Total		Informal		Formal		Not getting paid	
	Coeff.	*S.E.*	Coeff.	*S.E.*	Coeff.	*S.E.*	Coeff.	*S.E.*
Household size	-0,090***	0,00	-0,084***	0,00	-0,113***	0,01	-0,093***	0,01
Household members aged <6	-0,092***	0,02	-0,149***	0,03	-0,210***	0,04	-0,0275	0,05
Household members aged6 - 18	-0,142***	0,02	-0,079**	0,03	-0,0888*	0,05	-0,0998**	0,04
Education of Head of household	0,565***	0,02	0,474***	0,04	0,599***	0,04	0,579***	0,05
Cohort 2	-0,171*	0,09	-0,206	0,20	-0,295**	0,13	0,0792	0,19
Cohort 3	-0,358***	0,10	-0,357*	0,20	-0,447***	0,13	-0,149	0,28
Cohort 4	-0,439***	0,10	-0,460**	0,20	-0,571***	0,13	0,108	0,29
Cohort 5	-0,572***	0,11	-0,553***	0,20	-0,684***	0,15	-0,354	0,29

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Cohort 6	-0,669***	0,11	-0,720***	0,21	-0,721***	0,17	-0,381	0,31
Cohort 7	-0,915***	0,12	-0,882***	0,22	-1,069***	0,18	-0,495	0,34
Cohort 8	-0,900***	0,13	-0,949***	0,23	-0,947***	0,20	-0,579	0,36
Cohort 9	-0,913***	0,13	-0,893***	0,23	-1,100***	0,24	-0,611*	0,36
Cohort 10	-1,032***	0,14	-1,065***	0,24	-1,346***	0,29	-0,597	0,36
Cohort 11	-0,989***	0,14	-0,838***	0,24	-1,366***	0,27	-0,733*	0,37
Age 2	0,518***	0,10	0,404	0,26	0,549***	0,17	0,275	0,20
Age 3	0,647***	0,10	0,426	0,26	0,683***	0,17	0,362	0,27
Age 4	0,629***	0,10	0,387	0,26	0,730***	0,17	0,0977	0,28
Age 5	0,842***	0,11	0,604**	0,26	0,924***	0,18	0,478*	0,28
Age 6	0,941***	0,12	0,599**	0,27	1,088***	0,19	0,693**	0,31
Age 7	1,195***	0,12	0,944***	0,27	1,267***	0,20	0,746**	0,33
Age 8	1,325***	0,13	1,041***	0,28	1,443***	0,22	0,953***	0,36
Age 9	1,299***	0,14	0,917***	0,28	1,563***	0,25	1,105***	0,36
Age 10	1,314***	0,15	1,052***	0,29	1,476***	0,30	0,996***	0,37
Age 11	1,224***	0,15	0,753**	0,30	1,520***	0,29	1,057***	0,38
Constant	12,60***	0,05	12,85***	0,20	12,75***	0,12	12,54***	0,08
Observationsi	4018		1747		173		918	
R-squared	0,238		0,189		0,344		0,336	

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

The estimation results also state that there are differences in consumption according to cohorts in remittance recipient households. Based on the sign and magnitude of the coefficient, young birth years have a greater influence than older birth years. This can be interpreted that the initial wealth or initial economic conditions of old households tend to be lower than those of later ones (Deaton, 1997; Gaurinchas and Parker, 2002; and Villaverde and Dirk Krueger, 2007).

The estimation results show that consumption tends to be smaller in those who have a larger household size, there are more household members aged less than 6 years, and there are more household members aged between 6 - 18 years, otherwise consumption will tend to be smaller. greater in those who have a head of household with a higher level of household education.

As explained previously, the LCH model estimation aims to see consumption patterns according to age graphically so that it can be seen and analyzed whether the pattern tends to be flat or not. The consumption graph/curve is created based on the estimated consumption value based on the LCH model (Gaurinchas and Parker, 2002). Estimation is done by entering the variables average household size and age only, other variables are controlled first, so that the equation for consumption is obtained. estimates are as follows (Gaurinchas and Parker, 2002):

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1. Total consumption estimation model per age

$$\widehat{lnC_{age_i}} = 12{,}60 - 0{,}090\overline{hhsize} + \alpha_{age\_i} \quad \text{.....1}$$

2. Model for estimating consumption per age of informal groups

$$\widehat{lnC_{age_i}} = 12{,}85 - 0{,}084\overline{hhsize} + \alpha_{age\_i} \quad \text{..... 2}$$

3. Formal group consumption estimation model per age

$$\widehat{lnC_{age_i}} = 12{,}75 - 0{,}113\overline{hhsize} + \alpha_{age\_i} \quad \text{..... 3}$$

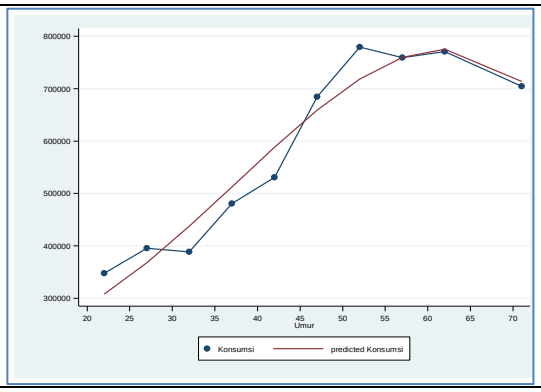
4. Model estimates consumption per age group not earning a fixed wage

$$\widehat{lnC_{age_i}} = 12{,}54 - 0{,}093\overline{hhsize} + \alpha_{age\_i} \quad \text{..... 4}$$

