Food away from home of middle-income earners: Empirical evidence from the three major cities in Malaysia

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Abstract

Malaysia have achieved high income growth and experienced rapid urbanization and changes in socioeconomic and demographic structure. Family income as well as demographic factors influence demand for food away from home. At the same time food service facilities also showed the rapid growth. It is expected that there will be significant changes in food away from home consumption in Malaysia. The objective of this paper is to analyse middle income household expenditure patterns on food away from home in the three major cities of Malaysia (George Town, Kuala Lumpur and Johor Bahru) that have a high cost of living. Therefore, a survey has been carried out in the three cities and the total number of observations used for the estimation was 473 observations. A censored Tobit model was applied to quantify the responsiveness of household expenditure on food away from home. The results indicate that on average, the household income and number of children below 12 years old in the household are the significant factors that affect the household expenditure on food away from home. There is a significant difference between the Chinese and Malays in their spending pattern on food away from home. Meanwhile, family size, gender and age of household head were statistically insignificant. It is recommended that the government should strengthen the enforcement of price control regulations in order to avoid high inflation in food price, as well as monitoring the quality of food served by the sellers in order to encourage people to consume healthy food.

Keywords: expenditure, food away from home, home consumption, household, middle-income, tobit

Introduction

Expenditure on housing and electricity, transport, food, communication, child care and education has become a major priority in order to improve the standard of living as a whole. However, food remains the main necessity of life. In 2014, the mean monthly household consumption expenditure for food away from home (FAFH) was RM365 a month in 2014, an increase of RM171 a month compared to 2009/10. For those living in the urban areas, the households spent RM409 a month for FAFH in 2014 (Department of Statistics, 2015c). The

Household Expenditure Survey (HES) 2014 report also indicated that households in Selangor have to spend RM599.83 a month on FAFH and RM183.80 a month in Sabah.

For this analysis, the authors have chosen George Town, Kuala Lumpur and Johor Bahru that have a high cost of living by running an analysis of variance. Lastly, the income groups of RM3000 to RM8,999 need to spend around RM383 to RM904 a month for FAFH. Meanwhile, households in the urban areas have to spend RM391 to RM909 for FAFH (Department of Statistics, 2015c). The upward trend in FAFH implies that food remains the main necessity in life.

Many previous studies have discussed the consumption patterns of households with regard to FAFH such as Lee and Tan (2007), Fabiosa (2008), Gazi et al. (2010) and others by assuming that all households have to spend the same amount on food across different household income groups. In this paper, the authors focus on middle income household expenditure on FAFH because the purchasing power of a middle income household is greater than low income groups. It is a different scenario for the high income earners as they have a high purchasing power and may have greater spending on FAFH. Therefore, the main objective of this paper is to analyse middle income household expenditure patterns with respect to FAFH. The following Section 2 will explain the literature review, followed by the methodology in Section 3. The empirical results and discussion are presented in Section 4. Lastly, the conclusion of this study is laid out in Section 5.

Literature review

A study by More (1913) found that spending on food is a necessary expenditure (Ismail, 1971; Sekhampu & Niyimbanira, 2013). However, Flanagan and Flanagan (2011) indicated that food is purchased only after three or more significant costs are taken out of the income of a person. From a different approach, the expenditure on food and clothing was found to be more important than other components of household expenditure (Ismail, 1971; Haworth & Rassmusen, 1973; Benus et al., 1976; Deaton et al., 1980). The studies found a significant and positive association between household expenditure and expenditure on food and clothing. According to the study by Ismail (1971), the elasticity for food is very significant in both urban and rural areas as well as for the Malay, Chinese and Indian communities. This result is consistent with the empirical work by Lee and Tan (2007), who found the Chinese population and urban residents had significantly higher FAFH expenditure. Ali and Abdullah (2017) discovered that urban household valued eating out as a convenient choice and provide more than material aspect. Also, Gazi et al. (2010) indicated that Chinese households have a significant influence on the FAFH expenditure for breakfast and dinner.

In addition, Kulub Abd. Rashid et al. (2010) indicated that the income level within society seems to be the main factor that determines individual consumption spending. Also, household income is the most important correlation with food expenditure patterns (Venn et al., 2017). For household FAFH expenditure, Blick et al. (2017) found that the income of the household head is an important determinant. Further, the wealthier the person or family then the household shows higher advantage and spends relatively more on FAFH, according to Venn et al. (2017).

