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CHARACTERISTICS OF INDONESIAN HOUSEHOLD'S LIVING EXPENDITURE

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Abstract

The aim of this study is to estimate and analize the characteristics of Indonesian household expenditure on goods and services, for example food, clothes, household utensils, housing, medical care, education, oil and transportation, gas, electricity and communication. Linear Expenditure System (LES) model and seemingly uncorrelated regression (SUR) estimation method were applied. This study has some conclusions. First, if ones have more incomes, they will proportionally allocate them for housing, oil and transportation, education, food, and medical care. Second, medical care, education and communication are categorized as superior or deluxe commodities. Third, the approximation of minimum living expenditure to survive is Rp 147.236 for a household per week.

Keywords: Living expenditure, Linear Expenditure System (LES), Seemingly Uncorrelated Regression (SUR)

Abstrak

Tujuan dari artikel ini adalah mengestimasi dan menganalisis karakteristik pengeluaran rumah tangga di Indonesia dalam bentuk barang dan jasa, seperti makanan, pakaian, peralatan rumah tangga, perumahan, perawatan medis, pendidikan, transportasi dan bahan bakar, gas, listrik, komunikasi. Model Linear Expenditure System (LES) dan metode estimasi Seemingly Uncorrelated Regression (SUR) digunakan dalam penelitian ini. Penelitian ini menunjukkan beberapa kesimpulan. Pertama, penambahan pendapatan akan dialokasikan secara proporsional untuk perumahan, transportasi dan bahan bakar, pendidikan makanan, perawatan medis. Kedua, perawatan medis, pendidikan, komunikasi adalah termasuk barang atau kebutuhan superior. Ketiga, perkiraan pengeluaran rumah tangga minimum sebesar Rp 147.236 per minggu.

Kata Kunci: pengeluaran hidup, Linear Expenditure System (LES), Seemingly Uncorrelated Regression (SUR)

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INTRODUCTION

Identifying the characteristics of living expenditure becomes very important for decision making of policy analysis. Living expenditure is strong related with the demand characteristic of basic need. Elaine (1999) notes that there are 5 factors affecting food decisions made by individual consumers i.e. food availability, cultural factors, psychological factors, lifestyle factors and food trends. By assuming unchanged household preferences, the change of minimum expenditure can easily found by multiplying the minimum good i by its own price and then summing up them.

However, the current financial crisis seems to have affected consumers' attitudes in many countries. The economic uncertainty and insecurity have led consumers to take decisions minimizing their costs, even for basic needs, such as food quantity and quality. In a period of inflation and unemployment, consumers are more likely to change the composition of their expenditures. (Barda and Sardinou, 2010). Furthermore, the household behaviour of expenditures on food is directly related to the household size. As expected, previous studies have estimated that there exists a positive relationship between the number of members in a household. (Kostakis, 2012)

In evaluating a household's well-being, one must not be limited to the household's actual welfare status today, but must also account for the household's prospects for being well in the future, and being well today does not imply being well tomorrow (Baiyegunhi, LJS, and Fraser, 2010). Secondly, understanding vulnerability is also important from an instrumental perspective. Because of the many risks household face, they often experience shocks leading to a wide variability in their endowment and income.

All econometric studies of demand are related to the three basic objectives of econometrics, i.e. (1) structural analysis, (2) forecasting and (3) policy evaluation (Griffiths et al., 1993; Intriligator et al., 1996; Gujarati, 2000). *First,* the structural analysis is connected with the use of an estimated econometric model for the quantitative measurement of economic relationships. Many researches of demand focus on some aspects of structural analysis, particularly the estimation of the impacts of the change in prices and income on the quantity demanded, as measured by elasticity. *Second,* forecasting concerns with the use of an estimated econometric model to predict quantitative values of certain variables outside the sample of data actually observed. Many researches of demand are oriented toward forecasting, in particular forecasting quantities, and/or prices of specific commodities in either the short or the long period. *Third,* policy evaluation is related to the use of an estimated econometric model to choose between alternative policies. Researches of demand are sometimes oriented toward policy evaluation, in particular, the impact of policies (such as taxes and subsidies) that may affect markets for consumer goods. From the estimated demand function, it is possible to predict the impacts of taxes or subsidies on the quantities demanded, welfare changes, for example (Widodo, 2006).

