

## HOUSEHOLD CONSUMPTION PATTERN IN AL-AIN, UAE

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### ABSTRACT

What is the consumption pattern of a typical household in Al-Ain, UAE? To answer the question, a template of a household budget is developed through discussion. It is found that households spent 22% of their total expenditures on housing, 16% on non-durable goods, 15% on education, and 10% on recreation. The remittance reached 6% of household income, and saving was 17%. Households received loans equal to 6.6% of income. A simple linear consumption function is estimated. The marginal propensity to consume equals 0.67. We concluded that there is a high degree of consumerism and social solidarity in Al-Ain society.

### INTRODUCTION

The paper aims to discover the household consumption pattern in Al-Ain city, United Arab Emirates, and to produce a typical household budget. Household consumption refers to purchases of goods and services. It neither include consumption by the public sector nor intermediate consumption of goods and services by the business sector (OECD, Towards sustainable household consumption? Trends and policies in OECD countries, 2002).

The household budget includes two balanced sides, which are income allocations and income resources. People allocate most of their income to cover consumption and earn most of their income from their work as a reward of being a part of production process. The person, who plans the budget, is called a household reference person. He/s is the household member with the highest income, the oldest one in the family, the one who rents or owns the property or the one who makes the most spending decisions (OECD, OECD Framework for statistics on the distribution of household income, consumption and wealth., 2013).

From economic perspective, it is always important to study consumption. On macroeconomic view, the aggregate household consumption is the largest component in gross domestic product (GDP). A change in consumption affects the level of economic activity or aggregate output as John Maynard Keynes argued. Consequently, consumption may drive the country into recession and unemployment or expansion and inflation. The fiscal and monetary policies can bring the economy back into equilibrium (Mankiw, 2012). For this reason, the section of practical background puts the aggregate consumption in the heart of the UAE economy.

On microeconomic view, households who spend beyond their capacity, they will get into financial problems or even go into bankruptcy (Zhu, 2011). Individuals, who involve in our practice, will become more aware about personal financial planning in order to meet their long run goals (Nidhi, 2014). Income is always divided into two parts as follows:

$$Y \equiv C + S$$

[1]

Where, Y: Income, C: Consumption, and S: Saving (dissaving when S is negative). A household, who controls consumption, saves more. As saving increases, people can meet adverse events and invest their saving in order to increase their income. So, People facing economic crises either don't budget at all or budget wrongly.

There is continuing publications of research on consumption. Some recent papers are summarized in the section of literature review. Each one considered a given country, city, or demographic group. Papers examine the relationship between household consumption as a whole or a given category and another factor such as income, government expenditures, housing loans, food prices, and life cycles.

To fill in the gap using the results of previous work, the current paper studies the different categories of consumption along with other sources of income leakages such as remittances, saving and loan installment paid. The paper introduces consumption and income in a frame called a household budget. It considered a unique city which is Al-Ain, UAE. So, what is the consumption pattern of a typical household in Al-Ain?

To answer this question, the researchers will adopt a new and a simple methodology. They will introduce an initial template of a household budget to 200 students in Al-Ain University of Science & Technology in Al-Ain, UAE. Then, they will work with their students to develop and adjust the template to meet the unique requirements of Al-Ain city. This practice is expected to be useful. The awareness of controlling consumption and planning financially will be improved in the community. We will adjust the budget to consider items such as housemaid wages and feeding camels. The discussion will help to prepare the sample to plan well and fill in the survey in the right way.

The researchers of the paper will try to reach 400 random households living in Al-Ain that represent an unbiased sample of the population. When households accurately fill in the e-survey of the revised template of the budget, we can build a typical and representative household budget. We will introduce the methodology to the Abu Dhabi Statistics Centre. It will be a call to revise the weights for calculating consumer price indexes (indices). We, will, then, estimate the consumption function and shed light on the marginal propensity to consume.

### PRACTICAL BACKGROUND

The UAE economy can be considered as an oil economy. The contribution of oil sector reached up to 66% of GDP in 1975. This is mainly as a result of the limited capacity of the non-oil economy and the huge reserve of crude oil in the country. During the beginning of 1970s, the international demand of oil increased due to expansion of developed countries and the pioneer role of OPEC in correcting oil prices (Al-Jundi, Economic Diversification in the United Arab Emirates, 2012).

