Consumption Pattern of Poor Households in Metro Manila – A Microeconometric Evaluation

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This study is an attempt to analyze through survey design-consistent consumption profiling the budget allocation pattern of urban poor in Metro Manila. Econometric models of a complete system of Engel curves for the various consumption items are to be employed in the analysis. A value-added characteristic of this research is the incorporation of the complex survey design features of the 2009 Family Income and Expenditure Survey to produce consistent and unbiased standard errors and parameter estimates used in a variety of inferences implemented.

JEL Classifications: C81, C83, D11, D12, D13

Keywords: Engel Curves, Complex Survey Design, Urban Poor, Income/Expenditure Elasticities

The National Capital Region (NCR), better known as the Metropolitan Manila Area or Metro Manila is the country's premier region. Not only is Metro Manila the most progressive among the regions of the country, it is also the most densely populated. Metro Manila which is composed of 17 highly urbanized cities that are geographically segmented into four contiguous districts, has traditionally been regarded as the country's center of commercial, political, educational and economic activities; not to mention its being the seat of the national leadership. Its generally affluent inhabitants, who according to the Results of 2007 Population Census reached close to 11.6 million people (living in an area of 636 square kilometers for a very high population density of 18,157 persons per square kilometer), are enjoying the highest purchasing power and standard of living among the different regions of the country.

However, despite the general affluence of Metro Manila inhabitants, like all regions of the country, it also has its share of the urban poor, or those who barely meet the basic necessities of life. It is in Metro Manila that the contrast between the rich and the poor is exceptionally glaring. This study attempts to uncover the consumption pattern of the urban poor in Metro Manila through econometric modeling of the budget households allocate to the different consumption items necessary to meet living standards, in relation to their spending capability. The public use file of the 2009 Family Income and Expenditure Survey (FIES) for Metro Manila constitutes the data base of the study, focusing on sample households belonging to the lowest 20% of the

regional income distribution, which in this study is presumed to constitute the poor segment of the population.

PROBLEM STATEMENT/POLICY ISSUE AND ITS IMPORTANCE

The central issue in this study is the conduct of an in-depth descriptive and econometric analysis of the consumption pattern of Metro Manila urban poor across household composition, demographic, social, and locational categories. We endeavor that the results will provide policy makers invaluable inputs in establishing poverty outline and other descriptive measures that may help local and national authorities in profiling the poor situated within these classifications for focused intervention targeting. An important value-added characteristic of this research is the incorporation of the complex survey design features of FIES to improve estimates of parameters and standard errors that will be used in the descriptive analysis and econometric modeling to be done. Explicitly, the main problem addressed in this research is – "how do the urban poor of Metro Manila allocate its meager resources to meet basic human requirements in light of their demographic and other attributes?"

THEORETICAL AND OPERATIONAL FRAMEWORK

The most important microeconomic concept used in empirical modeling of household budgets is that of Engel curves. This concept was named after Ernst Engel (1857), a 19th century Prussian statistician who conducted one of the earliest studies of household expenditure patterns. In a series of budget studies, he theorized that food expenditures take a steadily declining share of income as income of the family becomes larger. He also posited that clothing and housing take a constant share of the income regardless of its size, while education, health, transportation, recreation and saving takes larger percentage allocation as income of the family increases. These empirical regularities came to be known in the literature as the classical Engel's Law, and the mathematical equation linking income (or spending) to the budget share of a good is called Engel curve of the good. In a family budget, there are as many Engel curves as there are goods in the family's market basket.

Engel curves are a systematic way of summarizing and describing the development of household budgets as material resources increase (Deaton & Case, 1987). In microeconomic theory of consumer behavior, an Engel curve pertains to the income or expenditure expansion path of demand for a particular consumer good under constant prices (Varian 2005). In its most basic form, an Engel curve represents a mathematical relationship of the proportion of the budget allocated for a good (budget share) as a function of the household income (or by the total expenditure under the non-satiety assumption of the theory).

It is however simplistic to assume that variation in budget allocation for the different consumption items are explained solely by variation in household income (or expenditure). The presence of children in the household will definitely affect budget allocation for certain items that the children are heavy users of (e.g. education, clothing, and footwear). Gender of the household head and so with the age and other demographic characteristics of the household may also impact the budget allocation process.

In this study, it is postulated that the data provided by the Metro Manila sample belonging to the first two regional income deciles (households whose total income is at the bottom 20% of all Metro Manila households, which constitute the "Poor" segment) contains the necessary information that may reveal their budget allocation process – hence their consumption pattern. The choice of using the first and the second regional income decile to identify the poor is due to the 2009 poverty incidence of 20.9% for the Philippines (Virola, 2011), which is closely approximated by the 20% figure. The empirical

model which subscribes to the theoretical tenets of microeconomics is formulated accordingly this way:

Letting ϖ_i = the budget share of the ith consumption category in the consumption basket and M = total household expenditure (proxy for disposable income) or total household income

The Working-Leser Engel curve

The specification of the Engel curve for the ith consumption item takes the following empirical form popular in the literature as Working-Leser Engel curve (Working, 1943; Leser, 1963):

$$\varpi_i = \alpha_i + \beta_i \ln(M) + u_i \qquad \text{for } i = 1, 2, ..., k \text{ (1)}$$

where k is the total number of mutually exclusive consumption categories in the household's budget, α_i and β_i are parameters to be estimated, and u_i is a random disturbance term which is assumed to have zero mean and constant variance, generally independent across sample households and not related with M.