The idea of standard of living of Indonesian households relates to various elements of household's livelihood and varies by income. By using Linear Expenditure System (LES), characteristic of living expenditure can be explained. It is stated that x_i^o represents the minimum good consumed by household and $p_i x_i^o$ the minimum expenditure to which the household is committed (subsistence expenditure) (Stone 1954).

This paper aims to analyze the characteristics of Indonesian living expenditure and to approximate minimum living expenditure to survive. In this paper, the groups consist of (1) Food, (2) Clothes, (3) Household utensils, (4) Housing, (5) Medical Care, (6) Education, (7) Oil and Transportation, (8) Gas, (9) Electricity and (10) Communication. The rest of this paper is organized as follows. Section 2 describes the characteristics of living expenditure under LES. The methodology is presented in Section 3. Results and analysis are described in Section 4. Finally, several conclusions are presented in Section 5.

Theoretically, a household's demand for goods and services is a function of prices and income (by the definition of Marshallian demand function). The problem of the household is to choose quantity of goods and services that maximize its utility function subject to the given budget constraint. Therefore, some changes in income and prices of goods and services will directly affect the number of goods and services demanded. This section describes a utility function, which derives the linear expenditure system (LES), and shows formulas of elasticities under the LES.

In this paper, we assume that Indonesian households have a utility function following the more general Cobb-Douglas (CD) for a simplicity reason[1]. Stone (1954) makes the first attempt to estimate an equation system incorporating explicitly the budget constraint, namely the linear expenditure system (LES). Klein and Rubin (1948) formulate the LES as the most general linear formulation in prices and income satisfying the budget constraint, homogeneity and the Slutsky symmetry (Mas-Colell et al., 1995) Samuelson (1948) and Geary (1950) derive the LES from the following utility function:

$$U(x_1 \ldots\ldots x_n) = \left(x_1 - x_1^o\right)^{\alpha_1}\left(x_2 - x_2^o\right)^{\alpha_2}\left(x_3 - x_3^o\right)^{\alpha_3} \ldots\ldots \left(x_n - x_n^o\right)^{\alpha_n} \qquad (1)$$

The problem of individual household is to choose the combination of x_i that can maximize its utility $U(x_i)$ subject to its budget constraint. Therefore, the optimal choice of x_i is obtained as a solution to the constrained optimization problem as follows:

$$\underset{x_i}{\text{Maxize}}\ U(x_i) = \prod_{i=1}^{n}\left(x_i - x_i^o\right)^{\alpha_i}$$

Subject to: **PX** £ M**.** Where $\sum_{i=1}^{n}\alpha_i = 1$ and $x_i - x_i^o > 1$ then $0<a_i<1$. Furthermore, P is product operator and x_i is consumption of commodity i. Then x_i^o and a_i are the parameters of the utility function. x_i^o is minimum quantity of commodity i consumed and iÎ[1,2,3........n]. **P** is a row vector of prices and **X** is a column vector of quantity of commodity while M is income

Solving the above optimization problem, we can find the Marshallian (uncompensated) demand function for each commodity x_i as follows:

$$x_i = x_i^o + \frac{\alpha_i\left(M - \sum_{j=1}^{n} p_j x_j^o\right)}{p_i \sum_{i=1}^{n}\alpha_i} \quad \text{for all i and j} \qquad (2)$$

Where: iÎ(1,2,........n)
jÎ(1,2,........n)

Since the restriction that the sum of parameters a_i equals one, $\sum_{i=1}^{n}\alpha_i = 1$, is imposed, Equation (2) simply becomes:

$$x_i = x_i^o + \frac{\alpha_i\left(M - \sum_{j=1}^{n} p_j x_j^o\right)}{p_i} \quad \text{for all i and j} \qquad (3)$$

Equation (3) can be also reflected as the linear expenditure system as follows:

$$p_i x_i = p_i x_i^o + \alpha_i\left(M - \sum_{j=1}^{n} p_j x_j^o\right)$$

for all i and j (4)

Equation (4) shows that the expenditure on good i , denoted as $p_i x_i$, can be divided into two components. The first component is the expenditure on a certain base amount x_i^o of good i, which is the minimum expenditure to which the consumer is committed (*subsistence expenditure*), $p_i x_i^o$ (Stone, 1954). Samuelson (1948) interprets x_i^o as a necessary set of goods resulting in an informal convention of viewing x_i^o as non-negative quantity.