The total household income and the mean income are directly proportional to and have positive relationships with total expenditure, where an increase in income will increase the total expenditure as well (Benus et al., 1976; Lee & Tan, 2007; Kulub Abd. Rashid et al., 2010; Gazi et al., 2010; Sekhampu & Niyimbanira, 2013). As indicated by Farfan et al. (2017) in their findings, the consumption of food particularly for FAFH is rapidly growing across the developing world, and will continue to do so as GDP per person grows and food

systems evolve. Interestingly, Tiwari et al. (2017) found that income is unrelated with consuming food at home.

Most of the previous studies indicated that household size or family size is one of the important variables used to determine household expenditure and is statistically significant (Benus et al., 1976; Battese & Bonyhady, 1979; Kulub Abd. Rashid et al., 2010; Sekhampu & Niyimbanira, 2013; Tiwari et al., 2017). For FAFH, Lee and Tan (2007) found that household size did not affect total monthly household expenditure on FAFH.

Other than that, Sekhampu and Niyimbanira (2013) found that gender and age of the household head have a positive relationship with household expenditure but the relationships are not statistically significant (Kulub Abd. Rashid et al., 2010). The result is consistent with a study by Blick et al. (2017) that concluded small-sized households headed by a male and living in an urban settlement are most likely to purchase FAFH compared to female-headed households. Furthermore, Lee and Tan (2007) and Tiwari et al. (2017) indicated that gender and age or even education do not affect the household expenditure on FAFH. In contrast with the results found by Venn et al. (2017), there is a tendency for the highly educated to consume FAFH. In addition, a study by Gazi et al. (2010) showed that the growth in the FAFH sector was largely driven by household demographics, ethnic characteristics and the region in Malaysia.

In the presence of a fewer number of children in the household, the proportion of respondents to consume food at home is higher. Tiwari et al. (2017) in their study found that frequently home cooked dinners were associated with the presence of children aged below 12 years of age. This result is consistent with Redman (1980) and Rogers and Green (1978) that indicated larger size families with pre-school children have less FAFH expenditure due to the inherent difficulty of feeding children in public areas given their possibly unruly behaviour and smaller stomach capacities. Inversely, when there are a number of children more than 12 years old, there is a probability of significantly consuming FAFH as determined by a study by Gazi et al. (2010). Lastly, Lee and Tan (2007), Fabiosa (2008), Gazi et al. (2010) preferred to use the standard Tobit model. According to Wooldridge (2002), most variables encountered in economics are limited in range such as food consumption. A household may not make any expenditure on FAFH during the survey period and thus have zero expenditure. Thus, a censored model should be applied which would be more appropriate.

Methods

Analysis of variance

The analysis of variance (ANOVA) will be used in order to identify any differences in the cost of living between the various Malaysian states. The results of this analysis will help decision which cities to survey for the case study. The ANOVA will be run by using the regression analysis method in order to compare two or more mean values. The *k*-variable regression model is follows:

$$Y_i = \beta_1 + \beta_2 D_{2i} + \beta_3 D_{3i} + \cdots + \beta_{13} D_{13i} + u_i \qquad i = 2, \ldots .13 \qquad (1)$$

where:

Y_i = cost of living index in state *i*

D_{2i} = 1 for state *i*, 0 otherwise

In this analysis, we used the monthly Laspeyres index data for the period 2010 to 2014 as a proxy for the cost of living (COL). The coefficients of the dummy variables tell us by how much the mean cost of living differs from one state to another. Thus, the estimate model for ANOVA is as follows:

$$COL_i = \beta_1 + \beta_2 D_{2i} + \beta_3 D_{3i} + \beta_4 D_{4i} + \beta_5 D_{5i} + \beta_6 D_{6i} + \beta_7 D_{7i} + \beta_8 D_{8i} + \beta_9 D_{9i} + \beta_{10} D_{10i} + \beta_{11} D_{11i} + \beta_{12} D_{12i} + \beta_{13} D_{13i} + u_i \quad (2)$$

where:

COL_i = cost of living index in area i
D_2 = 1 if the state is Penang (PNG), 0 otherwise
D_3 = 1 if the state is Perak (PRK), 0 otherwise
D_4 = 1 if the state is Selangor (SEL); 0 otherwise
D_5 = 1 if the state is Kuala Lumpur and Putrajaya (KLPJYA); 0 otherwise
D_6 = 1 if the state is Malacca (MEL); 0 otherwise
D_7 = 1 if the state is Negeri Sembilan (N9); 0 otherwise
D_8 = 1 if the state is Johor (JHR); 0 if otherwise
D_9 = 1 if the state is Pahang (PHG); 0 otherwise
D_{10} = 1 if the state is Kelantan (KEL); 0 otherwise
D_{11} = 1 if the state is Terengganu (TRG); 0 otherwise
D_{12} = 1 if the state is Sabah and Labuan (SBH); 0 otherwise
D_{13} = 1 if the state is Sarawak (SRW); 0 otherwise

To know whether these means are statistically different from the omitted state mean or benchmark, there is a need to determine if each of the slope coefficients is statistically significant by examining the *t*-test statistic or *p*-value. To test the overall significance of the multiple regression models through the *F*-test, the following null and alternative hypotheses are tested:

$H_0: \beta_2 = \beta_3 = \cdots = \beta_{13} = 0$
$H_1:$ Not all slope coeffcients are simultaneuosly zero

The Tobit Model

Following McDonald and Mofitt (1980) and Wooldridge (2002), the standard Tobit model is as follows:

$$y_i^* = x_i\beta + \varepsilon_i \quad \text{with} \quad \varepsilon_i \sim N(0, \sigma^2) \quad (3)$$

$$y_i = \begin{cases} y_i^* & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases} \quad (4)$$

where:

y_i = actual observed household level of expenditure
y_i^* = households level of expenditure (latent variable)
x_i = individual characteristics
β = parameters to be estimated
ε_i = normally distributed error term

The probability of a positive value can be calculated as follows:

$$P[y_i > 0|x] = \Phi\left(\frac{x_i\beta}{\sigma}\right) \quad (5)$$

The level of expenditure conditional on $y_i > 0$ can be written as:

$$E[y_i|y_i > 0, x] = x_i\beta + \sigma * IMR \quad (6)$$

where:

IMR = inverse mills ratio = $\left(\frac{\phi\left(\frac{x_i\beta}{\sigma}\right)}{\Phi\left(\frac{x_i\beta}{\sigma}\right)}\right)$

Thus, the marginal effects for the probability of a positive value is as follows:

$$\frac{\partial P[y_i > 0|x]}{\partial x_j} = \frac{\beta_j}{x_i}\phi\left(\frac{x_i\beta}{\sigma}\right) \quad (7)$$

The marginal effects for level of expenditure on $y_i > 0$ is as follows:

$$\frac{\partial E[y_i|y_i > 0, x]}{\partial x_j} = \beta_j\left(1 - IMR * \left[\frac{x_i\beta}{\sigma} + IMR\right]\right) \quad (8)$$

Lastly, the marginal effect of the unconditional expectation:

$$\frac{\partial E[y_i|x]}{\partial x_j} = \beta_j\Phi\left(\frac{x_i\beta}{\sigma}\right) \quad (9)$$

Authors defined the range of middle-income group to be between RM2,992.50 to RM8,999 a month for a single person. This definition of a middle-income group follows Birdsall et al. (2000) in which they defined the middle-income group as those individuals whose income are between 75 per cent and 125 per cent of the median per capita income of society. The term 'middle income' which is commonly used in Malaysia is based on a household and income share of 40 per cent from the Household Expenditure Survey (HES) report which is around RM3,856 to RM8,999 in 2014 (Economic Planning Unit, 2015). For this study, the authors took into account the median monthly household income (RM4,098.75 to RM6,831.25 in 2014) and income share (RM4,000 to RM8,999 in 2014) not only based on the HES report, but also the Household Income and Basic Amenities Survey (RM3,438.75 to RM5,731.25 in 2014) as well as the Salaries and Wages Report median income of education sector workers (RM2,992.50 to RM4,987.50 in 2015) to define the middle income group (Department of Statistics 2012; 2013; 2014; 2015a; 2015b; 2015c; 2016).

Since the study on FAFH uses cross-sectional data, a survey will be carried out using a structured questionnaire in the three different major cities in Malaysia that have a high cost of living. All the respondents in the sample comprise government servants in the education sector group. A stratified random sampling-based survey tends to be more representative of the population. In addition, cluster sampling by geographical location, whereby the population is subdivided into groups or clusters also will be employed. The survey was conducted randomly among respondents over the period of September 2016 to October 2016.

