



ERASMUS UNIVERSITY ROTTERDAM

Master Thesis Data Science and Marketing Analytics

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# Conspicuous Consumption in Countries with an Emerging Middle Class

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## Abstract

This paper examines conspicuous consumption in emerging countries, particularly with a focus on Indonesia and the Philippines. The study's goal is to understand the impact of the emerging middle class on the conspicuous consumption of different socio-economic groups. K-means clustering was first used to determine the social stratification of each country. It is revealed that Indonesia is a dual-segment market comprising of the rich and the non-rich. In contrast, the segments of the Philippines are analogous to the traditional socio-economic hierarchy of the poor, middle class and the rich. These clusters were then included in a multiple linear regression to study the interaction between different clusters and state-level median income. It was found that affluent households in Indonesia decrease their expenditure on visible goods as local median incomes increase. There is also evidence that the emerging middle-class in the Philippines influences poorer households to increase their visible consumption.

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# 1 Introduction

The global middle class is expanding rapidly, with 160 million households added to the middle class every year (Kharas, 2017) . These households are expected to spend significantly more on visible and status goods as previous studies theorise that the expenditure share on such goods generally increases with household income. The expenditure shares on visible goods also increase when there is economic growth (Kamakura & Du, 2012). Visible consumption is linked to the concept of conspicuous consumption, which involves purchasing goods that convey economic status (Veblen, 1899). The growth of the middle class is also likely to impact the visible consumption habits of other socio-economic groups, especially if they are perceived as a reference group or a group that can influence the behaviour of others. Businesses that understand the dynamic between the growing middle class and visible consumption of the other socio-economic strata would also be able to target segments other than the middle class itself. This would allow businesses to diversify and possibly increase their market share. However, businesses would first need to identify how different countries are socially stratified to understand the different relationships between the visible consumption of the middle class and other socio-economic groups.

This paper studies the social stratification of two specific emerging countries, Indonesia and the Philippines. Most studies conducted on emerging markets primarily focus on Brazil, Russia, India and China (BRICs). However, the Southeast Asian region also has numerous market opportunities. It is forecasted that the region will have a steady post-coronavirus recovery growth rate of 4% for the next decade, with Indonesia and the Philippines being two of the fastest-growing countries in the region. Other than their growth trajectory, Indonesia and the Philippines have many similarities, with both of them being archipelagos and the two most populous nations in the region. However, based on recent economic data, the GDP per capita in Indonesia is 18% higher than that of the Philippines. The two countries also have had fairly different economic policies, with Indonesia being relatively more open to foreign investment. Although income inequality and wealth inequality are problems in both countries, Indonesia was cited as the sixth most unequal country in the world as the richest 1% control almost half of the country's wealth. The Philippines fares slightly better

than Indonesia in this aspect. Therefore, the comparison of these two countries allows for a broader understanding of emerging countries with different economic characteristics. In light of the phenomena of economic growth and the emerging middle class, the main research question is formulated as such:

**“How does rapid economic expansion and an emerging middle class impact conspicuous consumption patterns in a country?”**

The research question also allows for the following relevant questions to be answered.

- 1) Which market segments do various consumption patterns reveal?
- 2) Does the emerging middle class have an impact on the visible consumption patterns of other socio-economic classes?
- 3) How does the relationship between the emerging middle class and the visible consumption of other socio-economic classes differ in countries that are segmented differently?

Therefore, this paper offers two main contributions. The first is the identification of different social strata based on conspicuous consumption patterns in emerging countries. Socio-economic status is essential for determining reference groups since emerging countries are theorised to constitute two varied segments that account for the affluent and non-affluent reference groups (Burgess & Steenkamp, 2006). However, other studies dispute this and demonstrate that some emerging countries can constitute three different segments (Kamakura & Mazzon, 2013). The consumption habits of a household were also shown to be closely tied to its segment. This thesis uses k-means clustering to understand the social stratification of Indonesia and the Philippines. Cluster analysis is conducted on two waves of data to observe the changes in the distribution of strata. Indonesia is found to support the dual-market hypothesis as one segment is affluent, and the other constitutes poor and middle-income households. However, the market segments in the Philippines reflects the social hierarchy of the poor, middle class and the rich.