1 In fact, we can choose the appropriate utility function by conducting a non-nested test of comparison between two demand systems (See for examples - as they are cited by Katchova and Chern (2004): between the linear and the quadratic expenditure systems (LES and QES) by Polak and Wales (1978), between the QES and the translog demand system by Pollak and Wales (1980), between the translog demand system and the AIDS by Lewbel (1989), between the AIDS and the Rotterdam demand system by Alston and Chalfant (1993), between alternative demand system combining the Rotterdam model and the AIDS by Lee et al. (1994), between the absolute price Rotterdam model and the first differenced linear approximate AIDS by Kastens and Brester (1996)).

The restriction of x_i^o to be non-negative however is unnecessarily strict. In fact, the utility function is still defined whenever $x_i - x_i^o > 0$. Thus, Pollak (1968) argues that the interpretation of x_i^o as a *necessary level of consumption* is misleading. Allowing x_i^o to be negative provides an additional flexibility in the possibility of price-elastic goods. The usefulness of this generality in price elasticity depends on the level of aggregation at which the system is treated. The broader is the category of goods, the more probable is the price elastic. Solari (in Howe, 1974:13) interprets negativity of x_i^o as *superior* or *deluxe* commodities.

In order to preserve the committed quantity interpretation of the x_i^o when some x_i^o are negative, Solari (1971) redefines the quantity $\sum_{j=1}^{n} p_j x_j^o$ as "*augmented supernumerary income*" (in contrast to the usual interpretation as supernumerary income, regardless of the signs of the x_i^o). Then, by defining n* such that all goods with i£n* have positive x_i^o and goods for i>n* are superior with negative x_i^o, Solari interprets $\sum_{j=1}^{n^*} p_j x_j^o$ as *supernumerary income* and $\sum_{j=n^*+1}^{n} p_j x_j^o$ as *fictitious income*. The sum of "*Solary-supernumerary income*" and fictitious income equals augmented supernumerary income. Although somewhat convoluted, these redefinition allow the interpretation of '*Solari-supernumerary income*' as expenditure in excess of the necessary to cover committed quantities. From this analysis can be classified the type of goods services. If the minimum quantity of good (q_i^o) has positive value, it can be classified as basic need goods. On the other hand, if the value is not positive, it means that the good is not basic needs.

The second component is a fraction a_i of the *supernumerary income*, defined as the income above the "subsistence income" $\sum_{j=1}^{n} p_j x_j^o$ that is needed to purchase a base amount of all goods. The sum of coefficients a_i equals one to simplify the demand functions. The coefficients a_i are referred to as the *marginal budget share*, a_i /åa_i. They indicate the proportions in which the incremental income is allocated. From this analysis can be classified the type of goods services. If the marginal budget share (a_i) has positive value, it can be classified as no inferior goods. On the other hand, if the value is not positive, it means that the good is inferior.

RESEARCH METHOD

To estimate the coefficients and constants in the LES model requires data on prices, quantities, and incomes. This paper uses panel secondary data. The source of data refers to Susenas (Survei Sosial Ekonomi Nasional, National Survey of Social and Economy) that is published by BPS (Badan Pusat Statistik, Statistics Bureau of Indonesia) in July 2009 and March 2010. The analysis covers 33 provinces in Indonesia. Data of income and quantity are available on Susenas. Data of price can be estimated by divide income with quantity. It is not a good price but a weighted commodity price. The province average is used to break away different structure of data (July 2009 and March 2010). The unit of data is in household per week.

The estimation of a linear expenditure system (LES) shows certain complications because while it is linear in the variables, it is non-linear in the parameters, involving the products of a_i and x_i^o in Equation systems (3) and (4). There are several approaches to estimate the system (Intriligator et al., 1996).