Table 1. Summary of explanatory variables

Explanatory variable	Description
Total household income (M)	Total monthly income household income (in RM)
Family Size (FS)	Number of family members
Gender of household head (GH)	1 if male; 0 otherwise
Age of household head (AH)	Age of household head (in years)
Children below 12 years old (C_{12})	Number of Children below 12 years old
Malay	Benchmark variable
Chinese	1 if Chines; 0 otherwise
Indians	1 if Indians; 0 otherwise
Other races	1 if Other races; 0 otherwise
Kuala Lumpur	Benchmark variable
Johor Bahru	1 if Johor Bahru; 0 otherwise
George Town	1 if George Town; 0 otherwise

Other than that, the explanatory variables were total household income (M), family size (FS), gender of household head (GH), age of household head (AH) and children below 12 years old (C_{12}). Binary variables included measured the effect of race (Malay (D_M), Chinese (D_C), Indian (D_I) and others (D_O)), major cities (Kuala Lumpur (KL), George Town (GT), Johor Bahru (JB)). A total of 642 questionnaires were distributed and with high response rate, 473 samples were found eligible as a sample for this study.

Results and discussion

Analysis of variance results

From Table 2, the null hypothesis cannot be rejected, where the *F*-test statistic is 0.0627, which would be lower than the *F*-critical value. The mean of the cost of living in Kedah and Perlis was 105.1 and differed from each state with a min-max range from -0.58 to 0.76 points. The *p*-values for the cost of living for all states in Malaysia were also not significant and higher than the 10 per cent level of significance.

Table 2. The mean of COL between Malaysian states

Variable			Coefficient	*t*-statistics	Mean
COL_{KDHPER}	Constant	β_1	105.1***	60.497	105.10
COL_{PNG}	D_2	β_2	0.18	0.0732	105.28
COL_{PRK}	D_3	β_3	-0.58	0.2360	104.52
COL_{SEL}	D_4	β_4	0.26	0.1058	105.36
COL_{KLPJYA}	D_5	β_5	-0.72	-0.2930	104.38
COL_{MEL}	D_6	β_6	-0.16	-0.0651	104.94
COL_{N9}	D_7	β_7	0.20	0.0814	105.30
COL_{JHR}	D_8	β_8	0.50	0.2035	105.60
COL_{PHG}	D_9	β_9	0.12	0.0488	105.22
COL_{KEL}	D_{10}	β_{10}	0.76	0.3093	105.86
COL_{TRG}	D_{11}	β_{11}	-0.02	-0.0081	105.08
COL_{SBH}	D_{12}	β_{12}	-0.36	-0.1465	104.74
COL_{SRW}	D_{13}	β_{13}	-0.54	-0.2197	104.56

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively

Therefore, the authors concluded that the mean cost of living in the Malaysian states would appear to be about the same. This could be due to the computation of weights for the Laspeyres index which had same weights for each state as at the national level. The

Laspeyres index based measure of COL weights may in fact be different for different states. In order to determine which states should be selected for the FAFH survey study, the Gross Domestic Product (GDP) per capita in log form was used as a second option and proxy for the cost of living. Kulub Abd. Rashid et al. (2010) indicated that an increased cost of living is reflected in the higher attainment of the GDP. The GDP per capita is the best measure of living standards according to Ruffin and Gregory (2000), and Bloom and Canning (2008). People who live in countries with high per capita GDP are, on average, better off materially, powered by improvements in technology and capital accumulation that increase the output available to each person (Ruffin & Gregory, 2000).