Secondly, the paper illustrates the relationship between median income and the conspicuous consumption of different socio-economic strata in emerging countries. The median income is important in the context of this study as it represents the emerging middle-class. Previous

literature has shown that the consumption of non-affluent households had a positive association with the incomes of wealthy households (Bertrand & Morse, 2016). This is known as the trickle-down effect, in which wealthy households are presented as reference groups. There was no significant relationship between the median incomes and the consumption of the rich, thus implying that the rich do not engage in downward social comparison. However, the results obtained from this study are not fully applicable to Indonesia and the Philippines, given that the study was conducted in a developed country like the United States. Unlike the United States, Indonesia and the Philippines have been experiencing strong and sustained economic growth for the past decade. This suggests that the trickle-down effect might probably have a different impact in Indonesia and the Philippines. The thesis uses the clusters obtained from k-means clustering in a multiple linear regression to observe the impact of increasing state-level median incomes on the visible consumption of different groups. Affluent Indonesian households are found to decrease their visible expenditure when there is an increase in local median income. This dynamic was not mirrored for the Philippines as there was no significant relationship between the local median incomes and the visible consumption of wealthy households. Conversely, poor Filipino households do engage in more visible consumption when the local middle class becomes richer.

The rest of the paper is organised as follows. Section 2 discusses the findings of existing literature and their applicability to emerging economies. Section 3 illustrates the paper's theoretical framework by indicating that an increase in state-level median income represents economic growth and the resultant growth of the middle class. The consumption of visible goods represents conspicuous consumption. Hypotheses regarding the relationship between the state-level median income, visible consumption and a household's socio-economic status are then formulated. Section 4 describes the data preparation process and provides descriptive statistics of the datasets. This is followed by Section 5 which explains the methods used in the study. Section 6 presents the results of the study and discusses the findings. Lastly, Section 7 provides the academic and managerial implications of these insights. Limitations of the study and future areas of research are also highlighted in this section.

## 2 Literature Review

This section provides the foundation for the rest of the paper. First, the overarching concept of conspicuous consumption and its interaction with other phenomena and concepts will be discussed extensively. This will be followed by the background for other relevant theories, such as the relative income hypothesis. There will also be a discussion of the use of the methodology in previous literature that analyses consumption patterns and the impact of different reference groups on others.

### 2.1 Conspicuous Consumption and Economic Expansion

Conspicuous consumption is a concept that was first officially introduced by Veblen (1899). Since then, this theme has been central to numerous papers. In these studies, products deemed "conspicuous" are often perceived as readily visible goods. Visible consumption is defined as the consumption of goods easily observed by others in social settings (Charles et al., 2009). Most of these goods are also mobile. Moreover, increased or high consumption of these goods suggests an improvement in status or high status. Charles et al. (2009) and Heffetz (2011) surveyed participants on the visibility of different products. Both surveys identified apparel, accessories, watches, jewellery, and vehicles as highly visible. However, both studies were conducted in the United States and might not be fully applicable to the context of developing countries such as Indonesia and the Philippines. Roth (2014) conducted a similar visibility survey in Indonesia by using the formats of the previous two surveys. It was found that clothing, vehicles, education, tobacco and food consumed outside one's home are perceived to be highly visible. This is almost similar to the findings of the previous surveys in the United States, except that education is considered to be more visible.