The first approach determines the minimum quantities x_i^o based on extraneous information or prior judgments. Equation system (4) then implies that expenditure on each good in excess of the minimum expenditure $(p_i x_i - p_i x_i^o)$ is a linear function of supernumerary income, so each of the marginal budget shares (a_i) can be estimated by applying the usual single-equation simple linear regression methods.

The second approach reverses the first one by determining the marginal budget shares a_i based on extraneous information or prior judgments (or Engel curve studies, which estimate a_i from the relationship between expenditure and income). It then estimates the minimum quantities (x_i^o) by estimating the system in which the expenditure less the marginal budget shares time income $(p_i x_i - \alpha_i x_i^o)$ is a linear function of all prices. The total sum of squared errors -over all goods as well all observations- is then minimized by choice of the x_i^o

The third approach is an iterative one, by using an estimate of a_i conditional on the x_i^o (as in the first approach) and the estimates of the x_i^o conditional on a_i (as in the second approach) iteratively so as to minimize the total sum of squares. The process would continue, choosing a_i based on estimate x_i^o and choosing x_i^o based on the last estimated a_i, until convergence of the sum of squares is achieved.

The fourth approach selects a_i and x_i^o simultaneously by setting up a grid of possible values for the 2n-1 parameters (the –1 based on the fact that the sum of a_i tends to unity, $\sum_{i=1}^{n} \alpha_i = 1$) and obtaining that point on the grid where the total sum of squares over all goods and all observations is minimized.

This paper applies the fourth approach. The reason is that when estimating a system of equation seemingly unrelated(5) regression (SUR), the estimation may be iterated. In this case, the initial estimation is done to estimate variance. A new set of residuals is generated and used to estimate a new variance-covariance matrix. The matrix is then used to compute a new set of parameter estimator. The iteration proceeds until the parameters converge or until the maximum number of iteration reached. When the random errors follow a multivariate normal distribution these estimators will be the maximum likelihood estimators (Judge et al., 1982).

Rewriting Equation (4) to accommodate a sample t=1,2,3,.....T and 10 goods yields the following econometric non-linear system:

$$p_{1t} x_{1t} = p_{1t} x_{1t}^o + \alpha_1 \left(M - \sum_{j=1}^{10} p_j x_j^o \right) + e_{1t}$$
$$p_{2t} x_{2t} = p_{2t} x_{2t}^o + \alpha_2 \left(M - \sum_{j=1}^{10} p_j x_j^o \right) + e_{2t}$$
$$\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots$$
$$\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots$$
$$p_{10\,t} x_{10\,t} = p_{10\,t} x_{10\,t}^o + \alpha_{10} \left(M - \sum_{j=1}^{10} p_j x_j^o \right) + e_{10\,t}$$

for all i and j

Where: e_{it} is error term equation (good) i at time t.

Given that the covariance matrix $E[e_t e_t'] = \xi$ where $e_t' = (e_{1t}, e_{2t}, \ldots\ldots\ldots\, e_{10\,t})$ and x is not diagonal matrix, this system can be viewed as a set of non-linear seemingly unrelated regression (SUR) equations. There is an added complication, however. Because $\sum_{i=1}^{10} p_i x_i = M$ the sum of the dependent variables is equal to one of the explanatory variables for all t, it can be shown that $(e_{1t} + e_{2t} + \ldots\ldots\ldots + e_{10})= 0$ and hence x is singular, leading to a breakdown in both estimation procedures. The problem is overcome by estimating only 9 of the ten equations, say the first nine, and using the constraint that $\sum_{i=1}^{10} \alpha_i = 1$, to obtain an estimate of the remaining coefficient a_{10} (Barten, 1977).

The first equations were estimated using the data and the maximum likelihood estimation procedure. The nature of the model provides some guides as to what might be good starting values for an iterative algorithm[2]. Since the constraint the minimum observation of expenditure on good i at time t (x_{it}) greater than the minimum expenditure x_i^o should be satisfied, the minimum x_{it} observation seems a reasonable starting value for x_i^o in iteration process. Also the average budget share, $T^{-1} \sum_{t=1}^{T} \left(p_t x_t / M_t \right)$, is likely to be a good starting value for a_i in the iterating process (Judge et al, 1982). It is because the estimates of the budget share a_i will not much differ with the average budget share.