The results are shown in Table 3 below. The results show that the null hypothesis can be rejected at the 1 per cent level of significance, where the value of the *F*-test is 145.67, which is larger than the *F*-critical value by using annual data with 70 observations. The mean GDP per capita in Johor is 10.14 per cent and differs from each state with a min-max range from -0.83 to 1.11 per cent. The *p*-value of the GDP per capita for all states in Malaysia was significant and lower than the 5 per cent level of significance except for Pahang and Terengganu. Since there were significant differences between the states, then multiple comparison tests were required in order to check the sources of the differences by using the Bonferroni method, which simply takes a comparison-wise error rate (CER):

$$CER = \frac{\alpha}{k} \quad (10)$$

where:

α = level of significance
k = number of group comparisons or pairwise comparisons

Table 3. The mean of GDP per capita and variance from ANOVA Results between Malaysian states

Variable	Coefficient			*t*-statistics	Mean	Variance (%)
ln $GDPC_{JHR}$	Constant	β_1	10.14***	257.09	10.14	3.2
ln $GDPC_{KDH}$	D_2	β_2	-0.46***	-8.2969	9.68	0.9
ln $GDPC_{KEL}$	D_3	β_3	-0.83***	-14.925	9.31	0.3
ln $GDPC_{MEL}$	D_4	β_4	0.30***	5.4020	10.44	7.0
ln $GDPC_{N9}$	D_5	β_5	0.27***	4.8076	10.41	3.4
ln $GDPC_{PHG}$	D_6	β_6	0.07	1.2844	10.20	2.4
ln $GDPC_{PNG}$	D_7	β_7	0.39***	6.9899	10.53	5.9
ln $GDPC_{PRK}$	D_8	β_8	-0.17***	-3.0469	9.97	2.8
ln $GDPC_{PER}$	D_9	β_9	-0.27***	-4.8543	9.87	1.2
ln $GDPC_{SEL}$	D_{10}	β_{10}	0.37***	6.5514	10.51	5.8
ln $GDPC_{TRG}$	D_{11}	β_{11}	-0.05	-0.9612	10.09	1.8
ln $GDPC_{SBH}$	D_{12}	β_{12}	-0.28***	-5.0469	9.86	0.4
ln $GDPC_{SRW}$	D_{13}	β_{13}	0.47***	8.5111	10.61	6.7
ln $GDPC_{KL}$	D_{14}	β_{14}	1.11***	19.922	11.25	58.2

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Multiple comparison tests were used to control the type I error rate for the set of comparisons (Muller & Fetterman, 2002) and to reduce or minimise making any erroneous assumptions such as data manipulation to find a significant result (Westfall et al., 1999). To make a decision, the *p*-values were compared with an adjusted *p*-value with the desired level of significance. By using a standard two-sample *t*-test to obtain the standard *p*-value, the Bonferroni adjusted *p*-value could be calculated. The null hypothesis can be rejected if the corresponding *p*-value was less than or equal to CER. There were 91 pairwise comparisons

and hypotheses that needed to be tested between the 14 Malaysian states. Based on a summary of the pairwise comparisons in Table 4, Kuala Lumpur had the highest frequency of being significantly different from all the states in Malaysia with a total score of 13 times and 58.2 per cent of the variance (see Table 3). Further, Kelantan also recorded a high frequency of being different from all states in Malaysia with a total score of 13 times but had the lowest variance with 0.3 per cent among the Malaysian states.

Table 4. Summary of pairwise comparison between Malaysian states

State	JHR	KDH	KEL	MEL	N9	PHG	PNG	PRK	PER	SEL	TRG	SBH	SRW	KL
JHR	-	1	1	0	0	0	1	0	0	1	0	1	1	1
KDH	1	-	1	1	1	1	1	0	0	1	1	0	1	1
KEL	1	1	-	1	1	1	1	1	1	1	1	1	1	1
MEL	0	1	1	-	0	0	0	1	1	0	1	1	0	1
N9	0	1	1	0	-	0	0	1	1	0	1	1	0	1
PHG	0	1	1	0	0	-	1	0	1	0	0	1	1	1
PNG	1	1	1	0	0	1	-	1	1	0	1	1	0	1
PRK	0	0	1	1	1	0	1	-	0	0	0	0	1	1
PER	0	0	1	1	1	1	1	0	-	1	1	0	1	1
SEL	1	1	1	0	0	0	0	0	1	-	1	1	0	1
TRG	0	1	1	1	1	0	1	0	1	1	-	0	1	1
SBH	1	0	1	1	1	1	1	0	0	1	0	-	1	1
SRW	1	1	1	0	0	1	0	1	1	0	1	1	-	1
KL	1	1	1	1	1	1	1	1	1	1	1	1	1	-
Score	7	10	13	7	7	7	9	6	9	7	9	9	9	13

Note: 1 if "Significantly Different", 0 otherwise.

