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Consumption Patterns and Income Elasticities in Malaysia

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Abstract: The objective of this paper is to provide a more current and better understanding of expenditure patterns of the variety of consumption products and services for various groups of Malaysian society. The analysis focuses on differences in consumption across age groups, and identifies factors that affect the level of total expenditure as well as expenditure on specific consumption commodities. Estimates for income elasticities are computed to identify expenditure items as either luxuries or necessities. Differences with regard to an item being considered a necessity or a luxury are observed between urbanites and non urbanites, males and females, and married and non married individuals.

Keywords: Consumption, elasticity, expenditure, Malaysia
JEL classification: D10, D12, R20, R22

1. Introduction

Malaysia has experienced significant economic growth over the years. Although in the most recent year, growth has somewhat slowed down, it still registered a rate of over 5 per cent from 2004 to 2008 (International Monetary Fund 2008). This translates to a higher standard of living for the population in general, which leads to a marked expansion in the overall level of spending and consumption of the general public. In fact, growth of the economy is largely because of robust consumer spending compared to other components. Private consumption continued to be a driver of total growth in the country. In addition to the increase in magnitude of spending, there have also been changes in the composition and types of goods and services demanded. These changes can be attributed to the improvement in economic standing as well as factors related to the social aspects of society.

As in other parts of the world, there have been significant changes in terms of demographics as well as the roles played by the different segments of the community in Malaysia. For instance, there are, and will continue to be, increasing numbers of women who have large portions of disposable income resulting from their move into professional occupations previously defined as exclusively male. The increase in level of educational achievement has made more occupations available to women, and enabled them to compete with men on a more equal footing.

The social and demographic changes have implications on the behaviour patterns of Malaysia's population. Of particular interest are the patterns of spending and consumption. A clear understanding of how Malaysians behave should play an instrumental role in

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government implementation of effective strategies to achieve the economic goals of the country. It is important to have proper planning not only for the growth of the whole economy but also for improved living standards at present and in the future. Additionally, at a micro level, a better comprehension of and insight into the behaviour of individuals, their needs and preferences would enable product sellers and service providers to tailor their marketing efforts to meet the specific needs of the different segments of society.

Numerous empirical studies have identified the importance of individual demographics and status of employment on total expenditures and demand patterns. Paulin (2008), for example, determined that for single, never-married American adults aged 21 to 29 years, total expenditure for men substantially exceeded that of women. Higher total outlays also applied to those with college degrees compared to those who had not earned a college degree. There is also evidence that expenditure patterns differ across age groups, as found by Chen and Chu (1982), Lazer and Shaw (1987), Chung and Magrabi (1990), Blisard and Blaylock (1994), Abdel-Ghany and Sharpe (1997) and Lee (2001), among others. In addition, Abdel-Ghany and Sharpe (1997) and Lee (2001) established that income was significantly related to expenditure on some groups of products and services for American and Korean consumers, respectively.

Additionally, using the Consumer Expenditure Survey data from the United States, Du and Kamakura (2008) showed that the poorest 20 per cent of their sample have a higher preference share than the richest 20 percent for food at home, tobacco and smoking products, health insurance, telephone services, electricity, water and sewer and trash collection services, and gas, heating oil and coal, suggesting that these are the more essential consumption categories. Another study on South African households found that rural households spent a significantly higher share of their expenditure on food outlay than the urban households. The same results apply to households with a higher level of educational attainment where there is a shift in household spending away from food items. It is also found that female-earned income has a significant positive effect on the household's budget share of clothing (Maitra and Ranjan 2006).

Other studies focused on expenditure on a specific commodity such as food as in Bitterncourt *et al.* (2007) who analysed food consumption in Japan. Their results indicate that economic and non economic factors have different impacts on food consumption over a lifetime. Changes in consumption of some food groups can be explained by price and income effects while others can be explained by demographic characteristics. Petrovici and Ritson (2000) validated the relationship between household income and food expenditure of Romanians. Additionally, they stated that there was evidence that the Romanian diet is deteriorating relative to modern nutrition guidelines. A study on Malaysians by Sheng *et al.* (2008) showed that the demand for all foods in response to income was positive and the food consumption pattern is not only moving towards higher value food products (especially meats) but also functional foods (fruits and vegetables). Fan *et al.* (2007), instead, studied food intake patterns of Americans in an attempt to provide an insight into the possible causes of obesity. Their findings showed that 40 per cent of the households in their survey spent between 40 to 50 per cent of their food budgets on meals eaten away from home.