The government adopted a comprehensive development process to diversify the economy. As a result, the contribution of oil sector dropped to 39% in 2013 (UAE National Bureau of Statistics, 2014). However, the share of oil sector to GDP reached a minimum level of 21% in 1998 according to oil prices in the international market (Al-Jundi, Economic Diversification in the United Arab Emirates, 2012).

The oil revenues are fully exploited to finance government expenditures. The government has been building modern infrastructures for the last 40 years. The per capita income in the country has grown to levels as in rich or developed countries. The database of (The World Bank, 2014) revealed that GDP per capita in the UAE is very close to the average of the Netherlands, Ireland and Austria. Population in the UAE is as much as in Ireland, a half of it in Austria and 27% of the Netherlands' population.

According to the principles of national accounts, GDP equals aggregate expenditures as follows:

$$\text{GDP} = C + I + G + (\text{EX} - \text{IM}) \quad [2]$$

Where, C = Household consumption, I = Private investment, G = Government expenditure, EX = Exports, and IM = Imports. In the UAE, the household consumption took 57% of GDP in 2013. Private sector invested 16% of GDP while the government spent 17% on current and investment expenditures. Since the economy is still heavily dependent on oil sector, Exports represented more than 99% of GDP and imports was 89% (UAE National Bureau of Statistics, 2014). The surplus of trade balance goes to finance remittances and investment abroad. Household consumption here is lower in percentage than what it is in non-oil countries (UAE Central Bank, Annual Report, 2009, pp. 9-11).

The household consumption represents 84% of non-oil GDP. If we add other components of aggregate expenditures, we can understand the high effect of demand to create inflationary pressure on the economy (Al-Jundi, Inflation in United Arab Emirates, 2012). The production structure has to respond to the high level of income. If we take the USA economy as a benchmark, consumption took around 71% of GDP in the US, investment represented 11.4% and the US government spent 20% of GDP in 2009. There is a deficit of trade balance of around 3% of GDP. The US exports of 11% of GDP and imports 13.7% (Case, Fair, & Oster, Principles of Macroeconomics, 2012, p. 114).

The production structure is still deformed despite the efforts of eliminating the dependence on oil sector. The business sector has expanded due to characteristics of demand and availability of resources. If we ignore imputed bank services and with a little rounding, the production structure in 2013 shows that the oil sector contributes 37% in generating GDP while agricultural sector produces less than 1% due to geographical reasons. Manufacturing industries

participate by 9% and so does the construction sector. The imports, financed by oil revenues, allow fulfilling the local demand on consumable and capital goods.

Since it is more difficult to import services, the business sector has expanded in distribution and personal services. The trade sector contributes up to 10% of GDP, restaurants and hotels up to 2%, transport up to 6%, telecommunication up to 2%, real estate up to 10%, financial services up to 6.6%, government services up to 5% and other social and personal services up to 3%. The high level of income creates a real demand for such services, while the scarcity of physical resources prevents the same magnitude of expansion in industrial and agricultural activities.

If we consider the non-oil economy in the capital city of Abu Dhabi, The compensation of employees represents 30% of GDP, i.e., the profit as a loose measure takes 70% of GDP in 2009 (Abu Dhabi Statistics centre, 2010). According to the household income and expenditure survey in Abu Dhabi in 2007, households spent 26% of their income on non-durable goods, 38% on housing, 5% on durable goods, less than 1% on health, 10% on transportation, 7.7% on communication and 6% on recreation. The rest of percentages can be considered to be on miscellaneous and the rounding (Abu Dhabi Statistics Centre, Statistical Yearbook of Abu Dhabi 2009, 2009).

The population estimates of Abu Dhabi revealed that the population exceeded 2.4 million in 2013 with an annual growth rate of 7.7%, which is considered among the highest growth rates in the globe. The main source is the migration inflows of expatriates, especially males of working age. 27% of Abu Dhabi population lives in Al-Ain region, i.e., 653 thousand persons (Abu Dhabi Statistics Centre, Statistical Yearbook of Abu Dhabi 2014, 2014).

This paper focuses on Al-Ain city and tries to examine and update the household income and expenditure survey conducted for Abu Dhabi as a whole in 2007. The paper introduces a new methodology or form with additional items. The items are combined altogether in the household budget, which can give a new view to economic analysis in the city.