In conclusion, the authors decided to choose Kuala Lumpur, Johor Bahru and George Town to represent the central, southern and northern regions, respectively. These three states also happen to be eligible to enjoy a cost of living allowance (COLA) of RM300 per month based on area (Department of Civil Service, 2014).

The Tobit analysis results

A total of 473 samples were eligible for the analysis (see Table 5). The number of samples for Malays was 310 out of 473 samples or 65.5 per cent and the breakdown was 90 samples (29 per cent) from Kuala Lumpur, 140 samples (45.2 per cent) from Johor Bahru and 80 samples (25.8 per cent) from George Town. Next, a total of 117 samples or 24.7 per cent were Chinese that included 41 samples (35 per cent) from Kuala Lumpur, Johor Bahru with 24 samples (20.5 per cent) and 52 samples (44.4 per cent) in George Town. Meanwhile, Indians comprised 40 samples or 8.5 per cent. From that total number, 12 samples were from Kuala Lumpur, while 15 and 22 samples were from Johor Bahru and George Town, respectively.

Table 5. Respondent demographic

City	Malay		Chinese		Indian		Others		Total	
	Total	%	Total	%	Total	%	Total	%	Total	%
Kuala Lumpur	90	29.0	41	35.0	12	30.0	3	50	146	30.9
Johor Bahru	140	45.2	24	20.5	6	15.0	0	0	170	35.9
George Town	80	25.8	52	44.4	22	55.0	3	50	157	33.2

The summary statistics for expenditure on FAFH, M, FS, GH, AH and C_{12} are presented in Table 6. From Table 6, the measures of central tendency for the variables were found to be positive. The total household income (M) had the largest dispersion or spread compared to the other variables and the skewness denoted the existence of both positive and negative skewed variables. Further, the kurtosis indicated that the distribution was peaked (leptokurtic) relative to the normal for all the variables.

Table 6. Descriptive statistics of the variables

	FAFH	**M**	**FS**	**GH**	**AH**	**C_{12}**
Mean	322.72	8130.04	3	1	37	1
Median	250.00	7620.00	4	1	35	1
Maximum	3000	17923.36	9	1	72	5
Minimum	0	3122.00	1	0	24	0
Std. Dev.	302.04	3457.94	1.76	0.39	9.29	1.23
Skewness	4.2160	0.6161	0.2801	-1.5957	0.5092	0.9624
Kurtosis	31.338	2.6957	2.4588	3.5464	3.1309	3.0422

As shown in Table 7, it was reported that the uncensored observations were 467 and the censored observations were only six i.e. 1.27 per cent of the sample. As stated by Arabmazar and Schmidt (1982), random variables modelled by the Tobit model contain substantial bias when the true distribution has a high degree of censoring. In addition, Wooldridge (2002) also indicated that in the case of true data censoring ($y_i > 0$), the OLS results would be inconsistent and thus, the lower percentages of censored observations were acceptable.

The estimated coefficients (β) are presented in the second column. The third column shows the marginal effect of the explanatory variables on the expected value of the dependent variable. The fourth column represents the marginal effect of the expected value of the dependent variable for observations exceeding the threshold value. The fifth column depicts the marginal effect on changes in the probability for those who do not spend on FAFH but might, which refers to observations at the limit.

The probability value of the Wald statistic was almost zero and, hence, the model was concluded as having a good fit. This study did not run normality and heteroscedasticity tests because the number of samples was considered large (473 observations), and it was assumed the sample was already normally distributed. As indicated by Wooldridge (2002) that heterogeneity independent of x and normally distributed data has no important consequences in data-censoring.

The results revealed that only total household income (M) and the number of children below 12 years old (C_{12}) were statistically significant in explaining household expenditure on FAFH in the three major cities in Malaysia. For every RM100 increase in household income, the expected value of the latent variable was found to increase by RM1.41 a month. By considering the total sample, an increase in monthly household income by RM100 led to a rise of RM1 a month in FAFH. By holding other items constant or *ceteris paribus*, household expenditure among those who spent on FAFH during the survey period would rise by RM1 given each additional RM100 in monthly household income.