A related research area is estimating income elasticity of consumption goods to identify whether a good is a necessity or a luxury. Wan (1996) estimated Engel functions to compute the elasticities for rural China and found that staple food and clothing were determined as

necessities while housing and eating out appeared to be the two most luxurious goods. On the other hand, in Netherlands, housing is classified as a necessary commodity, together with food and beverages, and home energy. The luxuries were personal care and health care, food away from home, holidays and entertainment (Kalwij and Salverda 2007). Denton *et al.* (2006) applied an adapted form of the Almost Ideal Demand System to estimate expenditure patterns and elasticities among the older population of Canada. Their results indicate that the highest elasticities are for recreation, transportation, alcohol, clothing, food from restaurants, and health and personal care. In contrast, food at home, tobacco, and shelter have the lowest elasticities of well below one, implying that these are necessities.

Although empirical studies on consumption patterns are common, yet studies on consumption patterns in Malaysia are very limited. In addition, such studies focused on a specific group of individuals, or a specific commodity. For example, Othman and Ong (1995) investigated usage patterns of electrical appliances, while more recent literature such as Ong *et al.* (2008) studied expenditure patterns of adults aged 55 years or more, and Sheng *et al.* (2008) examined the changes in food consumption pattern. This paper attempts to fill a portion of the gap by providing some observations and analysis of the behaviour of employed Malaysians, across age groups with regard to their consumption for various types of goods and services. Additionally, this study provides estimates of income elasticities of consumption commodities overall, and for various subgroups of the population. It is hoped that this study will provide a more current and better understanding of the expenditure patterns of Malaysians, at least among those in employment.

The empirical framework for income elasticities in this study is based on the estimation of Engel functions. In Section 2, a brief discussion is presented on the Engel function and the choice of functional form in relation to the underlying consumer choice theory. The subsequent Sections of 4 and 5 provide a description of the sample and data, and the findings of the study. The last section concludes with a discussion of the results.

2. Income Elasticity and Engel Function

The empirical framework adopted in many studies for estimating consumer demand is based on Engel curves. In general, the Engel function relates the budget share of a commodity group or good to the total expenditure on these commodities and goods (Wan 1996). Deaton and Muellbauer (1980a) argued that the demand equations must be derived explicitly from consumer theory. They proposed a model called the Almost Ideal Demand System (AIDS) which gives arbitrary first-order approximation to any demand system which satisfies the axiom of choice. The AIDS demand functions express budget share as a function of the logarithms of prices and total real expenditure. This specific functional form was used by Working (1943) and Lesser (1963; 1976) and shown to provide an excellent fit to cross-section data in a wide range of circumstances.

Aasness and Rodseth (1983) also showed that the Working-Leser model performs well, and can be shown to be derivable from a utility maximising framework, where the utility function is the one underlying the AIDS model. However, Banks *et al.* (1997) argued that there is increasing evidence that the Working-Leser Engel curve specification does not provide an accurate picture of individual behaviour. A series of empirical studies indicate that further terms in income are required for some expenditure share equations (Atkinson *et*

al. 1990; Bierens and Pott-Buter 1987; Blundell *et al.* 1993; Hausman *et al.* 1995; Hardle and Jerison 1988; Hildenbrand 1994; Lewbel 1991). In their paper, Banks *et al.* (1997) derived a new class of demand systems, called the Quadratic Almost Ideal Demand System (QUAIDS) that have the quadratic term in the expenditure share model which preserves the flexibility of the empirical Engel curve findings while permitting consistency with utility theory. QUAIDS nests the AIDS model while permitting goods to be luxuries at some income levels and necessities at others. The relative performance of Engel functions with and without the quadratic term was evaluated by Wan (1996) and he found that the former was more superior in terms of its flexibility.[1]

This study estimates income elasticities based on the quadratic Engel function since it has the advantage of flexibility while being consistent with the consumer utility theory. The Engel function is given as

$$S_{ij} = \alpha_{0i} + \alpha_{1i} \ln(E_j) + \alpha_{2i} \left[\ln(E_j)\right]^2 + \varepsilon_{ij} ;$$

where S_{ij} is the budget share of commodity *i* for individual *j*, and E_j is the total expenditure of individual *j*. Prices are assumed to be the same for all individuals. Income elasticity of commodity *i* is equal to $e_i = 1 + \hat{\alpha}_{1i} / \overline{S}_i + 2\hat{\alpha}_{2i} \ln \overline{E} / \overline{S}_i$; where $\overline{S}_i$ and $\ln \overline{E}$ are mean budget share and mean total expenditure of commodity *i*, respectively, and $\hat{\alpha}_{1i}$ and $\hat{\alpha}_{2i}$ are estimated values of α_{1i} and α_{2i}. Items with income elasticity greater than one are considered as luxuries while those with elasticity less than one are categorised as necessities (Deaton and Muellbauer 1980b).

