

The Effect of Social Structures on Consumption of Beef in Indonesia

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Abstract: This study aims to measure the structure of education in years, employment status, income, gender, region, ethnicity, social capital, religion on beef consumption in Indonesia. The data used in this study was the Indonesian Family Life Survey (IFLS) data. The subject of this study was focussed on individuals in households aged 15-64 years old. The IFLS data used in this study was the IFLS-5 which was released in May 2016. The linear regression model in this study used robust regression. Regression analysis used to estimate the effect of beef consumption. The analysis result showed that beef consumption in Indonesia was influenced by income, ethnicity, occupation, and gender.

Keywords: Beef Consumption, Social Structure, IFLS.

1. Introduction

Consumption is the action or activity to use the item or the services. These actions are based on the subjective facts, rationality, emotions and certain motives of the individual to be known and be understood by the others. Consumption is not only seen to fulfill human physical and biological needs, but it is also related to social and cultural aspects. Consumption is related to matters of taste, identity, or lifestyle. According to Hardinsyah (2007), food consumption at the household level including nutritional knowledge, food purchasing capability, time availability for mothers to manage food, food preferences, and food stock. Each of these factors suspected was determined by the various social demographic factors, economic factors, and the other. With the existence of a social structure, the consumption of food products especially meat is also different depending on the groups and sub-groups contained in the social structure in Indonesia. Family members have an influence on meat consumption behavior. In a family, each family member has a different meat consumption behavior because each family member has different habits in meat consumption. Besides that, the family had the pattern of eating meat on certain days. Repetition of meat-eating behavior continuously which will eventually become a permanent behavior or become a habit (Farhan, 2014).

Consumption of protein from livestock expected to be as much as 6 grams/capita/ day is still not achieved because the daily consumption of protein per capita for meat is only 4,20 grams (6,75 %) (DITJENPKH, 2018). Meanwhile, the recommended protein intake from animal production is 15 grams/capita/day consisting of 9 grams /capita/day from fishery commodities and 6 grams/capita/day. That recommendation was equivalent to 10.3 kg of meat/capita/year from livestock commodities. This shows that the consumption of meat by the people of Indonesia is still very low. The need for protein from animal production in the form of meat especially beef for people community or families who live in environments that have diverse cultures such as in Indonesia needs to develop meat consumption based on the social structure of diversity of local social culture and community/society habits. This phenomenon is to be interesting to furthermore study, regarding the factors that causing changes in meat from livestock production especially beef consumption in Indonesia country has occurred that fluctuated.

2. Materials And Methods

The data in this study used secondary data from the Indonesia Family Life Survey. This survey was illustrated by 83% of Indonesia's population that representation of 13 selected provinces from 26 provinces in Indonesia. The samples were selected using the stratified sampling scheme method based on the province and area (rural-urban area), and from each stratum selected the smaller areas (districts/municipalities), sub-districts and villages at randomized. The selection of provinces as samples was based on maximizing the population

representation that reflects the socio-economic conditions of the Indonesian people in addition to the goal of cost-efficiency.

The subjects in this study were individuals in households aged 15 years or older who were individuals in the Indonesia Family Life Survey (IFLS) study in 13 provinces in Indonesia. This study uses IFLS-5 data in 2014 with the number of households sample that have been surveyed by IFLS totaling 15,900 with the number of individuals of 50,000. The IFLS survey began in 1993 as a baseline, continued in 1997, 2000, 2007 and finally in 2014 that covering 24 provinces in Indonesia except for the eastern provinces of Indonesia. The data collected in this study uses documentation techniques. This study analyzed data related to the research topic by recording directly in the form of longitudinal data on the 2014 IFLS data obtained.

This study uses beef consumption in the household as the dependent variable on the model. While the independent variables include the length of education, employment status, income, gender, region, ethnicity, social capital, religion. The operational limits used in this study as attached in Table 1.