RESULT AND ANALYSIS

Table 1 describes the estimates of the

2 For a detailed explanation about iterative algorithms, see Griffith *et al* 1982.

LES for the Indonesian household. There are two components of living expenditure that can be analyzed from LES's result, i.e. minimum quantity and marginal budget share.

The unit of minimum quantity is in quantity unit. From the value minimum quantity, it can be concluded that food, clothes, household, utensils, housing, oil and transportation, gas, and electricity are basic need commodities (positive value). Baiyegunhi (2010). On the other hand, medical care, education, and communication are not basic need commodities (non positive value) for surviving. In fact, many people can be survival without education and communication expenditure. Because of poverty, many people can't access education and standard medical care. For poor people, standard (formal) medical care can be substituted by traditional medical care. It is cheaper than standard medical care. On the other hand, poor people can access standard medical care and education with several subsidy programs from government, even can be zero cost.

From the value of marginal budget share (positive), it can be concluded that all of commodities are non inferior good. It means that if the income increase will affect the increase of consumption (quantity of good). From the rank of marginal budget share value, it can be concluded that housing, oil and transportation, education, food, and medical care are the most important expenditure if household get additional income

Table 1. Minimum Quantity and Marginal Budget Share of Indonesian Household

Component of Expenditure	Minimum Quantity	Marginal Budget Share
Food	1.49	0.14
Clothes	0.78	0.06
Household utensils	0.90	0.04
Housing	1.89	0.24
Medical Care	-5.95	0.07
Education	-12.41	0.14
Oil and Transportation	0.49	0.20
Gas	1.12	0.02
Electricity	5.21	0.02
Communication	-0.23	0.06
		1.00

Source: Susenas, July 2009 and March 2010, BPS, *authors' calculation*

Table 2. Minimum Household's Living Expenditure

Component of Expenditure	Minimum Expenditure	**Share**
Food	99,314	67.43%
Clothes	3,110	2.11%
Household utensils	4,137	2.81%
Housing	15,725	10.68%
Medical Care	0	0.00%
Education	0	0.00%
Oil and Transportation	10,658	7.24%
Gas	9,653	6.55%
Electricity	4,692	3.19%
Communication	0	0.00%
Total	147,289	100.00%

Source: Susenas, July 2009 and March 2010, BPS, *authors' calculation* (above supernumerary income).

Minimum living expenditure can be estimated from the multiplication of minimum quantity and weighted price of commodity except medical care, education, and communication (These are not basic need goods).

Tabel 2 describes the detail of household's minimum living expenditures (in Rupiah per household per week). Based on the value, the rank of component expenditure are food, housing, oil and transportation, gas, electricity, household utensils, and clothes. More than 50 percent of minimum expenditure is allocated for food. Total of minimum living expenditure is Rp 147.289 for a household per week.

CONCLUSIONS

This paper analyses estimates and analyses the characteristics of Indonesian household's living expenditures. Linear Expenditure System (LES) model and see mingly uncorrelated regression (SUR) estimation method is applied on this analysis.