The sample was then divided into subgroups based on population density, marital status and gender, and income elasticities were compared between the subgroups. Further analysis was done by estimating the quadratic Engel function incorporating population density, marital status and gender as additional explanatory variables. Denton *et al.* (2006) and Kalwij and Salverda (2007) applied a similar estimation by taking into account variables such as household size and degree of retirement, and household employment and demographics, respectively, which can affect expenditure shares. These results were evaluated and compared with those obtained from the Engel function estimations without the control factors.

3. Survey, Data and Sample

The data used in this study were obtained from a survey conducted from November, 2007 to February, 2008 for a bigger project to determine the expenditure and investment patterns of Malaysians. Since the sampling frame of all Malaysians was not available to the researchers, the participants of the survey were confined to those who were employed at the time of the survey, working in various parts of the country and representing various segments of the society. Several stages of stratified sampling procedure were carried out, first, based on the regions and states in Malaysia, followed by urban and non urban areas, and finally based on economic sectors.

[1] For detailed discussion on demand equations and consumer theory, refer to Deaton and Muellbauer (1980a; 1980b) and Banks *et al.* (1997).

Several states and a territory were chosen to represent various regions in Malaysia. These were Kedah (northern), Kelantan (eastern), Selangor (central), Johor (southern) and Kuala Lumpur (capital city) of Peninsular Malaysia and Sarawak (East Malaysia). Within each state, with the exception of Sarawak, at least one urban (or more urban) and one rural (or less urban) areas were selected. For Sarawak, the survey was conducted in its capital city.[2]

Selections were then made within the economic sectors. Based on the proportion of population of the various states, of urban and rural, and of various sectors in the economy, the target size of each subsample was determined accordingly. For the non agriculture private sector, most of the companies were randomly selected from the list given in the *Yellow Pages*.[3] Others were randomly chosen from *Times Business Directory of Malaysia 2004*.[4] In the case of the public sector, random selections of the organisations were made from a list of government institutions located in the selected areas. Employees from various occupational levels of the selected companies and government organisations were then selected to be included in the survey. For the agricultural sector, a list of associations of farmers and another of fishermen were obtained from various official institutions. We first randomly chose the associations and then randomly selected members of the chosen associations.

The selected participants were given a choice to complete a written questionnaire either in English or in the national language, *Bahasa Malaysia*. Out of the targeted sample of 4050 respondents, 2653 usable completed and partially-completed questionnaires were obtained. For this study, data was based on the responses of 2649 participants of which about 46.9 per cent were males.[5] The majority were Malays (84.9%), while the rest were made up of Chinese, Indians, and other ethnic groups.[6] More than half of the respondents were 35 years old or younger. With regard to the population density of the place of residence of the respondents, the distribution was somewhat equally distributed. The respondents were employed in various economic sectors and belonged to various occupations. In terms of education, about one-third had up to secondary school level (Form 5) or lower, while more than half had at least a diploma (see Table 1).

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[2] For each region, the state was chosen based on which best represented the region. While some states that were chosen have higher proportions of certain ethnic groups compared to the national average, others would not. For example, Kedah and Kelantan would have a higher percentages of Malays, while Kuala Lumpur and Selangor would have higher percentages of Chinese, relative to the national average. Thus, the three main ethnic groups should be appropriately represented, at least, theoretically (*http://www.epu.gov.my/populationandlabourforce*).

[3] *http://www.yellowpages.com.my*.

[4] We relied more on the *Yellow Pages* for the selection since the information on the companies listed is more current. Information on companies listed in *Times Business Directory* is somewhat outdated.

[5] Four of the 2653 usable completed and partially-completed questionnaires did not respond to questions on expenditure.

[6] The sampling procedure was constructed in such a way that the ethnic groups would be proportionately represented (see footnote 2). The actual sample obtained did not reflect the population due to the lack of willingness by some, perhaps more among the non Malays, to participate in the survey, and the non disclosure of information on ethnicity by other respondents. The population estimates for 2007 are 66.7% Malay, 24.9% Chinese, 7.5% Indians and 1.2% others (Malaysia 2008).