Table 1: The description of the variable

Variable	Description	Unit
Consumption	Household respondents who consume beef whose age 15-64 years old.	Kg/Month
Income	Household head income for one month in the IFLS-5 household in 2014	IDR/ family/years
Gender	The gender of individuals in IFLS-5 households in 2014 is male and female.	D= 1 = for male; D=0 otherwise
Education in years	The total number of years of education taken by individuals in the household	Years
Self-Employed	Status of self-employed workers in IFLS-5 households in 2014	D=1 = Self-Employed, D= 0 otherwise
Worker	The worker status in IFLS-5 households in 2014	D =1 Worker D = 0, otherwise
Free worker	The free worker status in IFLS-5 households in 2014	D=1 Free worker D=0 otherwise
Religion	The religion selected in the survey questionnaire (Islam, Hinduism, Catholicism, Protestantism, Buddhism, and Confucianism and Not Answering).	D=1 Moslem, D=0 otherwise
Region	The region area of origin of individuals in IFLS-5 households in 2014.	D=1 Urban, D=0 otherwise
Social capital	Formal participation calculated from the number of family members participating in activities organized by organizations or hierarchies such as village government, village institutions (LKMD), neighborhood associations (RT/RW) of wife's associations (PKK), etc.	The number of formal participation per household
Ethnicity	Ethnicity was the respondents' rate based on the answers to the questionnaire	D=1Javanese, D =0 oterhwise

Source: Based on the quistioner of Indonesia Family Life Survey 5th 2014,

The analytical model used in this study uses Ordinary Least Square (OLS) regression which is the most commonly used method of estimating regression functions. The OLS criterion is "Line of Best Fit" or in other words the sum of squares of deviations between the observation points and the regression line is minimum. OLS regression in this study was used to calculate the effect of individual beef consumption factors. OLS regression was analyzed using STATA 14 SE software.

3. Results And Discussion

The social structure in this study including social stratification and social differentiation. In this study, social stratification contains income, social capital, age, and length of education in years variable. social differentiation contains gender, ethnicity, occupation, region, and religion variable.

3.1 Social stratification

The statistical description of the social stratification data as attached in Table 2. The income is the variable studied in relation to household beef consumption by income of the head in the household in the 2014 IFLS household every year. In the next OLS model, researchers will find out how far the relationship and influence of income to beef consumption. In Table 3 below.

Table 2: Description of the Social Stratification Variable

Variabel	Mean	Standard Deviation	Min	Max
Income	29.100.000	53.400.000	0	1.000.000.000
Social capital	6,932185	4,232779	1	19
Age	39,9244	11,86782	15	64
Education	9,705948	3,711618	0	18

Source: IFLS5

Table 3: Distribution of Meat Consumption by Income

Income (12 Month)	Frequency	Percent (%)
0 - 30.000.000	1313	73.68
30.000.000 - 60.000.000	354	19.97
60.000.000 - 90.000.000	55	3.18
90.000.000 - 120.000.000	46	2.60
120.000.000 - 150.000.000	3	0.18
150.000.000 - 180.000.000	7	0.41
180.000.000 - 210.000.000	2	0.12
210.000.000 - 240.000.000	8	0.45
240.000.000 – 1.000.000.000	11	0.65
Total	1799	100.00

Source: IFLS5

In Table 3 above, we can see the distribution of household head income in one year. In general, the head of household income in 2014 IFLS households starts from the lowest income of Rp. 0 up to the highest income, Rp. 1,000,000,000 in one year. Income variable from the head of household has an average at Rp. 29,100,000, with a standard deviation of Rp. 53,400,000. The number of heads of households in each income group varies considerably. The income range between Rp. 0 to Rp. 30,000,000 in one year is the largest range income of the head of household, in this study reaching 1313 heads of households or 73.68 %. The head of household with income range between Rp. 180,000,000 to Rp. 210,000,000 is the smallest range income there are 0.12 percent or just 2 heads of households found in the 2014 IFLS household.

The age limit taken in this study is for individuals aged 15-64 years or older. The age variables in this study aim to determine the relationship and influence between the dependent and independent variables, as well as knowing the distribution of individual beef consumption based on age. The description of age based on beef

consumption showed in Table 4. The age range in this study is not too far apart in the amount of frequency. Ages 29 - 35 years have the most frequency 418 families who consume beef (23.24%) while the age with the lowest frequency was 15-21 years as many as 105 families who consume beef (5.83%). The age variable has an average of 39,924 or 40 years with a standard deviation of 11, 868 or 12 years. The youngest individual in the 2014 IFLS household was 16 years old and the oldest was 64 years old.