Macroeconomic events such as economic expansion profoundly impact conspicuous consumption since it is used as an indicator of economic status while also requiring a significant amount of money for its purchase. Economic expansions and conspicuous consumption both involve society as a whole. Kamakura and Du (2012) found that budget shares for "positional goods" or goods that conveyed the status of individuals are likely to fluctuate according to economic conditions. Other than deriving utility from the good itself, consumers

derive utility from spending more on positional goods than others (Frank, 1985). During an economic boom, mean expenditure increases and thus, individuals are inclined to spend more on positional goods to maintain their rank and image in a societal context. However, conspicuous consumption is expected to decrease during periods of economic downturn as worse-off individuals have to reallocate their budget to basic needs. Consequently, there will be less relative consumption or competitive consumption as there is a greater need to economise (Flatters & Willmott, 2009).

Engel curves are also used to illustrate the relationship between positional goods and macroeconomic events (Kamakura & Du, 2012; Aitchison & Brown, 1954). The primary purpose of the Engel curve is to describe how household expenditure on an item varies with household income. Engel curves are upward sloping for positional goods such as clothing and jewellery since the expenditure share of these items increases with the total household budget. The curve for visible and non-essential goods shifts upwards during periods of economic growth and downwards during periods of economic downturn. However, these Engel curves were constructed in the context of the United States, which is a developed economy that no longer experiences the high growth rates that Indonesia and the Philippines currently experience. This implies that the household budget allocation in the two emerging countries might not respond to economic growth in a similar manner to that of mature economies.

## **2.2 Conspicuous Consumption and Reference Groups**

An abundance of literature studies the relationship between conspicuous consumption and various reference groups (Charles et al., 2009; Bearden & Etzel, 1982; Childers & Rao, 1992). A reference group is defined as a group that is perceived as having a key influence on others' decisions and behaviour (Park & Lessig, 1977). There are numerous types of reference groups, such as associative and dissociative reference groups. Associative reference groups refer to groups that individuals strive to be identified with, while the latter refers to groups that individuals attempt to distance themselves from (White & Dahl, 2006). These reference groups exist across different domains such as gender, class and even ethnicity. The theory of reference groups also explains the phenomenon known as "Keeping up with the Joneses", which

describes how social comparisons drive individuals to appear on par with their neighbours (Luttmer, 2004). The "Joneses" represent an associative reference group that individuals of similar or lesser means aspire to emulate. For example, a relatively poor household might be inclined to compare themselves with middle-class households in their neighbourhood. This is corroborated by research that has found that the poor engage in upward social comparisons with slightly wealthier households but not highly affluent households (Colson-Sihra & Bellet, 2018; Runciman, 1966).

There is also existing literature which studies groups that consider the "Joneses" as a dissociative reference group. Bursztyn et al. (2017) studied the demand for platinum credit cards by high-income customers in Indonesia. A platinum card functions as a signal of high status since eligibility requirements meant that the lowest-income platinum card owner had an income that fell in the top 10% of Indonesia's income distribution. The researchers conducted an experiment by introducing another card with the same features as the platinum card but looked different and did not have the same visibility. The new card's demand was lower than that of the platinum card, implying that the platinum card was primarily sought for its status signalling effects. This finding is attributed to the observation that the cards were mostly used in social settings. Furthermore, when the experiment allowed for lower-status consumers to use the platinum card, the higher-status customers sought a more exclusive good as the signalling value of the card had diminished. This implies the need for individuals of a certain status to differentiate themselves from the norm.

In the context of emerging countries, socio-economic status is essential in the identification of different reference groups. Burgess and Steenkamp (2006) noted that different social classes in developing countries have clear distinctions between each other and do not overlap or interact as much as other types of societies. This results from the large variation in incomes and living standards which can be represented in the form of two broad segments. One segment is made up of elite individuals who primarily reside in urban areas and have a relatively higher purchasing power. The other segment accounts for most of the emerging country's population and has much lower purchasing power. This emphasises that the elite's purchasing trend differs significantly from that of the mass market or the norm. However,



the dual-market theory does not account for the burgeoning middle class in several emerging countries. Kamakura and Mazzon (2013) found that Brazil's market is comprised of three broad segments, which mirror the traditional socio-economic hierarchy of the poor, middle-class and the rich. The consumption patterns of the segments varied significantly, with the lower and middle segments spending more on utilitarian brands than the rich. This demonstrates that socio-economic status is vital in market segmentation because it provides marketing insights for businesses.