Table 1. Sample description of respondents

		Gender		Total
		Female	Male	
Ethnicity	Malay	926 (53.5)	806 (46.5)	1732 [84.9]
	Chinese	88 (48.4)	94 (51.6)	182 [8.9]
	Indian	40 (58.8)	28 (41.2)	68 [3.3]
	Other	32 (55.2)	26 (44.8)	58 [2.8]
Age	Up to 35 years	881 (60.6)	573 (39.4)	1454 [55.6]
	36 to 50 years	389 (47.2)	436 (52.8)	825 [31.6]
	51 years and above	120 (35.8)	215 (64.2)	335 [12.8]
Population	<100,000	137 (46.4)	158 (53.6)	295 [11.8]
Density	100,00 - <200,000	275 (54.1)	233 (45.9)	508 [20.2]
	200,000 - <500,000	276 (50.8)	267 (49.2)	543 [21.6]
	500,000 or more	663 (57.0)	501 (43.0)	1164 [46.4]
Sector	Agriculture/Fishing	157 (37.0)	267 (63.0)	424 [16.2]
	Manufacturing	33 (47.1)	37 (52.9)	70 [2.7]
	Electricity/Water/Gas	25 (61.0)	16 (39.0)	41 [1.6]
	Construction	104 (56.2)	81 (43.8)	185 [7.1]
	Wholesale/Retail/ Restaurant/Hotel	409 (54.3)	344 (45.7)	753 [28.9]
	Transport/Storage/ Communication	44 (40.7)	64 (59.3)	108 [4.1]
	Financing/Insurance/ Real Estate/ Business Services	155 (56.6)	119 (43.4)	274 [10.5]
	Government	462 (61.2)	293 (38.8)	755 [28.9]
Occupation	Prof/Technical/Related	167 (49.6)	170 (50.4)	337 [14.5]
	Admin/Managerial	189 (57.8)	138 (42.2)	327 [14.1]
	Clerical/Related	491 (71.1)	200 (28.9)	691 [29.8]
	Sales	133 (55.0)	109 (45.0)	242 [10.4]
	Service	124 (49.8)	125 (50.2)	249 [10.7]
	Agric/Fishermen	99 (33.9)	193 (66.1)	292 [12.6]
	Production/Transport/ Operators/Labourers	51 (28.5)	128 (71.5)	179 [7.7]
Highest	No formal education	14 (41.2)	20 (58.8)	34 [1.3]
Education	Primary school	62 (37.1)	105 (62.9)	167 [6.4]
Level	Secondary school form 3	43 (33.6)	85 (66.4)	128 [4.9]
	Secondary school form 5	466 (54.1)	395 (45.9)	861 [33.0]
	Diploma/STPM	517 (57.8)	378 (42.2)	895 [34.3]
	Bachelor degree	256 (57.9)	186 (42.1)	442 [16.9]
	Masters degree	30 (40.5)	44 (59.5)	74 [2.8]
	PhD	2 (20.0)	8 (80.0)	10 [0.4]

Note: Numbers may not add up to the total size of the sample due to missing responses.
(.) percentage within group; [.] percentage of total.

Table 2. Monthly expenditure (in ringgit) and percentage of total

Expenditure	N	Mini-mum	Maxi-mum	Mean	Std deviation	Per-centage
Food – at home and outside	2460	0	3500	454.48	323.76	34.0
Clothing – own and family	2409	0	3000	144.78	184.65	9.1
Personal care	2474	0	1050	48.66	71.87	2.9
Cigarette/Alcohol	2433	0	1200	28.21	75.42	1.7
House and home – rental, maintenance, furniture, utility (excluding telephone)	2339	0	5300	215.11	271.25	13.8
House and home– rental, maintenance, furniture, utility (including telephone)	2333	0	5500	301.00	310.40	20.1
Transport – own and public	2405	0	4000	201.25	209.51	13.1
Reading materials – newspapers, magazines, books	2407	0	980	40.53	59.42	2.3
Educational fees	2401	0	1000	38.73	38.73	1.6
Insurance – own and family	2402	0	4000	85.10	180.03	3.9
Charity and/or *zakat*[*]	2377	0	1000	28.77	68.25	1.4
Leisure – holiday and entertainment	2400	0	6300	95.00	345.17	3.2
Total	2121	120	23600	1509.54	1204.39	

* A Muslim obligation of giving alms to the poor.