Table 4: Age Descriptions Based on Consumption

Age	Frequency	Percent
15 – 21	105	5.83
22 – 28	201	11.17
29 – 35	418	23.24
36 – 42	365	20.29
43 – 49	286	15.89
50 – 56	222	12.34
57 – 64	202	11.23
Total	1799	100.00

Source: IFLS5

The length of education in years was an independent variable included in the study. The length of education of an individual in the household was calculated based on the length of the year an individual completes his last education. The length of education was included in the model to find out how much influence and the relationship between education duration and beef consumption. Education is closely related to science and other knowledge that is general and specific that is able to change the outlook and behavior of individuals in general. The highest education level of respondents who consumed beef was at the Senior high school level of 728 households (40,47%), the smallest value in consuming beef was not attending any formal education with only 1 household (0.06%). The average length of individual education in the 2014 IFLS household is 9,706 or 9 to 10 years, which is the level of junior high school (SMP) to senior high school (SMA) with the standard deviation of education is 3,712 or 4 years. The lowest length of education was 0 years (none formal school) and the highest was 18 years Post Graduate (S-2 level).

Table 5: Distribution of Meat Consumption by Length of Education

The length of education	Frequency	Percent (%)
None formal Education	1	0.06
Elementary school (SD)	433	24.09
Junior High School (SMP)	399	22.18
Senior High School (SMA)	728	40.47
Bachelor/Graduated (S-1)	233	12.95
Post Graduate (S-2)	6	0.33
Total	1,799	100.00

Source: IFLS5

Social capital in this study was the formal participation calculated from the number of family members participating in activities carried out by clear organizations or hierarchies such as village government, village institutions (LKMD), neighborhood associations (RT / RW) of wife's associations (PKK), etc. The frequency of families consuming beef based on social capital can be seen in Table 6. The number of families consuming beef based on the most social capital was 232 families (12.9%) with the number of formal participation 7 times, while the lowest frequency was in 13 families or 0.67 percent with 13 times participation.

Table 6: Distribution of Meat Consumption by Social Capital

Social Capital	Frequency	Percent (%)
0 – 3	371	20.63
4 – 7	816	45.37
8 – 11	390	21.69
12 – 15	76	4.23
16 – 19	146	8.11
Total	1,799	100.00

Source: IFLS5

3.2 Social Differentiation

The statistical description of social differentiation data attached in Table 7. Gender was an independent variable in the social demographic characteristics of this study and divided into dummy variables there were male and female that can be seen in Table 8. In the description of the table 8 below, the greatest percentage of gender of household heads to beef consumption is male with 1613 heads of households (89.66%). Female heads of household were the smallest group in 186 (10.34%).

Table 7: Distribution of Meat Consumption Based on Social Differentiation

Variable	Frequency		
Sex	Man (89,66 %)	Woman (10,34%)	
Ethnic	Javanese (27,24%)	The other (72,76%)	
Profession	Self-Employee (37, 63%)	Worker (33, 07%)	Free Worker (29,30%)
Religion	Islam (80, 10%)	The other (19, 90%)	
Region	Urban (59,48%)	Non-Urban (40,52%)	

Source: IFLS5

Table 8: Description of Gender variable Based on Beef Consumption

Sex	Frequency	Percent
Female	186	10.34
Male	1,613	89.66
Total	1799	100

Source: IFLS5

Ethnicity variables in this study were divided into dummy variables. Distribution of dummy variables based on the location of a tribe in the region (island) where the tribe originated. The division of dummy variables into two (Javanese and Non-Javanese). The division of Ethnicity in several regions in Indonesia was to determine the influence and relationship between Ethnicity in each region to beef consumption that can be seen in Table 9. Most of the sample households that consumed beef were Non-Javanese at 1309 households or 72.76%. The Javanese rate were smaller at 490 households (27.24).

Table 9: Distribution of Meat Consumption by Tribe

Ethnicity	Frequency	Percent
Non-Javanese	1,309	72.76
Javanese	490	27.24
Total	1799	100.00

Source: IFLS5

The Religious variables are grouped and made dummy variables based on Islam and the other. The distribution of beef consumption based on religion can be seen in table 10. Religion variables have an average

(mean) of 0.801 with a standard deviation of 0.399. The highest number of respondents who consumed beef was in Islam religion I 1,441 households (80.10%), while non-Islam respondents were 358 households (19.90%).