In order for this function to be empirically plausible, the adding-up restriction must be met in the parameter estimation, that is:

$$\sum_{i=1}^{k} \varpi_i = 1 \text{ that is possible only when}$$

$$\sum_{i=1}^{k} \alpha_i = 1 \quad \text{and} \quad \sum_{i=1}^{k} \beta_i = 0 \qquad (2)$$

Note that the above restrictions can be satisfied when Ordinary Least Squares (OLS) estimation of the model's parameters is implemented independently on an equation-by-equation basis. Hence under the basic Working-Leser Engel curve model, adding-up is not a cross-equation restriction that usually messes up the parameter estimation. In this study, separate Engel curves will be constructed and analyzed for M = total household expenditure and M = total household income. When total household expenditure is used, budget shares are the proportion of the total expenditure accounted for by the ith consumption item, while budget shares are deemed to be the proportion of the total household income allocated for the various items M is income. Additionally, in the income Engel curves household savings is assumed to be a distinct consumption category.

Incorporating the Sampling Design of the Survey in Inference

It has been one of the goals of this study to compute parameter estimates of the models together with the necessary descriptive measures and standard errors with full consideration of the complex design of the survey. This is made clear at the onset since the proponent would like to distinguish this study from most statistical investigations that employ survey data. More often than not, statistical inferences in most of these researches are done with the assumption that the data collection is undertaken using simple random sampling (SRS) without replacement, with the elements of the target population having equal chance of being included in the sample. Although computationally convenient, this procedure is theoretically flawed when complex design was used in the survey (Deaton, 1997; Korn & Graubard 1999).

The Family Income and Expenditure Survey in particular employed a multi-staged stratified sampling design aimed at economizing on the sample size without sacrificing the precision of the sample representation . As a consequence, each population element has different probabilities of inclusion in the sample. As such, there is a need to take into consideration the use of sampling weights (sometimes called raising factors), which represent the inverse of the selection probabilities for each sample element (Cochran, 1977). These sampling weights are needed to correct for differential representation and the effect of the sampling design on the estimates and their respective standard errors (Deaton, 1997). This will ensure the unbiasedness and consistency of the estimates, resulting in better inference.

An important by-product of the adjustment process called the Design Effect (Deff) is generated for each design consistent estimate. This statistic represents the ratio of the variance of the estimate (using the complex design) and the variance under a hypothetical survey conducted under the SRS sampling without replacement, and with the same number of elements as in the complex survey (Kish, 1965). Stratification tends to reduce Deff below 1.0 while clustering tends to increase it above 1.0 (Deaton, 1997). Design effect above 1.0 may seem to be pointing to the relative undesirably of the complex design vis-à-vis SRS on the basis of efficiency, however, survey designers has to take into consideration various factors in designing surveys (e.g. costs and timeliness of the results). All things being equal, a simple random sample gives the most efficiency per observation collected. Oftentimes however, important considerations dictate that samples not be taken strictly at random (Wolter, 2007).

The adjustment process to incorporate the complex design of the 2009 FIES in all of the estimation and statistical inferences procedures implemented in the study is automated using the STATA Ver. 11 software through the various commands and macros known collectively as "svy commands". Such suite of commands is well suited for all researchers who use survey data in their analyses and wanted to "do it right", that is, to avoid the consequences of using SRS based estimation and inference procedures that may lead to misleading results.

Identifying the Poor Households

Due to the multifaceted nature of poverty, identifying the individuals who are in such a state has become a matter conjecture. In the Philippines there are a number of estimates for an indicator known as "poverty line" or "poverty threshold" -- an income cut-off point which represents the minimum acceptable standard of welfare that separates the poor from the non-poor (Asian Development Bank [ADB], 2009). The government, private entities and various multilateral organizations employ different poverty lines which vary significantly in any given reference period. During the year 2009, the official poverty threshold using the approved poverty estimation methodology announced by the National Statistical Coordination Board (NSCB) is P16,841 per capita income which when used for the entire Philippines puts the poverty incidence at 20.9% (Virola, 2011). For international comparison, multilateral organizations either use the $1 a day or the $1.25 a day standards as the threshold. The Social Weather Stations (SWS) employ the "self rated poverty indicator" which in the 2nd quarter of 2009 stood at 50% (ADB, 2009). The methodology of the Annual Poverty Indicator Survey (APIS) identifies the poor as those belonging to lower 40% of the income distribution (ADB, 2009). Balisacan (2003) on the other hand, proposed a spatially consistent poverty threshold that varies across time and space, which at the moment an updated figure for NCR is not yet available.