Table 7. The Tobit estimated coefficient and marginal effect of food away from home

(1) Variables	(2) Coefficient	(3) $\frac{\partial \mathrm{E}[y_i \mid x]}{\partial x_j}$	(4) $\frac{\partial \mathrm{E}[y_i \mid y_i > 0]}{\partial x_j}$	(5) $\frac{\partial \mathrm{P}[y_i > 0 \mid x]}{\partial x_j}$
Constant	91.479*	80.09	61.73	0.0675
	(1.5447)			
M	0.0141***	0.01	0.01	0.0000

	(2.8250)			
FS	12.006	10.51	8.10	0.0089
	(0.8676)			
GH	-44.288	-38.78	-29.89	-0.0327
	(-1.2505)			
AH	2.0727	1.81	1.40	0.0015
	(1.0938)			
C_{12}	-29.466**	-25.80	-19.88	-0.0217
	(-1.7803)			
D_C	186.93***	163.67	126.14	0.1379
	(5.4298)			
D_I	16.732	14.65	11.29	0.0123
	(0.3390)			
D_O	226.13**	197.99	152.60	0.1668
	(1.9426)			
JB	8.0573	7.05	5.44	0.0059
	(0.2482)			
GT	31.356	27.45	21.16	0.0231
	(0.9715)			
Log-likelihood	-3297.6	$x\beta$	320.84	
Wald Statistic	9.3379***	SF_1	0.6748	
Uncensored Obs	467	SF_2	0.8756	

Note: The number in the ( ) show the *z*-statistics.
***, ** and * indicate significance at 1%, 5% and 10%, respectively.
SF_1 Scale factor or adjustment factor in equation (5)
SF_2 Scale factor or adjustment factor in equation (6)
Source: Author's calculations.

Furthermore, when the number of children below 12 years old increased by 1 person, the middle income households tend to spend less on FAFH by RM29.47 a month. Household expenditure on FAFH decreased by RM25.80 a month if the number of children below 12 years old increased by 1 person for the entire sample. However, middle income households during the survey period tended to spend less by RM19.88 a month on FAFH if there was an increase by 1 person in the number of children below 12 years old, *ceteris paribus*. Meanwhile, the analysis also revealed that three socio-demographic indicators, namely family size, gender and age of Household Head were statistically insignificant in explaining FAFH expenditure in the three major cities in Malaysia.

From another perspective, there was a significant difference between Chinese and Malays in terms of their spending pattern on FAFH. The Chinese community tended to spend more on FAFH by RM186.93 a month compared to Malays. For the entire sample, Chinese households would spend more on FAFH by RM163.37 a month compared to the Malays. For those who took part during the survey period, there was a tendency for the Chinese to increase their spending on FAFH by RM126.14 a month in comparison to the Malay community. If the household is a Chinese community, there was a 13.8 per cent probability for those who have not spent on FAFH to increase their spending. Lastly, it was found that there was no significant difference between household expenditure on FAFH between the three major cities in Malaysia.

Conclusion

The results of this study indicate that household income and the number of children below 12 years old in the household are the significant factors that affect the household expenditure on food away from home on average, in the three major cities in Malaysia. As indicated by the

household expenditure theory, the optimal consumption of goods and services could be a function of the household income, and a rational household maximises its utility within the income constraint. Further, there was a negative relationship and effect on the food away from home expenditure when there were a greater number of children below 12 years old in the household. The total cost to eat out was usually higher for a greater number of families in the larger households compared to smaller households. Other than that, there was a significant difference in spending pattern on FAFH between the Chinese and Malays in the three major cities. The results show that the Chinese community tends to spend on FAFH. This implies that Chinese communities have a high purchasing power in the major Malaysian cities and have a different lifestyle from the other races.

From this analysis, it is recommended for the government to provide more social programmes such as food assistance for students regardless of their family income background. For example, studies have shown that there is a negative relationship between the number of children under 12 years of age, and FAFH expenditure. Therefore, with a food assistance programme for students as recommended, it will help to reduce the burden of household as their children usually spend more on FAFH in school canteens. Other than that, government control of some consumer goods such as cooking oil, flour and other items is good in practice and should be continued. As food is getting more expensive and shows significant price increases, it is important to strengthen the monitoring and enforcement of price control regulations to make sure the price of food is truly under control and they served quality and healthy food. Lastly, there is a great opportunity for the local hawkers and franchise industry to build and expand their business in the major cities in Malaysia. This is because the demand for consumption of food particularly for FAFH is rapidly growing regardless of ethnicity or income in the Malaysian major cities.

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