4. Findings

4.1 Expenditure Patterns

The average total monthly expenditure was equal to RM1509.54, which is approximately an average of 91.7 per cent of the total income of a person. The spending on various goods and services is summarised in Table 2. The largest proportions of spending were on food (34.0%), house (13.8%), and transportation (13.1%). The amount spent on newspapers, magazines and books was about 2.3 per cent of total expenditure. However, books alone were only 0.6 per cent of total spending. Comparatively, expenditure on leisure activities such as entertainment and holidays was higher at 3.2 per cent of total expenditure.

Comparisons using *t*-tests were made to determine the presence of differences in expenditure between different age groups. The sample was divided into three groups according to the ages of the individuals – the 'young' for those up to 35 years old, the 'older' group for those between 36 and 50 years old, and the 'elderly' for those above 50 years old. The results are presented in Table 3. As expected, the young spent the least on food at home, while the elderly spent the least on outside food and on cigarettes and tobacco, compared to others. Those between 36 and 50 years old spent the most on alcoholic beverages.

Table 3. Expenditure (in ringgit) and proportion of total by age group

Expenditure (RM)	Age (years)	N	Mean	Result[a]
Food at home	Up to 35	1396	220.09	Y<O=E
	35 to 50	791	400.54	
	Above 50	326	403.25	
Outside food	Up to 35	1401	155.99	
	35 to 50	771	162.50	Y=O>E
	Above 50	307	119.36	
Alcoholic beverage	Up to 35	1359	4.89	
	35 to 50	757	9.13	O>Y=E
	Above 50	305	1.25	
Tobacco	Up to 35	1369	23.83	
	35 to 50	767	25.84	Y=O>E
	Above 50	304	17.75	
Own clothing	Up to 35	1385	88.40	
	35 to 50	766	67.69	Y>O>E
	Above 50	302	49.79	
Clothing for others	Up to 35	1350	60.55	
	35 to 50	755	91.12	Y=E<O
	Above 50	301	49.49	
House rental	Up to 35	1368	96.56	
	35 to 50	754	73.63	Y>O>E
	Above 50	309	37.06	
Home maintenance	Up to 35	1332	16.77	
	35 to 50	739	27.66	Y<O=E
	Above 50	303	26.99	
Utility – water, electricity, sewage	Up to 35	1381	66.90	
	35 to 50	792	116.52	Y<O=E
	Above 50	324	113.98	
Health	Up to 35	1361	38.40	
	35 to 50	749	62.20	Y<O=E
	Above 50	305	66.37	
Own vehicle	Up to 35	1406	175.58	
	35 to 50	790	223.67	Y=E<O
	Above 50	317	163.30	
Public transportation	Up to 35	1349	15.18	
	35 to 50	745	9.13	Y>O=E
	Above 50	306	8.03	
Reading materials (newspapers, magazines, books)	Up to 35	1379	22.55	
	35 to 50	767	34.27	Y=E<O
	Above 50	309	24.13	

Continued on next page

Table 3. Continued

Expenditure (RM)	Age (years)	N	Mean	Result[a]
Holidays	Up to 35	1346	47.64	
	35 to 50	744	104.64	Y=E<O
	Above 50	301	40.34	
Entertainment	Up to 35	1358	37.87	
	35 to 50	751	26.11	Y>O=E
	Above 50	302	17.71	
Personal care	Up to 35	1385	54.94	
	35 to 50	764	45.41	Y>O>E
	Above 50	304	26.26	
Educational fees	Up to 35	1345	21.13	
	35 to 50	737	66.82	O>E>Y
	Above 50	301	47.97	
Own insurance	Up to 35	1363	51.00	
	35 to 50	761	60.85	O>Y=E
	Above 50	304	49.12	
Insurance for others	Up to 35	1335	22.13	
	35 to 50	753	51.34	O>E>Y
	Above 50	298	36.21	
Charity	Up to 35	1349	11.80	
	35 to 50	752	23.59	O=E>Y
	Above 50	300	23.73	
Proportion of total				
Food at home/total expenditure	Up to 35	1215	.18	
	35 to 50	631	.28	E>O>Y
	Above 50	265	.40	
Outside food/total expenditure	Up to 35	1224	.12	
	35 to 50	654	.08	Y>O>E
	Above 50	276	.05	
Alcohol and tobacco/total expenditure	Up to 35	1319	.02	
	35 to 50	421	.01	Y>O, Y=E, O=E
	Above 50	292	.02	
Clothing/total expenditure	Up to 35	1220	.11	
	35 to 50	647	.07	Y>O>E
	Above 50	275	.04	
House and home[b]/total expenditure	Up to 35	1231	.13	
	35 to 50	635	.14	Y=O=E
	Above 50	265	.15	