In the present study, the official poverty incidence of 20.9% in 2009 is used to identify the poor, which roughly corresponds to the bottom 20% (lowest quintile) of the regional income distribution of the National Capital Region. When the P16,841 per capita threshold is to be used, only 57 of the Metro Manila 2009 FIES sample of 4,285 will be classified as poor, defeating the purpose of the study. Hence, due to the asymptotic nature of the econometric estimation methodology to be employed as well as to come up with a more robust descriptive estimates, it is deemed necessary to use the more "realistic" system of identifying the poor as those households belonging to the first two regional income deciles resulting in a working sample of 854 households.

Income and Expenditure Elasticities

Among the most important parameters of economic relationships essential in research is the concept of elasticity. In budget studies like Engel Curve analysis, income or expenditure elasticities may be used as a basis of categorizing the various

items of consumption into necessity, luxury or inferior. Obtaining estimates for these coefficients in the present study may reveal important insight into how the urban poor of the Metropolis consider the various items.

Using the Working-Leser Engel curve model (1), a general elasticity formula can be derived by considering that the budget share ϖ_i may be represented as the ratio of the unit price times the quantity of the commodity consumed by the household and the total consumption or total income.

Given the model $\varpi_i = \dfrac{p_i q_i}{M} = \alpha_i + \beta_i \ln(M)$, the income/expenditure elasticity for the ith consumption item which is denoted by ε_i, can be derived as:

$$\varepsilon_i = \frac{\partial \ln q_i}{\partial \ln M} = 1 + \frac{\beta_i}{\varpi_i} \tag{3}$$

Evaluation of the elasticities is undertaken at the mean budget share $\overline{\varpi}_i$ using the empirically determined parameter β_i (the coefficient of the natural logarithm of income or natural logarithm of expenditure)

In this study, both the income and expenditure elasticities of the different consumption items are estimated. In estimating the income elasticities, household savings is considered as one of the items families allocate budget for. Hence, design based estimate for savings elasticity of household income will be one of the distinct outputs of the study.

Stylized Facts on Metro Manila Urban Poor

Using the estimation procedure suggested by the survey design of FIES 2009, it is estimated that the total number of urban poor households in Metro Manila in 2009 stands at 492,392 families. Presented in Table 1 and Table 2 are the different demographic and locational characteristics of this segment of Metro Manila households. Average age of household heads is 45.63 years with mean family size of 3.6 persons. The most number of age specific household memberships are those

under the working age segment 25 to 59 years old bracket with 1.5 persons on the average, while non-relative members and infants (aged less than 1 year old) are the least with less than 0.1 average members. Adolescents (7 to 14 years old) averaged 0.8 members; toddlers (1 to 6 years old) averaged 0.6 members, while young adults (15 to 24 years old) are estimated at a little less than 0.5 average.

Three out of four (75.1%) households are headed by males; 7 out of 10 (70.1%) have married heads and about 6 in 10 (56.6%) have high school educated heads. Nine out of ten (89.3%) households belong to the nuclear single family type. Unemployment rate of the household heads stands at 21.95%, of which married unemployed are 12.4% of household heads; male unemployed − 12.1%, and over 45 years old heads who are jobless is estimated at 17.4%. Unemployment rate in the poorest decile is estimated at 13.6%. Those households with unemployed heads, 59,577 (12.1% of all households) are male; 61,145 (12.4%) are married; 85,950 (13.6%) are at least 45 years old; and 6,592 (1.3%) are college graduate.

Among Metro Manila's four contiguous districts, the most number of poor households at 180,499 are located in District 2 (Eastern Metro Manila composed of Mandaluyong, Marikina, Pasig, Quezon City and San Juan). District 3 (CAMANAVA District − Caloocan, Malabon, Navotas and Valenzuela) houses 132,949 households, while District 4 (Southern Metro Manila – Las Piñas, Makati, Muntinlupa, Parañaque, Pasay, Pateros, and Taguig) has 124,952 poor households. The district comprising the City of Manila has the least number of poor households at 53,991. Judging the severity of poverty across districts may not be appropriate because of scale effects, the number of poor households in districts with bigger geographical area is expectedly higher than smaller districts. Looking at the per capita income of poor households in the four districts, CAMANAVA district, with per capita income of P43,170 proved to have the poorest of the poor while the city

Table 1

Design Consistent Means of Demographic and Locational Characteristics of Metro Manila Poor Households, 2009