### **2.3 Relative Income Hypothesis and Expenditure Cascades**

The notion of relativity is also central to the concepts of relative income hypothesis and expenditure cascades. The relative income hypothesis (Duesenberry, 1949) posits that a household's neighbours influence its consumption patterns. It was also argued that this concept is driven by a household's desire to improve its social standing. Frank et al. (2014) developed a variant of the relative income hypothesis known as the "Expenditures Cascades" hypothesis. The model suggests that a given household's consumption has a positive relationship with the consumption of the household that has slightly lesser household income than them. This represents a "trickle-down" of consumption, whereby the savings of the less affluent is inversely related to the income of the affluent. As a result, the non-rich population feels obligated to spend more on positional goods to advance their social status (Frank, 2013).

Bertrand and Morse (2016) found that consumption of non-affluent in the United States increased when exposed to the consumption of affluent households. This exposure results from rising inequality as incomes at the top of the income distribution have increased significantly compared to those at the bottom of the income distribution. The study calculates percentiles of income distributions for each state and year. Households with an income above the 80<sup>th</sup> percentile were classified as affluent, whereas the rest were considered non-affluent. In addition to increasing consumption, non-rich households also increase the proportion of their budget spent on visible goods. Conversely, state-level median incomes were found to have no significant effect on the consumption of poorer households. There was also no statistical relationship between the consumption of the affluent and incomes of the non-

affluent. However, the results obtained from this study are not fully applicable to Indonesia and the Philippines, given that the nature of the economies is significantly different. Economic growth in the United States has stagnated in the last few decades, whereas it is still relatively strong in Indonesia and the Philippines. Incomes have increased substantially for significant portions of the population in both emerging countries. Therefore, it is likely that trickle-down consumption has a slightly different impact in Indonesia and the Philippines.

## 2.4 Analysis of Consumption Patterns

Consumption patterns have been analysed using a variety of methods such as unsupervised clustering and latent class analysis. Such analysis is popular in the context of studying electricity consumption profiles (Jin et al., 2017; Kwac et al., 2014). K-means clustering is one of the algorithms used to cluster and identify segments based on consumption trends. Other than identifying and interpreting the segments, previous papers have found that evaluation of clusters is necessary since it allows for the validity of the clusters and their application in market segmentation techniques. However, using only one metric for evaluation can result in an inaccurate selection of clusters and thus, usage of multiple metrics is encouraged. Clustering validity is especially relevant in the context of clustering household data since these clusters would be representative of a whole country.

The dynamic between consumption patterns and socio-economic class in emerging countries have also previously been studied. Kamakura & Mazzon (2013) devised a framework to identify and classify the Brazilian population into different socio-economic strata. They achieve this by implementing a latent class model that is dependent on social class and permanent income. The former is related to demographic variables such as the household head’s educational attainment and occupation, while the latter indicates the economic endowment of the household. The resultant strata were also identified by their different consumption patterns, emphasising the link between socio-economic status and consumption in emerging countries. Hence, consumption patterns can be used to identify distinct social strata in Indonesia and the Philippines.