#### LITERATURE REVIEW

Most of recent papers have dealt with consumption function according to the Keynesian theory of consumption (Case, Fair, & Oster, Principles of Macroeconomics, 2012). The function can be written as follows:

$$C = f(Y) \quad [3]$$

Where, C: Consumption, and Y: Income. A simple linear consumption function can be written as follows:

$$C = \alpha + \beta Y + \epsilon \quad [4]$$

Where,  $\alpha$ : the intersection point between consumption function and the vertical axis,  $\beta$ : the marginal propensity to consume (MPC), and  $\epsilon$  is the error variable. According to the Keynesian theory, the MPC ( $\beta$ ) must be:

$$0 < MPC < 1 \quad [5]$$

(Nidhi, 2014) studied the personal financial planning of Indian families residing in the UAE. She concluded that buying or upgrading a house and buying expensive items are less important for them, while a change in their career, savings and estate maintenance are of high priority. In China, it is found that government expenditures have a positive effect on household consumption. However, there is a decreasing marginal effect, i.e., consumption increases at a decreasing rate as the government expenditures increase (Chen, Zhu, & Cheng, 2012).

(Rashid, Nasir, Mustapha, & Kamil, 2011) proved that there is a positive correlation between household expenditures and each of household income, housing loan, automobile loan and expenditures for education in some Malaysian cities. Additionally, the pattern of relationship has a city specific nature. As a result of an increase in food prices in Ethiopia during 2004-2008, a large part of households had to adjust food consumption. Urban Ethiopians with low asset level, and casual workers, were especially affected by high food prices in a harmful way (Alem & Soderbom, 2012).

In Pakistan, (Amir & Bilal, 2012) found that as household income increases, poor people spend more on necessities and rich people spend more on luxuries. Marginal propensity to consume necessities is higher among poor than it is among rich. (Ajmair & Akhtar, 2012) stated that consumption, in other Pakistani city, depend on income, family size and basic needs with positive relationship, while consumption has negative relation with the age. As the

age increases, consumption decreases and saving increases. (Khan & Khalid, 2010) said that the pattern of household consumption in Pakistan did not change over two survey years (1984 and 2000). Household, who received remittances, spent more on education, durables, fuel and entertainment than household who did not receive remittances.

In general, consumer behavior is determined by the stages of household life cycle. Around the age of 40 years, a typical household starts accumulating liquid, or tries to save more, to prepare themselves for retirement (Gourinchas & Parker, 2002). (Mishra, 2007) argues that Indian consumers prefer shopping malls and other organized retail formats, due to variety and convenience. They purchase products which need their involvement and present a complex buying behavior. The Indian consumers were influenced by the brand, quality and availability when they purchased cosmetic products. Young Indian males became more aware of such products (Junaid, Nasreen, Ravichandran, & Ahmed, 2014).

(Fernandez-Villaverde & Krueger, 2011) found that young households keep a minimum level of liquid assets and hold a maximum level of their wealth in durable goods. In their model, durables provide services to households, such as housing units, and act as collateral for getting loans. (Zhu, 2011) investigated bankruptcy filings from the U.S. bankruptcy Court, District of Delaware during 2000-3. He concluded that household expenditures on durable goods, such as houses and automobiles, contribute significantly to personal bankruptcy. Bankrupt households spent a similar amount on durables as control households. Medical conditions also cause bankruptcy. He shed light on adverse events, such as divorce and unemployment, which have marginal effects. Bankrupt households spent beyond their means or incomes, which make them vulnerable to adverse events.

Due to 2005 international data, low-income countries allocated a larger part of their income on necessities, such as food. However, richer countries allocated a larger part of their budget on luxuries, such as recreation. In general, low-income countries are more elastic to changes in income and food prices (Muhammad, Seale, Meade, & Regmi, 2011).

## METHODOLOGY

In the light of recent trends in research and studies of other researchers, we first developed a household budget template which includes two categories of entries one of them is the income resources and the other is its allocation to household consumption in different listed subcategories of items.

To verify the proposed budget template, we selected a group of 200 university students to examine the validity of the budget. These selected students are from the Al-Ain University of Science & Technology and belong to 8 different sections of classes. In addition, the students belong to families from different walks of life and are also from different countries, including the local community, in proper proportion to their respective demographic groups. Thus, they are a true representative of our population, the city of Al-Ain, UAE.