Household Demographics	Mean	Standard Error	95% Conf. Interval		Design Effect
			L. Limit	U. Limit	
Age of HH Head	45.62916	0.52725	44.59107	46.66726	1.0967
Family Size	3.58901	0.06710	3.45691	3.72112	1.0929
Members of HH Aged Less Than 1 Year	0.06969	0.00989	0.05022	0.08915	1.2461
Members of HH who are 1 to 6 Years Old	0.56111	0.02884	0.50433	0.61789	0.9663
Members of HH who are 7 to 14 Years Old	0.76892	0.03627	0.69750	0.84033	1.0224
Members of HH who are 15 to 24 Years Old	0.43399	0.02829	0.37829	0.48968	1.1257
Members of HH who are 25 to 59 Years Old	1.50160	0.02936	1.44379	1.55940	1.2815
Members of HH who are 60 Years and Over	0.27787	0.02125	0.23603	0.31972	1.2060
Number of Non Relative Members of HH	0.02697	0.00920	0.00885	0.04508	1.0934
Male HH Head (Dummy)	0.75091	0.01606	0.71928	0.78253	1.1766
Female HH Head (Dummy)	0.24909	0.01606	0.21747	0.28072	1.1766
HH Head is Jobless (Dummy)	0.21952	0.01510	0.18978	0.24926	1.1358
HH Head is 45 Years Old and Over (Dummy)	0.46172	0.01756	0.42714	0.49629	1.0585
Single HH Head (Dummy)	0.09838	0.01184	0.07507	0.12168	1.3471
Married HH Head (Dummy)	0.70070	0.01618	0.66885	0.73255	1.0644
Widowed HH Head (Dummy)	0.13624	0.01223	0.11216	0.16032	1.0843
Separated or Divorced HH Head (Dummy)	0.06468	0.00813	0.04867	0.08069	0.9322
At Most Elementary Graduate (Dummy)	0.30770	0.01804	0.27217	0.34323	1.3038
High School Undergraduate or Graduate (Dummy)	0.56456	0.01515	0.53473	0.59440	0.7966
With Some College (Dummy)	0.09319	0.01054	0.07243	0.11395	1.1221
At Least College Graduate (Dummy)	0.03455	0.00635	0.02205	0.04704	1.0304
Single Type of Household (Dummy)	0.89289	0.01115	0.87095	0.91484	1.1084
Household in the Poorest Decile (Dummy)	0.50025	0.01878	0.46327	0.53724	1.2040
Household in the City of Manila (Dummy)	0.10965	0.01410	0.08188	0.13742	1.7380
Household in MM District 2 (Dummy)	0.36658	0.03429	0.29905	0.43410	4.3205
Household in MM District 3 (Dummy)	0.27001	0.02599	0.21884	0.32117	2.9223
Household in MM District 4 (Dummy)	0.25377	0.02701	0.20058	0.30695	3.2864
HHH Married and Jobless (Interaction)	0.12418	0.01153	0.10148	0.14688	1.0425
HHH College Grad and Jobless (Interaction)	0.01339	0.00411	0.00529	0.02148	1.0916
HHH is 45 Years/Over and Jobless (interaction)	0.17456	0.01277	0.14942	0.19969	0.9648
HHH is Male and Jobless (Interaction)	0.12100	0.01154	0.09828	0.14371	1.0676
HHH is Jobless and in Poorest Decile (Interaction)	0.13622	0.01235	0.11191	0.16052	1.1051

Table 2.

Design Consistent Estimates of Total Number of Metro Manila Poor Households by Demographic and Locational Characteristics

Poor Households Demographic or Locational Characteristics	Estimated Number of Households	Linearized Standard Error	95% Conf. Interval		Design Effect
			L. Limit	U. Limit	
Male Headed	369,740	26,399	317,763	421,717	13.1088
HH Head is Jobless	108,090	9,089	90,194	125,986	1.6964
HH Head 45 Years Over	227,346	15,804	196,229	258,463	3.5358
HH Head is Single	48,440	6,724	35,200	61,679	1.7935
HH Head is Married	345,021	25,477	294,859	395,183	10.8892
HH Head is Widowed	67,084	6,633	54,025	80,144	1.3153
HH Head is Separated	31,847	4,113	23,750	39,944	0.9836
HH Head has Elem. Educ.	151,508	15,649	120,698	182,319	4.0446
HH Head has HS Educ.	277,987	18,014	242,521	313,454	4.6440
HH Head is College Undergrad.	45,886	5,311	35,430	56,342	1.1741
HH Head is College Grad.	17,010	3,079	10,948	23,073	1.0001
Single Type Household	439,653	28,458	383,623	495,684	29.7929
HH is in City of Manila	53,991	6,787	40,629	67,353	1.6598
HH is in MM District 2	180,499	23,550	134,131	226,868	8.4036
HH is in MM District 3	132,949	13,934	105,514	160,384	3.4658
HH is in MM District 4	124,953	15,025	95,371	154,534	4.1939
HH Head is Male & Jobless	59,577	6,695	46,395	72,760	1.4829
HH Head is Married & Jobless	61,145	6,842	47,674	74,617	1.5144
HH is in Bottom Regional Income Decile & with Jobless Head	67,072	6,906	53,474	80,670	1.4262
HH Head is College Graduate but Jobless	6,592	2,027	2,601	10,582	1.0943
HH Head is at least 45 Years old and Jobless	85,950	7,814	70,565	101,334	1.4908

of Manila with per capita income of P45, 584 have poor with the highest purchasing power. Estimates of the average income, expenditures, per capita income and per capita expenditure of the poor in the different districts are presented in Table 3, while regional estimates for the poor alongside Metro Manila's are exhibited in Table 4.