Appendix: Estimation Result of the LES

System: SUR0910
Estimation Method: Seemingly Unrelated Regression
Date: 01/18/13 Time: 20:13
Sample: 1 66
Included observations: 66
Total system (balanced) observations 660
One-step final coefficients from consistent one-step weighting matrix
Convergence not achieved after: 1 weight matrix, 6 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1.486113	0.121456	12.23580	0.0000
C(11)	0.136837	0.007843	17.44684	0.0000
C(2)	0.776148	0.432916	1.792837	0.0735
C(3)	0.904192	0.201306	4.491628	0.0000
C(4)	1.891089	0.436760	4.329813	0.0000
C(5)	-5.952276	2.473099	-2.406808	0.0164
C(6)	-12.40575	2.408910	-5.149944	0.0000
C(7)	0.488726	0.183638	2.661353	0.0080
C(8)	1.117996	0.168410	6.638547	0.0000
C(9)	5.207845	0.657974	7.914972	0.0000
C(10)	-0.233791	0.231663	-1.009189	0.3133
C(12)	0.064251	0.003444	18.65582	0.0000
C(13)	0.039465	0.001263	31.25830	0.0000
C(14)	0.241063	0.006864	35.11763	0.0000
C(15)	0.071116	0.002490	28.55729	0.0000
C(16)	0.137825	0.004389	31.40017	0.0000
C(17)	0.204620	0.004549	44.97695	0.0000
C(18)	0.024468	0.002040	11.99492	0.0000
C(19)	0.021278	0.001187	17.91962	0.0000
C(20)	0.059014	0.001317	44.81084	0.0000

Determinant residual covariance		7.51E+76	
R-squared	0.887902	Mean dependent var	55371.70
Adjusted R-squared	0.867521	S.D. dependent var	24389.00
S.E. of regression	8877.028	Sum squared resid	4.33E+09
Durbin-Watson stat	1.464172		
S.E. of regression	15930.61	Sum squared resid	1.40E+10
Durbin-Watson stat	1.260593		

Equation: Q6*P6=C(6)*P6+C(16)*(M-P1*C(1)-P2*C(2)-P3*C(3)-P4*C(4)-P5 *C(5)-P6*C(6)-P7*C(7)-P8*C(8)-P9*C(9)-P10*C(10))
Observations: 66

R-squared	0.716569	Mean dependent var	118050.0
Adjusted R-squared	0.665036	S.D. dependent var	49479.63
S.E. of regression	28636.88	Sum squared resid	4.51E+10
Durbin-Watson stat	1.812997		

Equation: Q7*P7=C(7)*P7+C(17)*(M-P1*C(1)-P2*C(2)-P3*C(3)-P4*C(4)-P5 *C(5)-P6*C(6)-P7*C(7)-P8*C(8)-P9*C(9)-P10*C(10))
Observations: 66

R-squared	0.927875	Mean dependent var	211086.1
Adjusted R-squared	0.914762	S.D. dependent var	69303.58
S.E. of regression	20233.61	Sum squared resid	2.25E+10
Durbin-Watson stat	2.617023		

Equation: Q8*P8=C(8)*P8+C(18)*(M-P1*C(1)-P2*C(2)-P3*C(3)-P4*C(4)-P5 *C(5)-P6*C(6)-P7*C(7)-P8*C(8)-P9*C(9)-P10*C(10))
Observations: 66

R-squared	0.285529	Mean dependent var	34653.47
Adjusted R-squared	0.155625	S.D. dependent var	13506.02
S.E. of regression	12410.67	Sum squared resid	8.47E+09
Durbin-Watson stat	1.338810		

Equation: Q9*P9=C(9)*P9+C(19)*(M-P1*C(1)-P2*C(2)-P3*C(3)-P4*C(4)-P5 *C(5)-P6*C(6)-P7*C(7)-P8*C(8)-P9*C(9)-P10*C(10))
Observations: 66

R-squared	0.779622	Mean dependent var	24116.00
Adjusted R-squared	0.739554	S.D. dependent var	16437.79
S.E. of regression	8388.854	Sum squared resid	3.87E+09
Durbin-Watson stat	1.789107		

Equation: Q10*P10=C(10)*P10+C(20)*(M-P1*C(1)-P2*C(2)-P3*C(3)-P4 *C(4)-P5*C(5)-P6*C(6)-P7*C(7)-P8*C(8)-P9*C(9)-P10*C(10))
Observations: 66

Food, clothes, household, utensils, housing, oil and transportation, gas, and electricity are basic need commodities. Medical care, education, and communication are not basic need commodities. All of the commodities are non inferior commodities. Increases in income (above supernumerary income) will be proportionally allocated more for Housing, Oil and transportation, Education, Food, and Medical care. *Second,* Medical care , Education, and Communication are superior or deluxe commodities. The approximation of minimum living expenditure to survive is Rp 147.236 for a household per week with the dominant proportion if food.