Table 10: Distribution of Meat Consumption by Religion

Religion	Freq.	Percent
Non-Islam	358	19,90
Islam	1.441	80,10
Total	1.799	100,00

Source: IFLS5

The occupation status in this study was divided into three categories, namely Self-employed, worker, and free workers that can be seen in Table 11. Each status uses a dummy to be analyzed statistically. The dummy categories, namely 1 (self-employee) and 0 (none self-employed), 1 (worker) and 0 (non-worker), and 1 (free worker) and 0 (non-free worker). The self-employee variable has an average of 0.376 with a standard deviation of 0.484. The worker variable has an average of 0.330 with a standard deviation of 0.470. The free worker variable has an average of 0.293 with a standard deviation of 0.455.

Table 11: Distribution of Meat Consumption by Occupation Status

Occupation	Frequency	Percent (%)
Self Employee	677	37,63
Worker	595	33,07
Free Worker	527	29,30
Total	1799	100,00

Source: IFLS5

Occupation status has a difference that was not so far in the frequency of households that consume beef. Self-employee became the most status that consumes beef 677 households (37.67%), Worker amounted to 595 households (33.07), and finally free workers had the smallest frequency at 527 households (29.30%).

Regional variables are grouped and made dummy variables based on urban and non-urban that can be seen in Table 12. Regional variables have an average of 0.595 with a standard deviation of 0.491. This variable has a maximum value of 1 (urban) and 0 (non-urban). The highest sample of beef consumption in urban areas there were 1070 households (59.48%), while Non-urban areas 729 households (40.52%).

Table 12: Distribution of Meat Consumption by Region

Urban	Freq.	Percent
Non-urban	729	40.52
Urban	1,070	59.48
Total	1,799	100

Source: IFLS5

3.3 Estimation Result

Beef consumption can be obtained from questions in the IFLS-5 questionnaire about consumption in households that consume beef which was converted to units of kilograms, based on data during the interview can be seen in Table 13. From Robust regression, the results show that beef consumption influenced by variables of income, gender, ethnicity and worker. Income variable has a significant and negative effect on beef consumption in Indonesia with a p-value of 0.036. The gender variable has significant and positive effect with a p-value of 0.022. Ethnicity has a significant and negative effect on beef consumption with a p-value of 0.046. The worker variable has a significant and negative effect on beef consumption in Indonesia, the p-value is 0.024.

Table 13: Regresi OLS

Variable	Coefficient	Robust Std. Error
Income	-1.330000000*	6.330000000
Gender	0.2340512*	0.1019284
Ethnicity	-0.2526077*	0.1266064
Social capital	-0.0276424	0.0146442
Age	-0.0052721	0.0035004
Self-employee	0.0261868	0.196038
Worker	-0.2699467*	0.1190689
The length of education	-0.0070597	0.0185084
Religion	-0.0349229	0.1538176
Region	0.0872129	0.0910034
Constanta	1.269386	0.3752568
Prob > F	0.2799	
R square	0,0067	
Adj-R squared	0,0012	

Source : IFLS5. Note: Robust t-statistics in beef consumption * means significant at the 5% level, respectively.

There is an omission variable (omitted variable) automatically when building the model there is the free worker variable, this happens because that has a correlation between the variable x and error term, and the free worker variable becomes a comparison variable to occupation status variables.

The R² value in regresi OLS was 0.0067, indicating that the equation of the model in this study is able to explain 0,67% of the factors that influence beef consumption in Indonesia. The Likelihood Ratio (LR) or in the linear regression test is called the F-statistic test in the table above shown from the pro> chi2 value of 0.2799, illustrating that the independent variables simultaneous influence the consumption of beef in Indonesia in the 2014 IFLS.