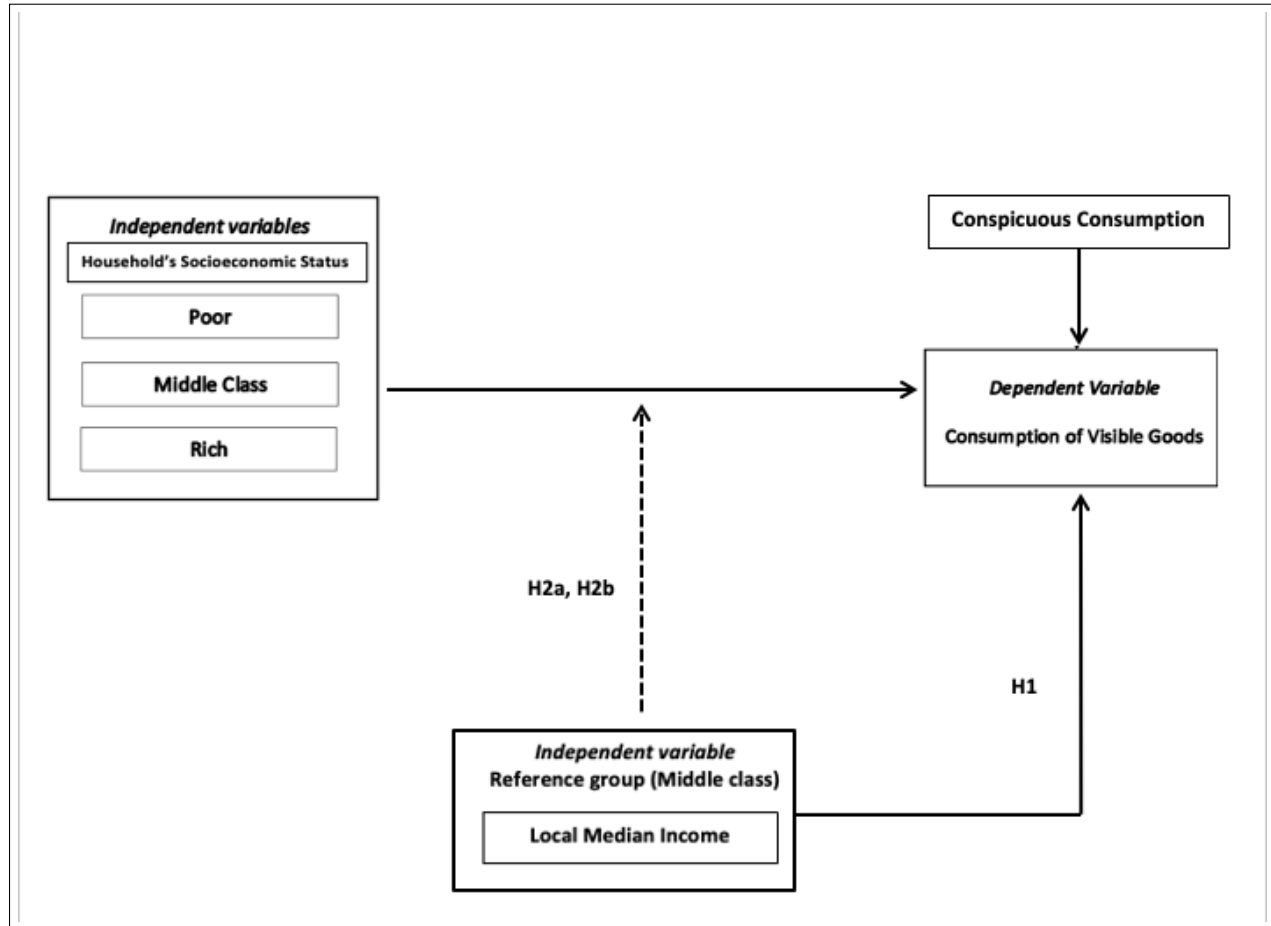
## 2.5 Measuring Impact of Reference Groups

Several empirical studies investigate the impact of reference groups on conspicuous consumption. Charles et al. (2009) analysed the impact of race on the conspicuous consumption of individuals. An ordinary least-squares (OLS) regression was first used to determine the impact of racial differences on visible consumption. The equation for the regression included dummy variables that indicated the race of the household head, the household's permanent income and a vector of demographic variables such as the age of household head and state-year effects. However, due to the poor quality of the data used, permanent income was replaced by total expenditure. The permanent income hypothesis also supports this replacement as it theorises that consumption patterns result from the expectation of future income (Friedman, 1957). This emphasises that household expenditure is a good substitute for permanent income. Furthermore, the prevalence of the informal economy in Indonesia and the Philippines suggests that household expenditure might be a better measure of household wealth than the income reported in the survey.