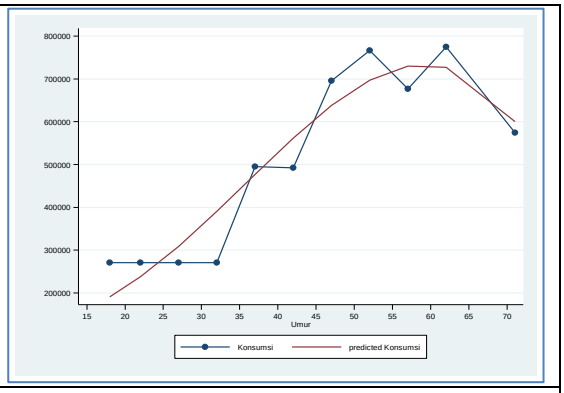
$\widehat{lnC_{age_i}}$ is the logarithm of estimated consumption and $\widehat{lnC_{age_i}}$ is the average household size. After obtaining the estimated consumption logarithm value for each age, the next step is to determine the antilog of the estimated consumption logarithm to obtain the estimated consumption value for each age. Then, after obtaining the estimated consumption value for each age, a consumption curve is created based on the age profile. The consumption curve will show the consumption patterns of households receiving remittances according to their age profile, whether they form consumption patterns like in the LCH theory or are different.

Figure 1 shows that consumption increases up to around age 60, then falls at the following ages. The consumption curve according to the age profile is determined after first controlling for the influence of cohort variables, family size and the presence of young family members. Thus, the consumption profile reflects households' inter-time preferences (factor discounting and risk aversion).

Throughout the age profile, the consumption patterns of remittance recipient households do not show a flat pattern as predicted in the LCH theory, but form a "hump shape" pattern as shown by the results of research conducted by Deaton (1997), Gaurinchas and Parker (2002), Villaverde and Krueger (2007) and Aguiar and Hurst (2013). The consumption pattern according to age which is in the form of a "hump shape" in remittance recipient households faces liquidity constraints in financing consumption to maintain the same consumption throughout life as found by Alba and See (2006) and Villaverde and Krueger (2007). Apart from that, this is due to the greater consumption preferences of these households in old age compared to before. This result is different from the findings from Alexandre (2019) on households in Portugal which showed a pattern like that in the LCH theory. Alexandre (2019) stated that the LCH consumption pattern occurs in households in Portugal because it is easier for young people in Portugal to obtain credit and because Portugal has better social security for old age.



A. Total



B. Informal

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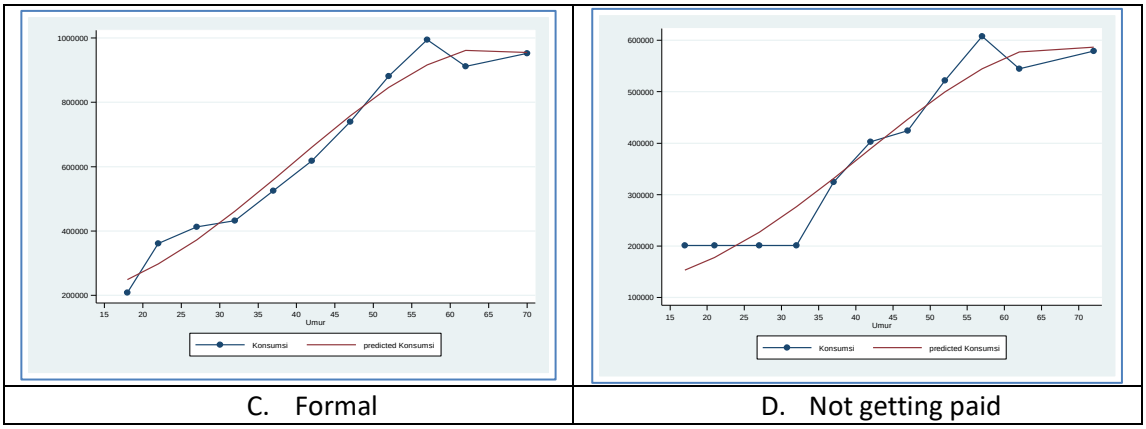

C. Formal	D. Not getting paid

Source: Stata Output, 2023

Figure 1. Consumption Patterns According to Age Profile of All Samples

CONCLUSION

Based on empirical results regarding the consumption patterns of households receiving remittances, it shows that consumption tendencies differ significantly both according to age profile and cohort. Consumption patterns according to the age of the head of the household form a "hump shape" or "inverted U" pattern, different from the pattern described in LCH model.

From the results of the estimates and discussion above, several suggestions can be made for operations such as the ease of obtaining loans or credit for households receiving remittances that need to be further improved, especially for young and elderly households, considering the strong influence of income on consumption. Then it is important to control the number of family members to prevent negative impacts on the level of changes in household consumption and in the long term it is hoped that it can increase the household's ability to save. In addition, skills training programs for abandoned household members so that they do not only rely on remittances to meet their daily needs.

Academic advice is that household consumption behavior, especially those receiving remittances, will be better understood if you use the Absolute Income Hypothesis or Relative Income Hypothesis model or theoretical framework. In addition, analysis of consumption behavior needs to also include financial aspects in the research model.

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