3.4 The effect of income on beef consumption

The estimation results show that the variable of income gave regression coefficient shows a negative value. Thus, the more income, the less consumption of beef. It is suspected that people with high incomes often do not consume fresh beef, or consume more processed foods made from beef. The consumption of processed products is related to the lifestyle of people who have high incomes shifting their protein needs to modern markets such as supermarkets so that the intensity of purchasing or consumption of beef purchased in traditional markets decreases to adjust to changing tastes and lifestyles. People with high incomes who divert their animal protein needs to the modern market tend to prioritize quality and not too concerned with the quantity and price of beef or processed products purchased. This is in line with the opinion of Amir., et al (2006) which states that changes in income levels will affect the amount of meat consumed even often found with increased income, so people tend to consume goods of better quality. Increased income is one of the factors that drive people to change consumption patterns with changes in better nutritional quality. Increased public awareness about the need to consume foods that have sufficient nutritional value also contributes to an increase in the number of requests and the needs of people for foods that have a high enough protein value, such as meat, milk and eggs (Osak *et al.*, 2014).

The higher level of income will increase the capability of households to buy protein needs to be greater and there was a tendency to meet higher quality needs (Rahayu *et al.*, 2018). Households will be more responsive in consuming commodities when there is an increase in income while households in the HDI (Human Development Index) in the low or moderate area the increase in income will be more allocated to meeting basic food needs first. (Mayasari *et al.*, 2018). The effect of the level of income on the level of consumption has a close relationship, as Rinawati *et al.*, (2014) stated that income influences the level of consumption, so it can be concluded that variation in income can affect variations in consumption.

3.5 Effect of Gender Variables on Meat Consumption

The estimation results show that the variable of Gender gave regression coefficient shows a positive value which that mean the beef consumption were higher in male compared to female. This is in line with the statement by Brown (2005) that men need more energy and protein than women. This is because men do more physical activity than women. Therefore, male calorie needs more than women, so men consume more food. In addition, many women pay attention to their body image so that many of them postpone eating even reducing the portion of food according to their needs in order to have the perfect body portion. That result was contrasted with the habit condition in Indonesia that women as the head of household in terms consumption play an important role in determining the goods or food to be bought for the family because some people in their families have a full role in the food that will be cooked and served to the family. Women also manage more finances in the household, so most food purchases are regulated by women in the household. This is consistent with the opinion Junaedi (2008) states that male and female consumers have in common except for female consumers that have individualistic value orientation influences the desire to pay for food at premium prices.

3.6 The Effect of Ethnicity on Beef Consumption

The ethnicity variable influences the consumption of beef in Indonesia. The estimation results show that the variable of ethnicity gave the regression coefficient shows a negative value which that means the beef consumption was higher in non-Javanese compared to Javanese. Non-Javanese had more consuming beef there are related to culinary or special food, tastes, and customs. For example the Minangkabau ethnic has special food in the form of rendang made from beef. This is in accordance with the opinion of Parulian et al (2014) which states that, ethnicity influences tastes, habits and decisions in consuming beef. There are several factors that influenced beef consumption including ecological and social factors. Ecological/natural factors can also influence habits related to food consumption in certain ethnic groups living in the area (Hardinsyah, 2007). Social factors, one of which are ethnic, influence family decision making on the level of meat consumption on a household scale (Kusuma *et al.*, 2018).

3.7 Effect of Worker Variables on Beef Consumption

The worker variable influences the consumption of beef in Indonesia. The estimation results show that the variable of worker gave the regression coefficient shows a negative value which that means the beef consumption was higher in non-worker compared to worker occupation. That be suspected that the higher the level of occupation in the head of the household will pay more attention to food consumption patterns, especially in terms of health. It is known that beef contains a lot of cholesterol which can cause several diseases. The results of this study are consistent with the results of previous studies conducted by Researchers Al-Shookri et al (2011) who found that there was an inverse relationship between work level and a number of healthy eating attitudes that were consumed. Wulandari and Narmaditya (2015) agreed a significant relationship between occupation and health patterns with nutritional status, income with nutritional status, and diseases related to nutritional status. Family with the head of household occupation with low income generally related to choose the daily basic needs for food. It is different from the family with households that have higher level occupation with higher income that able to buy as secondary and tertiary needs (Diana and Dewi, 2015)

4. Conclusion

Variables Income, ethnicity, occupation status in worker and gender influenced the level of beef consumption in Indonesia. The higher income of the head of the household gave decreasing level of beef consumption. Families with a male as the head of household heads consume gave increasing the level of beef consumption. Non-Javanese ethnic gave higher level of beef consumption. The head of household with the worker as occupation gave more level of beef consumption.

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