REFERENCES

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Baiyegunhi., LJS., and Fraser. (2010). Determinants of Household Poverty Dinamics in Rural Regions of the Eastern Cape Province, South Africa.

Barda, C., & E. Sardianou. (2010). Analysing consumers' 'activism' in response to rising prices, *International Journal of Consumer Studies*, 34, 133-139.

Barten, A.P. (1977).The system of consumer demand function approach: a review. *Econometrica,* 45:23-51.

Deaton A.S., and J. Muellbauer. (1980). *Economic and Consumer Behaviour*. Cambridge: Cambridge University Press.

Deaton, A.S. (1986). Demand analysis. In Z. Griliches and M.D. Intriligator, Ed, *Handbook of Econometrics*, Vol. 2. Amsterdam: North-Holland Publishing Company.

Elaine, H. (1999).Factors affecting food decisions made by individual consumers. *Food Policy*.

Vol. 24: 287-94.

Geary, R.C. (1950). A note on a constant utility index of the cost of living. *Review of Economic Studies*. XVIII (I), No. 45: 65-66.

Gujarati, Damodar. (2000). *Basic Econometrics*. Fourth Edition. McGraw Hill.

Griffiths, W., R.C. Hill., and G.G. Judge. (1993). *Learning and Practicing Econometrics*. Canada: John Wiley and Sons, Inc.

Goldberger, A., and T. Gamaletsos. (1970). A Cross-country comparison of consumer expenditure patterns. *European Economic Review,* 1:357-400.

Howe, H. (1974). *Estimation of the Linear and Quadratic Expenditure Systems: a Cross-section Case for Colombia*. University Microfilm International, Ann Arbor, Michigan, USA, London, England.

Intriligator, M.D . et al. (1996). *Econometric Models, Techniques, and Applications,* Second Edition. Prentice–Hall Inc, Upper Saddle River, NJ 07458.

Judge, G.G. et al. (1982). *Introduction to the Theory and Practice of Econometrics*. . Canada: John Wiley and Sons, Inc.

Katchova, A.L., and W.S. Chern. (2004). Comparison of quadratic expenditure system and almost ideal demand system based on empirical data. *International Journal of Applied Economics,* 1(1) September: 55-64.

Klein, L.R., and H. Rubin. (1948). A constant utility index of the cost of living. *Review of Economic Studies*. XV(2). No. 38: 84-87.

Kostakis, Ioannis. (2012). The Determinants of Households' Food Consumption in Greece. *International of Food and Agricultural Economics* Vol. 2 No. 2 pp. 17-28.

Mas-Colell, A., M.D. Whinston., and J.R.Green. (1995). *Microeconomic Theory*. New York: Oxford University Press.

Pollak, R.A. (1968). Additive utility function and linear Engel curves. *Discussion Paper*. No 53, Department of Economics, University of Pennsylvania, revised Feb.

Samuelson, P.A. (1948). Some implication of linearity. *Review of Economic Studies*. XV (2). No. 38: 88-90.

Samuelson, P.A., and W.D. Nordhaus. (2001). *Economics.* Seventh Edition. McGraw-Hill, New York.

Solari, L. (1971). *Théorie des Choix et Fonctions de Consommation Semi-Agrégées: Modéles Statiques*. Genéve: Librairie Droz: 59-63.

Stone, R. (1954). Linear expenditure system and demand analysis: an application to the pattern of Britissh deman. *Economic Journal*, 64:511-27.

Susenas Survey. (2009-2010). Website https://www.bps.go.id diakses pada tanggal 11 Januari 2012

The Statistics Bureau of Indonesia (Badan Pusat Statistik). (2009). *National Survey of Social and Economy (Survei Sosial Ekonomi Nasional).* Indonesia

Widodo, T. (2006). Demand estimation and household's welfare measurement: case studies on Japan Indonesia. *HUE Journal of Economics and Business* 2 (2): 103-136.

Widodo, T., and Donna D.R. (2009). Characteristic of Japanese Household's Demand. *Journal of Indonesian Economy and Business*, Vol. 24 (3): 327-387