We first discussed and explained them about categories of income resources and income allocations, with the purpose of identifying omission of any item in our template. After the discussion with the students, we got a list of items, some of which were already mapping with our original proposed template, such as allocation of university tuition or training course fees, which were mapping with the item of education in our template and few others such as legal service fees, governmental service fees and remittance, were not matching with any of the listed items in our template. Thus, they should find the place in the list. Through this discussion, we came to develop a revised template (Table # 1) of the household budget of the population of the Al-Ain city.

The original items of expenditures and the means of their earnings that came into the light after the discussion with the students were large in number and our selected categories of entries were less compared to those items. Students were also arguing to include most of the items proposed by them in the list, but we explained and shown them that they already map to our existing template categories. Thus, there is no need to increase the categories of entries but we certainly felt the need to explain how and where to allocate new entries into our decided categories. Thus, on the basis of our discussion on mapping of items in the revised template of the budget, we prepared guidelines (tables # 2 and 3) to help households understand how to allocate and identify the true classification of items.

It was expected that these tables will help the respondents in filling up the electronic survey, but at the time of electronic survey it was noticed that the students are not entering the data properly due to misconception of allocated entries in the table # 1, especially in the case of yearly and monthly income. It was found that the students entered yearly income in place of monthly income; because of this data was not acceptable for analysis. We again reached to them and explained the problem in detail as to how it would be wrong to enter yearly data in place of monthly data. After this it was found that the entries were being made correctly.

Table 1: Revised Household Budget

Income allocations	UAE Dirhams	Income resources	UAE Dirhams
Non-durable goods		Compensation of employees	
Durable goods		Profits	
Education		Interest received	
Medical care		Rental income	
Communication			
Transportation		Mixed income of small businesses	
Recreation			
Housing		Opportunity cost of owner-occupied house	
Personal services		Opportunity cost of owner-driven car	
Loan installment paid		Loan received	
Social obligations		Social support	
Remittance			
Saving		Dissaving	
Total	xxx	Total	xxx

The audience was also confused between income and wealth. They asked questions such as: Should we consider inheritance as a source of income? Should we consider the market value of selling used goods as an additional source of income? After discussion, we agreed that income is a flow measure and a kind of earnings as wages, profits, interest payments and rents. Wealth is a stock measure and a total value that a household owns at a particular moment (Case, Fair, & Oster, Principles of Microeconomics, 2012). Thus, the inheritance is a source of wealth. If a household spends part of inheritance, it should be considered as dissaving. When a person sells a used good, only the profit of such transaction should be considered as a source of income.

Students further asked where to include the items like the cost of feeding camels, expenses for beauty products and salons, costs of operation for further beautification, housemaid wages and expenses for social gatherings. We agreed, after discussion, to put each one in a category as in table # 2. What is the opportunity cost of owner-occupied house or owner-driven car? Lots of audiences were confused about it. The clarification was in table # 3. A household, who owns a house, should estimate the highest-valued rent as a source of income and put the same amount in the housing category as an owner's equivalent rent (Case, Fair, & Oster, Principles of Microeconomics, 2012, p. 2).

Table 2: Guidelines for Income Allocations

Items	Explanations
Nondurable goods	Goods that are consumed fairly quickly, such as clothes & footwear, smoking products, food and beverages.
Durable goods	Goods that last a relatively long time, such as furniture, refrigerator, crockery, television, vacuum cleaner and other household appliances.
Education	Tuition fees, training fees, books, stationeries, and school uniform.
Medical care	Hospital services, regular drugs and medical supplies, beauty and self-care costs, health insurance fees. Checkup bills, eyeglasses and eye care.
Communication	Internet and phone bills, Telephone sets, mobile devices, laptops, personal computers, computer software and their accessories.
Transportation	Car maintenance costs, License fees, fuel costs, insurance charges of vehicles, car's rent, purchasing a used or new car, and owner's equivalent rent.
Recreation	Travelling, tourism, hotels, visit of parks, restaurants, airline ticket fares, attending clubs and social gatherings, sport equipment, fitness, pets and pet products such as camels.