Continued on next page

Table 3. Continued

Expenditure (RM)	Age (years)	N	Mean	Result[a]
Health/total expenditure	Up to 35	1264	.02	
	35 to 50	670	.03	E>O>Y
	Above 50	278	.04	
Transport/total expenditure	Up to 35	1220	.14	
	35 to 50	640	.13	Y=O>E
	Above 50	268	.10	
Holidays and entertainment/ total expenditure	Up to 35	1276	.04	
	35 to 50	700	.03	Y>O>E
	Above 50	292	.01	
Personal care/total expenditure	Up to 35	1243	.04	
	35 to 50	670	.02	Y>O>E
	Above 50	288	.01	

Notes: Y: 'Young' age up to 35 years old; O: 'Older' age from 36 to 50 years old; E: 'Elderly' age from 51 and above.

[a] A>B indicates the expenditure (or proportion of expenditure) of A is significantly greater than that of B at least at the 5 % level; A=B indicates the expenditure (or proportion of expenditure) of A is not significantly different from that of B at the 5% level, based on *t*-test.

[b] Expenditure on house and home includes home maintenance and repairs, house rental, if any, utilities, and furniture and furnishing.

The results also show that spending on own clothing was the highest among the young, followed by the older group, while the elderly spent the least. However, for spending on clothing for others, the older group spent the most. This is expected since the latter are probably those with families of their own and spending on their children is likely.

Compared to other groups, the young spent the most on house rental, public transportation, personal care and entertainment, but the least on home maintenance, utility, health and educational fees. Relatively high expenditures on house rental and public transportation are expected since those in this age group were just beginning their career life and thus less likely to own a home or a car.

The study also compared the proportion of expenditure (out of total) on various groups of commodities among individuals of different ages (see lower panel of Table 3). Consistent with the earlier results, compared to others, the elderly spent larger proportions on food at home and health. On the other hand, bigger proportions of expenditure of the young were on outside food, clothing, leisure activities and personal care.

Regression analysis was applied to identify factors which contributed to the size of total expenditure, and to specific expenses such as food at home, outside food, cigarette and alcohol, reading materials, leisure activities and personal care. Income and total expenditures were in logarithm. For the specific group of commodities, the value one was added to the expenditure before converting it into its logarithm. *Population* was a variable representing the population density of the area the respondents resided in, to differentiate between one who lives in an urban area from one who lives in a non urban area. It was equal

Table 4. Regression analysis of expenditure

Dependent variable	Total expenditure	Food at home	Outside food	Tobacco and alcohol	Reading materials	Holiday and entertainment	Personal care
(Constant)	2.749**	2.620**	-3.129**	.719	-6.741**	-4.908**	-3.440**
Population	.064**	-.052*	.283**	.022	.218**	.083*	.149**
Age	-.001	.004	-.029**	-.016*	.014*	-.019**	-.007*
Married	.298**	.877**	.002	.173	.571**	-.369*	-.076
No. of children	.0155	.053**	-.010	-.015	.001	-.047	-.035*
Education level	.090**	.000	.209**	-.205**	.318**	.096	.118**
Male	-.078**	.034	-.071	1.368**	-.459**	-.027	-.193
Malay	-.029	.012	-.116	-.643**	.527**	-.542*	-.307*
Indian	-.045	-.189	-.512	.422	-.501	1.552*	1.368*
ln(income)	.491**	.273**	.890**	.213*	.801**	.995**	.645**
$\overline{R}^2$	.573	.157	.269	.149	.282	.325	.366
n	1089	1270	1241	1233	1217	1091	1176

Note: * and ** Significant at 5% and 1% level, respectively.

to 1 if the population of the area was less than 100,000; 2 if it was between 100,000 to less than 200,000; 3 if it was 200,000 but less than 500,000; and 4 if it was 500,000 or more. *Married*, *Male*, *Malay* and *Indian* were dummy variables. *Married* took on the value 1 if the individual was currently married, and *Male* was equal to 1 if the person was a male. *Malay* and *Indian* were included in the equation to incorporate the three major ethnicity groups in Malaysia – *Malay* was 1 if the person was a Malay, while *Indian* was assigned the value 1 if the person was an Indian, with the reference group being Chinese. The OLS estimations did not show the presence of multicollinearity and the normality assumption held for all but one (tobacco and alcohol expenditure) of the regressions. However, since tests revealed that the error terms were heteroscedastic for all regressions, weighted least squares method was employed to obtain the regression estimates.[7] The results are shown in Table 4.