Design consistent estimation of the average income and expenditure of the poor in Metro Manila resulted in the figures of P117,087 and P115,433 respectively in current (2009) Peso, with per capita figures of P44,008 and 42,521. These numbers are less than half of Metro Manila's FIES results (P356,000 income and P309,000 expenditure) reported by NSO for the year 2009, but better than those estimated for ARMM (P113,000 income and P98,000 expenditure) during the same year (NSO, 2011) . Despite their meager purchasing power, the urban poor of the capital region managed to generate an estimated

Table 3

Design Consistent Estimates of the Mean Household Income and Expenditure, Per Capita Household Income and Expenditure, Metro Manila Poor by District, 2009

Metro Manila District	Mean	Standard Error	95% Confidence Interval		Design Effect
			L. Limit	U. Limit	
Total Income					
City of Manila	118,970	3,021	113,022	124,919	1.38664
Eastern MM	116,018	1,576	112,914	119,121	1.03770
Camanava	113,131	2,213	108,774	117,488	1.29669
Southern MM	122,027	1,823	118,437	125,617	1.10880
Metro Manila	117,087	1,056	115,007	119,167	1.26440
Total Expenditure					
City of Manila	112,962	3,132	106,796	119,128	1.27085
Eastern MM	116,262	1,732	112,852	119,671	0.75605
Camanava	108,867	2,285	104,367	113,366	1.16868
Southern MM	122,289	2,347	117,668	126,911	1.40513
Metro Manila	115,433	1,197	113,076	117,790	1.16270
Per Capita Income					
City of Manila	45,584	3,997	37,714	53,453	1.32498
Eastern MM	43,644	1,631	40,432	46,856	1.03828
Camanava	43,170	1,877	39,475	46,865	0.84477
Southern MM	44,745	2,549	39,727	49,763	1.63119
Metro Manila	44,008	1,106	41,830	46,187	1.16540
Per Capita Expenditure					
City of Manila	42,991	3,994	35,127	50,854	1.49731
Eastern MM	42,521	1,497	39,574	45,468	1.06060
Camanava	40,930	1,847	37,295	44,566	0.94781
Southern MM	44,010	2,372	39,341	48,679	1.69783
Metro Manila	42,521	1,049	40,455	44,587	1.23810

P1, 654 average savings (compared to Metro Manila savings of 47,000), the only region in the Philippines whose poor segment that registered positive per capita savings.

Non-Poor vs. Poor Income Disposition

Looking at the other segment of the population of households in Metro Manila we labeled "Non-Poor" which basically consists of households belonging to the top eight regional income deciles, a glaring contrast in consumption patterns may be noted. Table 5 presents the disposition of household income and consumption incidence of the different consumption items by the poor and the non-poor households. Also exhibited are the average income and expenditure per household as well as the per capita income and expenditure

Table 4

Design Consistent Estimates of 2009 Mean Regional Income, Expenditure, Per Capita Income and Per Capita Income of Poor Households

Region	Household Income	Household Expenditure	Per Capita Household Income	Per Capita Household Expenditure	Total Household Savings
Ilocos Region	58,289	62,130	22,845	23,259	-3,841
Cagayan Valley	51,667	54,886	18,953	19,457	-3,219
Central Luzon	71,691	74,210	26,161	26,025	-2,519
Bicol Region	48,604	52,270	18,325	19,073	-3,666
Western Visayas	47,533	49,833	18,871	19,280	-2,300
Central Visayas	43,043	44,658	16,558	16,809	-1,615
Eastern Visayas	41,380	43,937	15,908	16,566	-2,557
Zamboanga Peninsula	35,962	36,640	12,203	11,992	-678
Northern Mindanao	40,455	42,635	15,560	15,946	-2,180
Davao Region	45,262	47,249	17,101	17,313	-1,987
SOCCSKSARGEN	44,124	49,222	15,948	16,917	-5,098
NCR (Metro Manila)	117,087	115,433	44,008	42,521	1,654
CAR	49,726	55,515	21,074	21,817	-5,789
ARMM	55,449	57,679	17,304	17,470	-2,230
CARAGA	41,977	46,113	14,167	15,516	-4,136
CALABARZON	72,210	74,515	25,809	25,621	-2,305
MIMAROPA	45,162	45,843	17,721	17,512	-681
Philippines	61,932	63,982	23,040	23,075	-2,050

figures. The table provides irrefutable evidence of the existence of wide disparity in living standards of the two segments.