Housing	Rent of primary residence, maintenance, utility (electricity & water bills), gardening, and owner's equivalent rent.
Personal services	Visa, fines, renewal visa fees, legal consultancy, haircuts, funeral expenses, beauty salons, housemaid wages and other personal services.
Loan installment paid	Installments paid to banks and other financial agents including interest.
Social obligations	Paying money as a help to relatives and poor people of the society, and payments to charities.
Remittance	Sending money to relatives back home if you are an expatriate living in Al-Ain.
Saving	Money left over at the end of all transactions, including purchases of golden jewelry, shares and bonds, financing a new business, and spending for expanding an existing business.

**Table 3: Guidelines for Income Resources**

Items	Explanations
Compensation of employees	Total package paid by employers to employees, such as salaries, wages, allowances, facilities, insurance cover, education fees, transportation allowances, accommodation and part time & overtime wages.
Profits	Profits from businesses, dividend, and profits of a single transaction such as selling used goods.
Interest received	Interest received from banks and other financial agents, and interest of corporate and national bonds.
Rental income	Rents received for the use of cars, apartments or any immobile properties.
Mixed income of small businesses	Incomes received for conducting small businesses in which incomes could not be divided into wages and profits.
Opportunity cost of owner-occupied house	The highest-valued rent you give up to stay in or use your owned house. It is considered here as a source of income especially when we compare your status with someone who does not own a house.
Opportunity cost of owner-driven car	The highest-valued rent you give up to use your owned car. It is considered here as a source of income especially when we compare your status with someone who does not own a car.
Loan received	When you receive a loan from banks or other financial agents and use of credit cards during the month in question.
Dissaving	When you spend more than your income, you may withdraw from your previous savings, such as withdrawals from your bank accounts. Thus, your wealth would decline.
Social supports	Financial help received from the government, relatives and through charitable organizations.

An e-survey was designed using Google Forms. It included all revised budget categories. They were integrated with an explanation of the guidelines. The survey was introduced with a message: "In this household consumption survey, you will not mention your name. You should provide closely reliable figures about your expenditures and earnings in UAE dirhams as they are in November, 2014. If your entries are accurate, the budget you produce will be balanced. The researchers will consider only the aggregate figures. Thus, they can build a model for consumption pattern in Al-Ain, UAE. We do appreciate your involvement in the earlier discussion and your time to fill in the survey. This is an exercise to help you understand how to plan your budget. If you plan your finances well, you would reach your desired goals or at least be aware how to solve the personal financial problems."

The selected group of students was asked first to discuss with their parents about their income and expenditures according to the proposed template given to them and fill in the Google Form. After that we asked some of them to approach the working class of people in the city of Al-Ain through their friends and relatives. These students

approached those people and collected information as per the template and filled them up in the Google Form on their behalf. This made our data representing most of the classes of households in Al-Ain.

### FINDINGS

Despite of the discussion with our students, as mentioned in the methodology section, many members of the sample are not aware about budgeting. The Abu Dhabi Statistics Centre should take this into consideration, when they go into a new session of income and expenditures survey. The media should also play a vital role to educate the general public about how to budget themselves.

Some households filled most of the categories of the household budget. However, their budget was obviously not balanced as it should be. We planned to reach 400 households but we got only 230 responses and 18% of them were rejected because of lack of accuracy. The sample of the study includes 188 households living in Al-Ain who gave data about their income and expenditures as of November 2014. We have to admit that the sample is quite small relative to the population. It is recommended for the Abu Dhabi Statistics Centre, Al-Ain Office, to enlarge the sample up to 3000 households and enrich the methodology of the paper.

The average of each column of data received was calculated and converted from UAE dirham to US dollar. The typical household budget in Al-Ain is shown in table # 4 as in November 2014. The results are consistent with our observations since we have lived in the city for a long period of time. The average monthly income resources reached to less than \$5000 which is similar to developed or rich economies. The remittance ratio reached 6.1% of income. If we narrow the concept of income to first five categories of income resources, the ratio will increase to 7.6%. Since the majority of population is expatriates, on one side, they have to send part of their saving to their homeland, on the other side, they spent most of their income in the UAE to cover their expenses and to activate the economic cycle.