Income is positively related to total as well as to specific expenditures. Higher income levels imply higher levels of expenditure for the various goods and services. This finding is consistent with the basic Keynesian theory of consumption in that individual income is an important determinant of personal consumption. With respect to the effect of age on expenditure, it was found that after controlling for other variables, age emerged as a significant factor for all types of expenditures except for home food. The younger ones spent more on outside food, tobacco and alcohol, leisure activities and personal care items, and less on reading materials compared to their older counterparts. It was also found that

[7] The weights used are exponents of the predicted values, and the choice of the value of the exponent for each regression is based on the optimal value given in SPSS. It tests a range of weight transformation and indicates which gives the best fit to the data. Individual explanatory variables are not considered for the weights since there are, not one, but potentially five variables that can be used as the weight. In addition, the variance of the error term may be correlated with not one, but a combination of the explanatory variables.

those residing in more urban areas have higher total spending, and spent more on outside food, but less on food at home, and also spent more on reading materials, leisure activities, and personal care items.

The findings also found gender differences in terms of spending. As expected, men spent more on tobacco and alcohol, while a less expected result was that women's total expenditure was higher than men. Women also had higher expenditure on reading materials. Dissimilarities were found across ethnic groups for some types of expenditure. Malays spent less on tobacco and alcohol, compared to other ethnic groups. This is perhaps expected since in Malaysia, Malays are Muslims and the religion prohibits the consumption of alcohol. Malays also spent less on leisure activities, while Indians spent the most. The latter also had higher spending on personal care items compared to Malays and Chinese. There were no significant differences on food expenditure among the ethnic groups. However, the results for ethnicity must be interpreted with caution since the data that is used comes from a sample that does not reflect the ethnic composition of the population.

4.2 Income Elasticities

The elasticities were computed for the whole sample, and for each subgroup based on population density, marital status and gender. The results are presented in Table 5. Overall, and not surprisingly, food was found to be a necessity. Leisure activities, such as holidays and entertainment, as expected, appear to be the most luxurious good. Clothing, housing and transport had elasticities greater than, but close to one. The elasticities estimated for the different subgroups provided interesting comparisons. The results show that the elasticity for outside food decreased and became less than one, the higher the population density of an area one resided in. In other words, outside food becomes a necessity, rather than a luxury, for those who live in urban areas. The same result applies to clothing and transport.

Comparisons between persons who were currently married and unmarried, and between men and women also provided some noteworthy observations. First, food at home is a necessity for both the unmarried and more so for the married. On the other hand, outside food is a luxury for the married but a necessity for the unmarried. The same conclusion applies to clothing, personal care and reading, and to a lesser extent to alcohol and tobacco. However, housing and health were found to be necessities for those who were married, and luxuries for the unmarried ones. A somewhat surprising finding is that women consider outside food as a necessity, but not men. Perhaps this is due to the fact that more women are now employed outside of their home, and thus have less time to prepare home food for themselves and for their families.[8] In addition, outside food is easily available and affordable at most places. Besides, Malaysian men, traditionally, given the choice, would prefer to have home-cooked food. As expected, clothing and personal care were commodities regarded as necessities by women, not by men. Another interesting discovery is that women considered alcohol and tobacco as inferior goods, with the elasticity being negative. The higher the income, the lower would be the consumption of those goods. This finding is

[8] The labour force participation rate has increased for women from 45.9 % in 2005 to 46.4 % in 2007 (Asian Development Bank 2008).