The validity of the Engel's Law that richer families tend to have lower proportion of income devoted to food is apparent in Table 5 as only 36.38% of the non-poor's income is consigned to food while the figure is 49.94% for the poor. In all other expenditure items, the disposition of their income essentially differ but the ranking in their importance are basically the same, especially in the top two items which account for the bulk of their income. For the non-poor, Savings occupy the third highest allocation proportion made by the

non-poor, while Utilities is the third highest for the poor. The difference in their savings rate is an awe inspiring ratio of more than 10:1 (9.89% for the non-poor vs. 0.91% for the poor). Two other items exhibit glaring contrasts -- Tax payments (2.33% vs. 0.36%) and Education expenditures (3.18% vs. 0.70%). These figures suggest an extreme disparity in well being enjoyed by the non-poor over the poor.

With regards to consumption incidence (percentage of the total households consuming positive amount) of the various items, the two segments registered 100% incidence of almost the same items except for Savings where only

Table 5

Disposition of Total Income and Consumption Incidence of Poor vis-à-vis Non-Poor Metro Manila Households, 2009

Consumption Items	Estimated Share of Income		Consumption Incidence	
	Non-Poor	Poor	Non-Poor	Poor
Food	36.38%	49.94%	100.00%	100.00%
Alcoholic Beverages	0.58%	0.90%	59.60%	51.59%
Tobacco	0.59%	0.95%	52.82%	49.09%
Fuel, Light & Water	7.53%	9.37%	100.00%	100.00%
Transport & Communication	7.47%	4.96%	99.86%	96.10%
Household Operations	1.86%	1.52%	100.00%	100.00%
Personal Care & Effects	3.49%	4.40%	100.00%	100.00%
Clothing, Footwear & Other Wear	1.92%	2.00%	99.23%	97.27%
Education	3.18%	0.70%	78.65%	57.91%
Recreation	0.39%	0.22%	69.59%	46.68%
Medical Care	1.64%	1.55%	99.39%	97.96%
Non-durable Furnishings	0.13%	0.10%	45.70%	31.85%
Durable Furnishings	1.75%	1.13%	40.36%	22.77%
Taxes Paid	2.33%	0.36%	65.25%	28.36%
Rental Value of Dwelling Unit	15.47%	17.46%	100.00%	100.00%
House Repairs & Maintenance	0.26%	0.16%	14.14%	8.31%
Special Occasions of the Family	1.58%	1.05%	85.25%	65.10%
Gifts & Contributions to Others	1.63%	1.52%	70.57%	68.46%
Other Expenditures	1.94%	0.81%	77.13%	31.33%
Savings	9.89%	0.91%	100.00%	59.37%
Average Household Income	416,002	115,433		
Average Household Expenditure	357,387	117,087		
Per Capita Income	105,362	44,008		
Per Capita Expenditure	90,020	42,521		

59.37%% of the poor was able to save while the non-poor posted 100%. Among the other noteworthy difference in consumption incidence are in Education, Recreation, Durable and Non-durable furnishings, Special occasions of the family, Gifts and contribution to others, House repairs and maintenance, and Tax payments. When one looks at the hard figures of average household and average per capita income and expenditure, the picture of contrast will be complete -- for the non-poor vis-à-vis the poor: total income (almost four folds), total expenditure (three-folds), per capita income (2.4 folds) and per capita expenditure (double).

Estimated Income and Expenditure Elasticities

Further insights can be gathered beyond descriptive analysis of the budget allocation process of Metro Manila poor households when we can quantify the manner they consume the various consumption items in response to their changing disposable income. We call this measure income elasticity of demand. Sometimes we use the alternative measure called expenditure elasticity when we equate disposable income to the total expenditure. Such an assumption is usually made in analytical studies and is necessary to allow the adding-up restriction of consumer

demand theory to be relevant. In this study, both the income and expenditure elasticities are computed as we allow savings to be endogenized and treated as an additional consumption category in the computation of income elasticities.

As the basic Working-Leser model (1) is implemented, two sets of Engel curve systems came about presented in Table 6 (Expenditure Engel Curves) and Table 7 (Income Engel curves). These systems differ in the M variable in the basic model. The expenditure Engel Curves presupposed that the money budget is allocated to all expenditure items; while the Income Engel Curves endogenized savings as a distinct consumption category. Thus M is the total household expenditure in the former while M is the total household income in the latter. Out of the estimated coefficients of M in the different Engel curves, expenditure and income elasticities are generated using the formula (5).