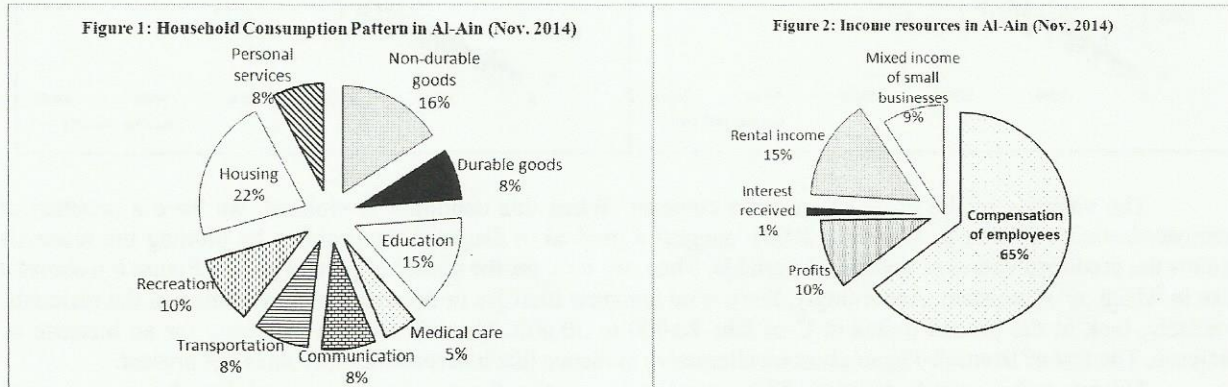
**Table 4: A Typical Household Budget in Al-Ain, UAE (Nov. 2014)**

Income allocations	USA Dollar	Income resources	USA Dollar
Non-durable goods .....	526	Compensation of employees .....	2702
Durable goods .....	258	Profits .....	274
Education .....	488	Interest received .....	48
Medical care .....	170	Rental income .....	344
Communication .....	267		
Transportation .....	277	Mixed income of small businesses ....	381
Recreation .....	337		
Housing .....	718	Opportunity cost of owner-occupied house	285
Personal services .....	256	Opportunity cost of owner-driven car	157
Loan installment paid .....	257	Loan received .....	277
Social obligations .....	133	Social support .....	81
Remittance .....	256		
Saving .....	728	Dissaving .....	122
Total	4672	Total	4672

We know there is a high degree of social solidarity among members of the society. The study gives evidence about this phenomenon. A typical household gives 3.2% of income to support relatives and friends. It receives 2% of income to survive. The government of Abu Dhabi has a great program for transfer payments to support widowed, divorced ladies and elderly parents. The charitable organizations also work in the same way. A representative household saves around 17% of their income which is close to the private investment ratio to GDP in the UAE.

The household consumption pattern is represented in figure # 1. The pattern is somehow different than the results of the whole Abu Dhabi survey of 2007. Even, the two structures have the same trend. The pattern in Al-Ain as in Nov. 2014 shows that a representative household spent 22% of their total expenditure on housing. The rent is still consuming a large part of household income although the rent in Al-Ain is much lower than it is in the city of Abu Dhabi.

Households spent 16% on non-durable goods mostly on food which make challenges on sustainable consumption (A typical household spent more than \$500 per month). They spent 15% on education, 10% on recreation and half of the latter on medical care. Households spent 8% of total expenditures on each of communication, transportation, durable goods and personal services. In poor countries, families spent most of their income on necessities such as food and shelter while in rich countries, as in the UAE, they spent mostly on luxuries or high quality services.



To form the income structure, we added the opportunity cost of owner-occupied houses to rental income. We did the same to the opportunity cost of owner-driven cars as an addition to profits. The income structure in Al-Ain is revealed in figure # 2. If we assume that production is a function of labor and capital, the compensation of employees represents 65% of total income and profit, as a loose measure, equal 35%.

These results are a reversal of what was stated by Abu Dhabi statistics because of the followings: First, the Abu Dhabi Statistics Centre published separate statistics for compensation of employees. It is recommended for them to collect and publish data on GDP as a division between the compensation of employees and profits (operating surplus). Second, the researchers could not reach owners of large businesses or/and the sample was too small. Third, the interest received roughly equals 1% of total income because most of interest collected by commercial banks and the monetary market is still limited. The topic of income is always sensitive. It is recommended to study income structure according to available production technologies in the country.

The sample of 188 households living in Al-Ain, who gave data on their budget as of Nov. 2014, could not produce a valid model for consumption function. After receiving the valuable comments from the anonymous reviewers, we conducted a complementary survey about only two parameters (monthly income and consumption) as of Feb. 2015. We now have panel data of a sample of 318 households living in Al-Ain as of Nov. 2014 and Feb. 2015.