Table 5. Income elasticities

	All	Population density ('000)				Marital status		Gender		All - controlling for socio-demographic effects
		<100	100<200	200<500	500+	Unmarried	Married	Women	Men	
Food at home	0.59	0.67	0.57	0.68	0.83	0.70	0.44	0.61	0.53	0.54
Outside food	0.96	1.40	1.36	0.89	0.74	0.73	1.19	0.94	1.09	1.11
Alcohol & tobacco	1.04	1.06	1.01	0.18	1.13	0.95	1.06	-0.23	0.76	0.78
Clothing (own & for others)	1.08	1.31	1.23	1.12	0.77	0.85	1.24	0.90	1.14	1.13
House and home [a]	1.07	0.95	0.89	1.17	1.13	1.21	0.99	1.06	1.04	0.97
Health	1.17	0.72	0.96	1.26	1.32	1.22	0.84	1.09	0.93	0.99
Transport (own and public)	1.03	1.24	1.19	1.05	0.98	1.10	1.04	1.16	1.00	1.09
Leisure (holidays & entertainment)	2.00	2.42	2.56	1.89	1.72	1.86	2.38	1.81	2.20	2.13
Personal care	1.11	1.08	1.36	0.72	1.00	0.76	1.31	0.77	1.25	1.22
Reading materials (newspapers, magazines, books)	1.30	1.19	1.51	1.23	1.34	0.82	1.58	1.27	1.66	1.58

[a] Expenditure on house and home includes home maintenance and repairs, house rental, if any, utilities, and furniture

heartening in that alcohol and cigarettes are considered as generally proscribed goods, and their consumption in many societies and religions are prohibited or discouraged.

The final analysis re-estimated income elasticities for the whole sample controlling for population density, marital status, gender and ethnic effects on expenditure share. The results are presented in the last column of Table 5. Home food remained a necessity, while leisure activities and reading materials were still considered as luxuries. Clothing and personal care items were also regarded as luxuries, more so after controlling for the socio-demographic effects. The elasticity for transport although still close to one, had increased slightly. On the other hand, the elasticities for house and home, and health were reduced but close to value of one.

Significant changes were observed for outside food, and alcohol and tobacco. Outside food was no longer regarded as a necessity, but rather a luxury, after taking into account other effects. In contrast, the estimated elasticity for alcohol and tobacco fell significantly below one, which indicates that these items are now considered as necessities. These results are not unexpected since the earlier analysis indicated that the elasticities differ significantly across groups, especially between those who live in towns and those who live in less urban areas or in cities.

5. Discussion and Conclusion

The primary objective of this paper was to analyse the consumption behaviour of employed Malaysians. While there have been several studies that focused on Malaysia, they either concentrated on a specific expenditure item such as food or appliances, or on a particular group of consumers, such as the elderly. This study attempted to provide a more current and better understanding of expenditure patterns of a variety of consumption products and services for various groups of Malaysian society. Specifically, the analysis focused on differences in consumption across age groups, and identified factors that affect the level of total expenditure as well as expenditure on specific consumption commodities. This paper further provides estimates for income elasticities used to categorise the expenditure items as either luxuries or necessities.

Variations in consumption patterns among individuals of different age groups obtained in this study are consistent with those found by others as discussed in the earlier section. Young adults aged less than 35 years old allocate a bigger proportion of their total spending, and a larger amount of money on clothing, holidays and entertainment, and personal care items. These categories of spending, although important especially to young people, may not have a long term benefit compared to spending on insurance which they spend very little on. With the general rising of costs in health and maintaining a livelihood, the purchase of insurance would help in ensuring that financial security is available when it is especially needed in case of death, serious illness or upon retirement.

The amount spent on reading materials is also very low. If spending is a reflection of consumption and behaviour, then it appears that the reading habit among Malaysians has not improved. In the 1998/99 Household Expenditure Survey conducted by the Department of Statistics, it was found that the average Malaysian household spent a meager RM3.21 per month on books, compared to RM23.25 on toiletries. This study found that reading materials are considered as luxury items for working Malaysians in general. More emphasis

must be placed on the importance of reading especially among the young. The government, private sector and individual families must play a bigger role in instilling the reading habit in the people for Malaysia to achieve its goal of being a knowledge-based economy.

The study also determined that income is a significant factor in influencing the level of spending. A one per cent increase in income results in an estimated increase of approximately 0.5 per cent increase in total spending. This finding implies that an increases in income can assist in spurring economic growth during downturns or during recovery periods through improvements in private spending. This may be done through a revision of tax imposition, financial allocation on households' transfers and other forms of relief to encourage more spending particularly on productive products that can contribute to the growth of the nation. It is hoped that the findings of this study will give a better understanding of the patterns of consumption behaviour so that product sellers and service providers can tailor their marketing efforts to meet consumer needs and preferences. This information may also be of help to the relevant authorities to shape the consumption pattern of individuals for the betterment of society and to maintain economic growth and social development of the country.

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