Table 6

Working-Leser Engel Curves and Estimated Expenditure Elasticities of MM Poor Households, 2009

Consumption Items	Constant	Standard Error	t-value	p-value	Log of Expenditure	Standard Error	t-value	p-value	Expenditure Elasticity
Food	0.76319	0.14770	5.17	0.000	-0.02227	0.01286	-1.73	0.084	0.9558
Alcoholic Beverages	0.01260	0.04757	0.26	0.791	-0.00030	0.00408	-0.07	0.942	0.9671
Tobacco	0.05202	0.02892	1.80	0.073	-0.00362	0.00247	-1.47	0.143	0.6343
Fuel, Light & Water	0.22582	0.05144	4.39	0.000	-0.01126	0.00441	-2.55	0.011	0.8812
Transport & Communication	-0.33086	0.05188	-6.38	0.000	0.03271	0.00447	7.32	0.000	1.6581
Household Operations	0.03121	0.01859	1.68	0.094	-0.00136	0.00160	-0.85	0.396	0.9118
Personal Care & Effects	-0.01272	0.02689	-0.47	0.636	0.00491	0.00233	2.10	0.036	1.1105
Clothing, Footwear & Other Wear	-0.01935	0.02163	-0.89	0.372	0.00340	0.00185	1.83	0.068	1.1683
Education	-0.08487	0.01943	-4.37	0.000	0.00789	0.00173	4.57	0.000	2.1429
Recreation	-0.02058	0.01192	-1.73	0.085	0.00196	0.00105	1.87	0.063	1.8915
Medical Care	0.03263	0.03966	0.82	0.411	-0.00148	0.00342	-0.43	0.665	0.9038
Non-durable Furnishings	-0.00506	0.00274	-1.85	0.065	0.00053	0.00024	2.21	0.028	1.4787
Durable Furnishings	-0.18599	0.07336	-2.54	0.012	0.01677	0.00648	2.59	0.010	2.8230
Taxes Paid	-0.08319	0.02258	-3.68	0.000	0.00746	0.00200	3.74	0.000	3.0175
Rental Value of Dwelling Unit	0.91900	0.13748	6.68	0.000	-0.06374	0.01186	-5.37	0.000	0.6407
House Maintenance & Minor Repairs	-0.00361	0.01169	-0.31	0.758	0.00045	0.00099	0.46	0.648	1.2674
Special Occasions of the Family	-0.03866	0.02285	-1.69	0.092	0.00423	0.00196	2.16	0.032	1.3993
Gifts & Contributions to Others	-0.12584	0.05537	-2.27	0.024	0.01220	0.00479	2.55	0.011	1.7579
Other Expenditures	-0.12575	0.01994	-6.31	0.000	0.01152	0.00173	6.66	0.000	2.3876

Table 7

Working-Leser Engel Curves and Estimated Income Elasticities of Metro Manila Poor Households, 2009

Consumption Items	Constant	Standard Error	t-value	p-value	Log of Income	Standard Error	t-value	p-value	Income Elasticity
Food	1.23479	0.20840	5.93	0.000	-0.06321	0.01790	-3.53	0.000	0.8734
Alcoholic Beverages	0.02735	0.04400	0.62	0.535	-0.00158	0.00377	-0.42	0.676	0.8245
Tobacco	0.06182	0.02712	2.28	0.023	-0.00449	0.00231	-1.94	0.053	0.5292
Fuel, Light & Water	0.30448	0.06043	5.04	0.000	-0.01812	0.00517	-3.50	0.001	0.8066
Transport & Communication	-0.27968	0.05954	-4.70	0.000	0.02830	0.00513	5.51	0.000	1.5703
Household Operations	0.04192	0.01737	2.41	0.016	-0.00230	0.00149	-1.54	0.125	0.8482
Personal Care & Effects	0.02992	0.03268	0.92	0.361	0.00121	0.00280	0.43	0.666	1.0275
Clothing, Footwear & Other Wear	-0.00544	0.02272	-0.24	0.811	0.00219	0.00195	1.13	0.262	1.1093
Education	-0.08355	0.01955	-4.27	0.000	0.00778	0.00173	4.49	0.000	2.1169
Recreation	-0.01777	0.01020	-1.74	0.083	0.00172	0.00090	1.91	0.057	1.7832
Medical Care	0.02512	0.04380	0.57	0.567	-0.00083	0.00380	-0.22	0.828	0.9466
Non-durable Furnishings	-0.00290	0.00280	-1.04	0.301	0.00034	0.00024	1.40	0.164	1.3262
Durable Furnishings	-0.25233	0.12484	-2.02	0.044	0.02266	0.01103	2.06	0.041	3.0067
Taxes Paid	-0.08260	0.02316	-3.57	0.000	0.00741	0.00205	3.62	0.000	3.0396
Rental Value of Dwelling Unit	1.11802	0.15705	7.12	0.000	-0.08109	0.01351	-6.00	0.000	0.5355
House Maintenance & Minor Repairs	-0.00160	0.01092	-0.15	0.883	0.00028	0.00093	0.30	0.766	1.1719
Special Occasions of the Family	-0.03504	0.02405	-1.46	0.146	0.00391	0.00206	1.90	0.059	1.3740
Gifts & Contributions to Others	-0.08904	0.06008	-1.48	0.140	0.00896	0.00515	1.74	0.083	1.5900
Other Expenditures	-0.12175	0.01988	-6.12	0.000	0.01116	0.00172	6.47	0.000	2.3792
Savings	-0.87172	0.33553	-2.60	0.010	0.07570	0.02871	2.64	0.009	9.3401

One of the most useful applications of the estimated elasticities is in the classification of the consumption items into necessity or luxury goods. Identifying which of the different expenditure categories are considered necessity for the urban poor may provide important insights on the type of assistance suitable for this segment of the population. The following summary, taken from Table 6 and Table 7 gives the results of the computation of both the income and expenditure elasticities for the different budget items.