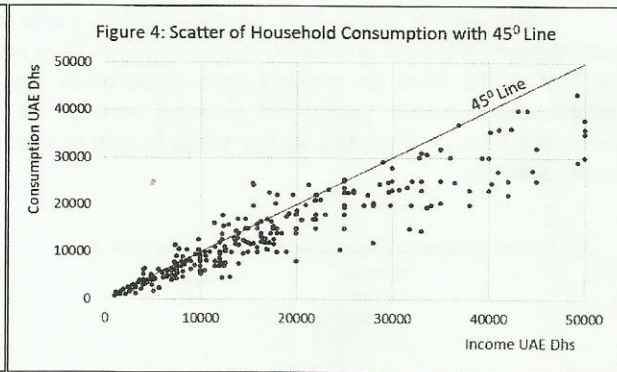
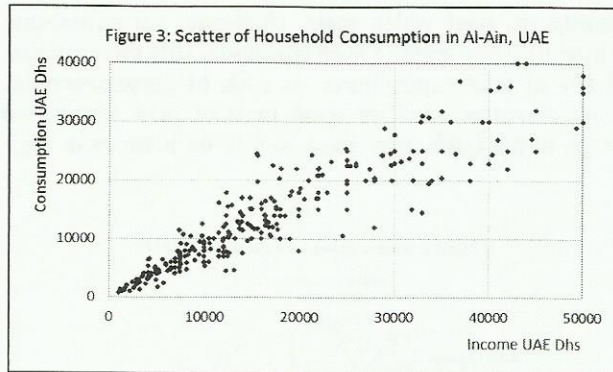
Consumption is mainly determined by income. As income increases, consumption increases. According to data in the scatter diagram # 3, the coefficient of correlation (R) is +0.94 which shows a strong positive correlation between consumption and income. The coefficient of determination ( $R^2$ ) is 0.89, as shown in model # 1 which represents 89% of the variation in consumption is explained by the variation in income. Model # 1 shows the results of consumption function by using the ordinary least squares method. The first-order linear model is:

$$\hat{C} = 2223 + .67 Y$$

[6]

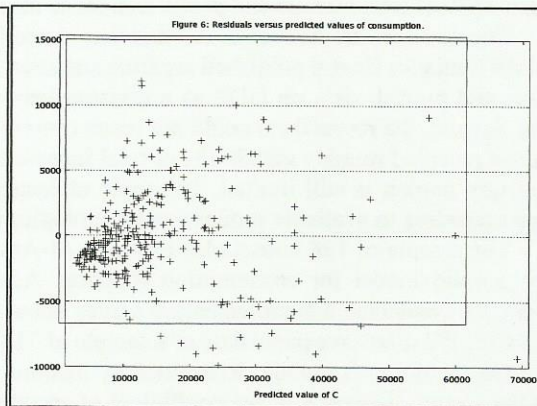
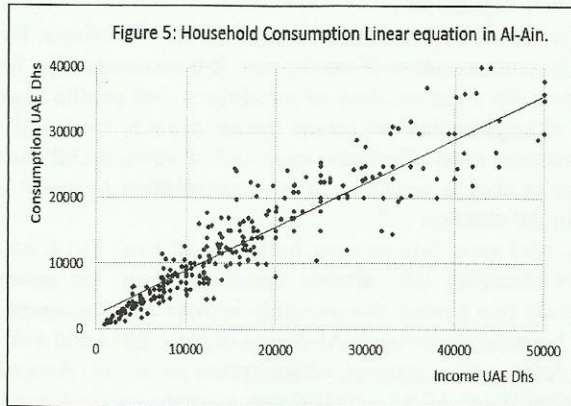
Where  $\hat{C}$  is the predicted value of consumption while the marginal propensity to consume is 0.67 which is justified by macroeconomic indicators mentioned in the section of practical background. The household consumption linear equation is drawn in the figure # 5. Since the value of test statistic for  $\beta$  is  $t = 51$  with p-value of zero, there is strong evidence to say that a linear relationship exists. Additionally, F distribution, derived from ANOVA analysis, gives overwhelming evidence that the model is valid.