There are other studies that examine the impact of reference groups using econometrics. Bertrand and Morse (2016) implemented an OLS regression similar to that of Charles et al. (2009). However, the former includes multiple interaction terms between the different income percentiles. This inclusion aimed to examine the impact of exposure to the incomes of affluent households on the consumption patterns of the non-affluent. The regression also takes into account fixed effects of a location and period. This allows the study to focus on the income distribution and reference incomes in each state-year cell. Accounting for location and time fixed effects is especially relevant for Indonesia and the Philippines since there is high income inequality between the countries' different regions.

### 3 Conceptual Framework

Figure 3.1: Conceptual Framework



This paper focuses on three central themes – conspicuous consumption, socio-economic status and reference groups. While this framework might be relevant for many countries, there will be a focus on developing countries that have experienced continuous economic growth. These economic expansions have led to a redistribution of the population in terms of socio-economic status as the middle class expands significantly. Therefore, the relationships between the themes might not be identical to that of developed countries.

Existing literature has found that economic growth leads to increased conspicuous consumption (Kamakura & Du, 2012). Based on Figure 3.1, economic growth and the resultant growth of the middle class is represented by an increase in state-level median income, whereas

conspicuous consumption is represented by an increase in expenditure or consumption of visible goods. Both Indonesia and the Philippines have experienced sustained economic growth between the years 2006 to 2015. These years correspond to the two different waves of data in the study. As mentioned in the previous section, it is theorised that economic growth leads to a general increase in the consumption of visible goods (Kamakura & Du, 2012). This leads to the following hypothesis.

**H1: The consumption of visible goods increased in the second wave as a result of the increase in state-level median income that occurred with economic growth.**

Figure 3.1 illustrates that median income has a moderating effect on the relationship between conspicuous consumption and the socio-economic status of a household. In order to understand the impact of socio-economic status on conspicuous consumption, the middle class can be viewed as a reference group for both the poor and the rich. Research has found that the poor are most likely to compare themselves to middle-class individuals instead of the rich since the middle-class habits are more tangible (Colson-Sihra & Bellet, 2018). However, the rich are inclined to view the middle class as a dissociative reference group that they strive to distinguish themselves from (White & Dahl, 2006). The need for differentiation might encourage the rich to engage in increased visible consumption (Bursztyn et al., 2017). Thus, social image concerns lead both the poor and the rich to increase conspicuous consumption. Given the above, the hypotheses are formalised as follows:

**H2a: The emerging middle class is an associative reference group that drives poor households to increase their consumption of visible goods.**

**H2b: The emerging middle class is a dissociative reference group that drives rich households to increase their consumption of visible goods.**

## 4 Data

The data used in this paper is from the Indonesian Family Life Survey (IFLS) and the Family Income and Expenditure Survey (FIES) from the Philippines. A cross-sectional approach is implemented as data from two different periods is used to analyse the evolution of consumption patterns in these countries. For Indonesia, the years 2007 and 2014 are compared, while the years 2006 and 2015 are compared for the Philippines. The first wave corresponds to a period of subdued economic growth resulting from the global financial crisis. In contrast, the second wave corresponds to sustained economic growth and global post-crisis recovery. These surveys include a detailed breakdown of the participating household's expenditure and its relevant economic and demographic details.

The IFLS is a socio-economic and health survey that has been conducted over four different waves, with the first wave starting in 1993 and the subsequent ones being held in 1997, 2000, 2007 and 2014. The survey is a product of the collaboration between RAND Corporation, the Center for Population and Policy Studies (CPPS) of the University of Gadjah Mada and Survey METRE. It represents approximately 83% of the Indonesian population, with participants from 13 different provinces. This paper makes use of data from the fourth (IFLS-4) and fifth wave (IFLS-5).