As seen from Table 8, five items are categorized as necessity while the rest are either luxury or independent (with insignificant income/ expenditure coefficients in the Basic Working-Leser Engel Curves) goods. Both income and expenditure elasticities agree with their classification(except for three items – Tobacco,

Table 8

Classification of the Different Consumption Items into Necessities and Luxuries based on Estimated Income and Expenditure Elasticities

Consumption Item	Income Elasticity	Classification	Expenditure Elasticity	Classification
Food	0.8734	Necessity	0.9558	Necessity
Alcoholic Beverages	ns (p>0.567)	Independent	ns (p>0.942)	Independent
Tobacco	0.5292	Necessity	ns (p>0.143)	Independent
Fuel, Light and Water	0.8066	Necessity	0.8812	Necessity
Transport.& Comm.	1.5703	Luxury	1.6581	Luxury
Household Operations	ns (p>0.125)	Independent	ns (p>0.396)	Independent
Personal Care & Effects	ns (p>0.666)	Independent	1.1105	Luxury
Clothing & Footwear	ns (p>0.262)	independent	1.1683	Luxury
Education	2.1169	Luxury	2.1429	Luxury
Recreation	1.7832	Luxury	1.8915	Luxury
Medical Care	ns (p>0.828)	Independent	ns (p>0.665)	Independent
Non-Durable Furnishings	ns (p>0.164)	Independent	1.4787	Luxury
Durable Furnishings	3.0067	Luxury	2.8230	Luxury
Taxes Paid	3.0396	Luxury	3.0175	Luxury
House Rent/Rental Value	0.5355	Necessity	0.6407	Necessity
House Maint./Repairs	ns (p>0.766)	Independent	ns (p>0.648)	Independent
Special Occasions	1.3740	Luxury	1.3993	Luxury
Gifts & Contributions	1.5900	Luxury	1.7579	Luxury
Other Expenditures	2.3792	Luxury	2.3876	Luxury
Savings	9.3401	Luxury		

ns – not significant (with p-value > 0.05)

Personal care & effects and Clothing, footwear and other wears). Foremost among the list of necessary consumption items are Food, Utilities (Fuel, light & water) and House rent, which a-priori are items the poor can not do without. The other necessities (Alcoholic beverages , Tobacco, Medical care and Household operations) are not really expected a-priori. However, when one analyzes the nature of these items, one can justify their classification as necessary goods for the poor.

For the expenditure items classified as luxury by either income or expenditure elasticities, sound economic sense can be gleaned from their inclusion. Transportation and communication, Personal care and effects, Clothing, footwear and other wear, Education, Recreation, Durable and Non-durable furnishings, Special occasions of the family, Gifts and contributions, House maintenance and repairs, Tax payments and Household savings may be expected to fall at the lower priority end of the budget formation

of the financially challenged segment of the population. The items having the highest income elasticities – Savings (9.34), Tax Payment (3.04), Durable Furnishings (3.01) and Education (2.12) indicate the aspirations of the poor to consume more of these items when their purchasing power improves.

Consumption Profile of the Urban Poor in Metro Manila

The main objective of the study is to generate the consumption profile of the poor households in Metro Manila area using survey design-consistent analysis of the most recently available Family Income and Expenditure Survey data. The foregoing stylized facts and results of a systems-wide modeling of Engel curves of the various consumption items comprising the market basket of the poor provide us with the necessary information to meet this objective. Since all of the descriptive statistics and Engel curves presented pertain to the average household, an attempt will be made to create a portrait of a typical Metro Manila poor household in a non-technical and intuitive manner.

Based on the results of the analytical procedures implemented, the typical urban poor family in Metro Manila is composed of four members headed by a 46 year old high school educated father, living in District 2 (Eastern Metro Manila) of Metro Manila with his wife, and two children – an adolescent and a toddler. They live as a single family household whose family income in 2009 amounted to P117,087 and total expenditure of P115,433 making them on the average better off than families living in the Autonomous Region of Muslim Mindanao, but more than twice worse-off than the average Metro Manila families. The typical poor family finds it difficult to allocate their income to their various consumption requirements as they need to spend two-thirds of it for food (49.9%) and house rent (17.5%), leaving the remaining third to other expenditure items, especially those needed by their children like education, medical care and apparel. Despite their meager income, the family managed to make both ends meet and is able to pay tax and save a modest P1,654 for the year.

Among the consumption items included in the budget of any household, the typical poor household of Metro Manila considers food, house rent and utilities as the only necessities. Fourteen of the other 17 consumption categories are luxuries (Medical care, Household operations and House maintenance are independent of their expenditure budget). Included in the luxury items of the poor are Education, Apparel, Transportation and communication and Personal care – generally considered as basic requirements of decent urban living.

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