The variance of the error  $\sigma_{\epsilon}^2$  must be constant. When this condition is violated, we have a problem of heteroscedasticity. (Keller & Warrack, 2000) suggest a method to diagnose the problem by plotting the residuals against the predicted values of dependent variable. Then, we look for the scatter of plotted points. Figure # 6 shows a case in which  $\sigma_{\epsilon}^2$  is constant. Accordingly, there is no apparent increase or decrease in the variation of the residuals. Precisely, look at the plotted points at  $\hat{C}$  of Dhs 20,000 to 30,000. There is no clear tendency for an increase or decrease. The test of Breusch-Pagan gives an alternative evidence that heteroscedasticity does not present.

The researchers aim to estimate the aggregate consumption function based on panel data. It is necessary to combine time series data of the whole UAE and each emirate (There are seven emirates in the UAE). Then, the Friedman's permanent income hypothesis can be diagnosed and some results for policy makers can be introduced (Bonuedi, 2012; Palley, 2008).



**Model 1: Ordinary Least Squares Method, using observations 1-318**  
Dependent variable: Consumption (C)

	Coefficient	Standard Error	t-ratio	p-value	
constant	2223	326.027	6.8186	<0.00001	***
Y	0.67	0.0129636	51.7336	<0.00001	***
Mean dependent variable	15161.43		S.D. dependent var	11459.33	
Sum squared residuals	4.40e+09		S.E. of regression	3729.764	
R-squared	0.894398		Adjusted R-squared	0.894064	
F(1, 316)	2676.367		P-value(F)	2.6e-156	
Log-likelihood	-3065.483		Akaike criterion	6134.966	
Schwarz criterion	6142.490		Hannan-Quinn	6137.972	

## Analysis of Variance:

	Sum of squares	df	Mean square
Regression	3.72313e+010	1	3.72313e+010
Residual	4.39592e+009	316	1.39111e+007
Total	4.16272e+010	317	1.31316e+008

$$R^2 = 3.72313e+010 / 4.16272e+010 = 0.894398$$

$$F(1, 316) = 3.72313e+010 / 1.39111e+007 = 2676.37 \text{ [p-value } 2.61e-156]$$

## Breusch-Pagan test for heteroscedasticity:

Null hypothesis: heteroscedasticity not present

Test statistic: LM = 82.6545

With p-value = P (Chi-square (1) > 82.6545) = 9.77261e-020

The scattering of household consumption in figure # 4 gives evidence that plenty of households spent beyond their capacity. It can be shown by dots above the 45° line in which consumption is greater than income. Table # 4, again, reveals that households got loans equal to 6.6% of their income and they had to pay loan installments equal to 6.1% of income. They had to withdraw from their previous savings (dissaving) equal to 3% of income. It can be concluded that there is a quite high degree of consumerism in the society.

### CONCLUSIONS

- Plenty of households in Al-Ain are not aware about budgeting their income and expenditures. That leads to personal financial problems in the society.
- The conclusions of the study are limited to the small size of the sample.
- Discussion with the sample led to develop and adjust the household budget to meet the unique requirements of Al-Ain city.
- The paper built a typical household budget in Al-Ain according to a survey in Nov. 2014. The remittance reached 6% of household income, social support was 3%, saving was 17%. Households received loans equal to 6.6% of income and they had to pay installments equal 6.1%. They dis-saved 3% of their income.
- Households spent 22% of their total expenditures on housing, 16% on non-durable goods, 15% on education, 10% on recreation, 5% on medical care, and 8% on each of communication, transport, durable goods and personal services.
- The marginal propensity to consume equals 0.67.
- There is a high degree of consumerism and social solidarity among the members of the Al-Ain society.
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### RECOMMENDATIONS

- The media should play a vital role to educate the society about budgeting their income and expenditures and how to avoid personal financial problems.
- It is important to build or derive a household budget through discussion with a sample of households to take the unique requirements of a given city into consideration.
- It is recommended for the Abu Dhabi Statistics Centre, Al-Ain Office, to enlarge the sample of households and enrich the process of adjusting the household budget when they make a new round of income and expenditure survey. The weights for calculating consumer price indexes should be revised according to the new survey.
- The Abu Dhabi Statistics Centre should collect and publish data on GDP as a division between the compensation of employees and operating surplus.
- The study suggests further research on:
  - The relationship between income structure (resources) and available production technologies.
  - How can consumerism be eliminated? How can the system of social solidarity be improved? How can expatriates be encouraged to invest in their host country?
  - Estimating the aggregate consumption function and testing the Friedman's permanent income hypothesis.

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