The FIES was first conducted in 1957 by the National Statistical Office and is now conducted every three years by the Philippines Statistical Authority (PSA). It is used to track poverty and income inequality in 17 different administrative regions. The survey is carried out two separate times using different questionnaires with an identical set of questions. Therefore, the reference period for each round was the preceding six months.

### 4.1 Data Preparation

The formatting of the observations in the datasets had to be changed in order to ensure consistency. Variables were created or modified to allow for simpler analysis. The categorical variable "Education of Household Head" had several different levels. Therefore, another factor variable with six different levels was created as a more straightforward substitute. The levels

include educational milestones such as elementary school, high school, university and also account for individuals who had no education. The IFLS dataset for Indonesia does not provide the aggregate household expenditure and instead had to be computed manually. The calculations are based on documentation from RAND, which is the organisation that conducts IFLS. There is also no aggregate variable that indicates the total household income or any documentation which provides insights on its calculation. Therefore, household expenditure is used as a proxy of household income in the case of Indonesia. A categorical variable was also created to indicate if the household participated in both waves of IFLS.

#### **4.1.1 Definition of Visible Consumption and Expenditure Categories**

This paper uses a similar approach to other studies by using visible consumption to measure conspicuous consumption (Charles et al., 2009; Kaus, 2013). This meant that relevant expenditure categories had to be classified as visible consumption. As mentioned in the previous section, the visibility of goods differs according to cultural contexts. Therefore, the classification by Roth (2014) is used, whereby clothing, personal transport, education, food consumed outside of the home and tobacco are deemed as visible goods. A similar survey is not available for the Philippines. However, the classification for Indonesia is most likely to apply to the Philippines since both countries share similar cultural traits due to their geographical proximity and rapidly industrialising economies.

The expenditure variables in both datasets were converted to 2010 PPP values. This was done by obtaining the consumer price index values for both years and then dividing these values by the deflator. Another critical step was the transformation of the variables since many of these variables originally had right-skewed distributions. All of the expenditure variables were first given an increment of 1 to remove observations that were 0 and then were logarithmically transformed. This was done in order to improve the performance of the k-means clustering algorithms and other methods. The logarithmically transformed variables were then scaled and centred. Different categories of visible goods were also aggregated to create a new variable, "Visible\_Consumption", to account for total visible consumption for each household.

Table 4.1 shows the percentage of household expenditure allocated to the different categories of goods for both waves and countries. There was an increase in the expenditure share for visible goods in the second wave as compared to the first wave. However, there was a more significant increase for the Philippines than Indonesia. Overall, there was no drastic change in the expenditure shares for the different categories over the two waves for both countries.

Table 4.1: Expenditure Shares for Different Categories

	Indonesia - IFLS		Philippines - FIES	
	2007	2014	2006	2015
<b>Visible Consumption (%)</b>	<b>24.10</b>	<b>24.73</b>	<b>16.02</b>	<b>19.51</b>
Clothing and Footwear (%)	4.88	3.01	2.30	2.37
Personal Transport (%)	4.92	5.94	8.20	6.20
Education (%)	7.14	6.83	2.82	2.68
Food out (%)	1.90	2.92	4.18	6.72
Tobacco (%)	5.25	6.02	1.34	1.54
<b>Non-Visible Consumption (%)</b>	<b>75.90</b>	<b>75.27</b>	<b>83.98</b>	<b>80.49</b>
Food (%)	55.01	54.94	50.46	50.51
Housing (%)	12.78	10.03	13.59	12.10
Other (%)	8.11	10.30	19.93	17.88

#### 4.1.2 Socio-economic Status and Reference Income Variables

The paper also focuses on the impact of an emerging middle class on the visible consumption of other socio-economic classes. In order to address the research goal, socio-economic status and reference income had to be defined in the context of the two datasets. This paper uses two socio-economic classification systems, with the first being determined by income percentiles and the second being determined by k-means clustering. The first classification system is similar to that of Bertrand and Morse (2016). Households with an income above the 80<sup>th</sup> percentile of the income distribution were classified as affluent, and the rest as non-affluent. In the context of this paper, the non-affluent category is further broken down into the middle-class and the poor. Households with an income below the 50<sup>th</sup> percentile are considered poor, while the remaining proportion is designated as the middle-class. The process of the second classification system is described in detail in Section 6.1.

The 50<sup>th</sup> percentile and 80<sup>th</sup> percentile in income distribution were computed for each province and year to classify the households accordingly. These values were compared to the



household income or expenditure of each household. Two other categorical variables were then created to indicate if the household had an income below the 50<sup>th</sup> percentile or above the 80<sup>th</sup> percentile. These two categorical variables indicate the socio-economic status of each household. Additionally, the 50<sup>th</sup> percentile in income distribution signifies the reference income for households since it represents the middle class. These constructed variables are reflected in Table 4.2, which shows an overview of the variables that are used in this study.

Table 4.2: Overview of Key Variables

Variable	Description	Included in both FIES and IFLS	Manually Added into Dataset
<b>Categorical Variables</b>			
Year	Year that survey took place	Yes	No
Province	Unique identifier of province or region	Yes	No
Fsize	Household size	Yes	No
National_income_decile	Household income percentile	FIES only	No
Gender_hh	Gender of household head	Yes	No
RecodedEdu	Recoded variable that indicates household's head educational attainment	Yes	Yes
Lessthan50thPercentile	Indicates if household income is below 50th Percentile for specific province and time period	Yes	Yes
Morethan80thPercentile	Indicates if household income is above 80th Percentile for specific province and time period	Yes	Yes
PanelData	Indicates if household was included in survey for both waves	IFLS only	Yes
Age_hh	Age of household head	Yes	No
<b>Numerical Variables</b>			
Totinc	Total monthly household Income	FIES only	No
HHexp	Total monthly household Expenditure	Yes	No
Foodx	Total monthly food expenditure	Yes	No
Foodoutx	Total monthly expenditure spent on food outside of home	Yes	No
Tobaccox	Total monthly expenditure spent on tobacco	Yes	No
Clothingx	Total monthly expenditure spent on clothing, footwear and other apparel	Yes	No
Educationx	Total monthly expenditure spent on educational fees	Yes	No
Pers' Transportx	Total monthly expenditure spent on personal transport fees	Yes	No
Visible_consumption	Aggregate expenditure spent on visible goods	Yes	Yes
50thPercentile	50th Percentile Income for specific province in a specific year	Yes	Yes
Weights	Survey weights that are used to obtain a certain portion of the population that is of interest	Yes	No

Table 4.3 shows the descriptive statistics of some of the variables. The average household expenditure has increased over the years in both Indonesia and the Philippines. Average household size and average age of a household head is also higher in the Philippines as compared to Indonesia. The number of households used for the analysis is also listed in the table.

Table 4.3: Descriptive Statistics of Datasets

	Indonesia - IFLS		Philippines - FIES	
	2007	2014	2006	2015
Number of Households	7,968	15,020	38,198	41,494
Average Household Size	4.13	4.05	4.85	4.66
Average Household Expenditure	\$ 1,628.93	\$ 2,217.18	\$ 3,723.98	\$ 3,801.96
Household Head Age	45.45	44.56	48.32	51.36

## 4.2 Engel Curves for Visible Goods

Engel Curves illustrate the relationship between economic growth, total household expenditure and expenditure of different goods. It also allows for an understanding of the dynamic between necessity and visible consumption as the slope of the Engel curve indicates the necessity of a visible good. The Engel curve is downward sloping for an essential good but is upward sloping for non-essential goods (Kamakura & Du, 2012).

Figure 4.1: Engel Curves for Visible Expenditure in Indonesia

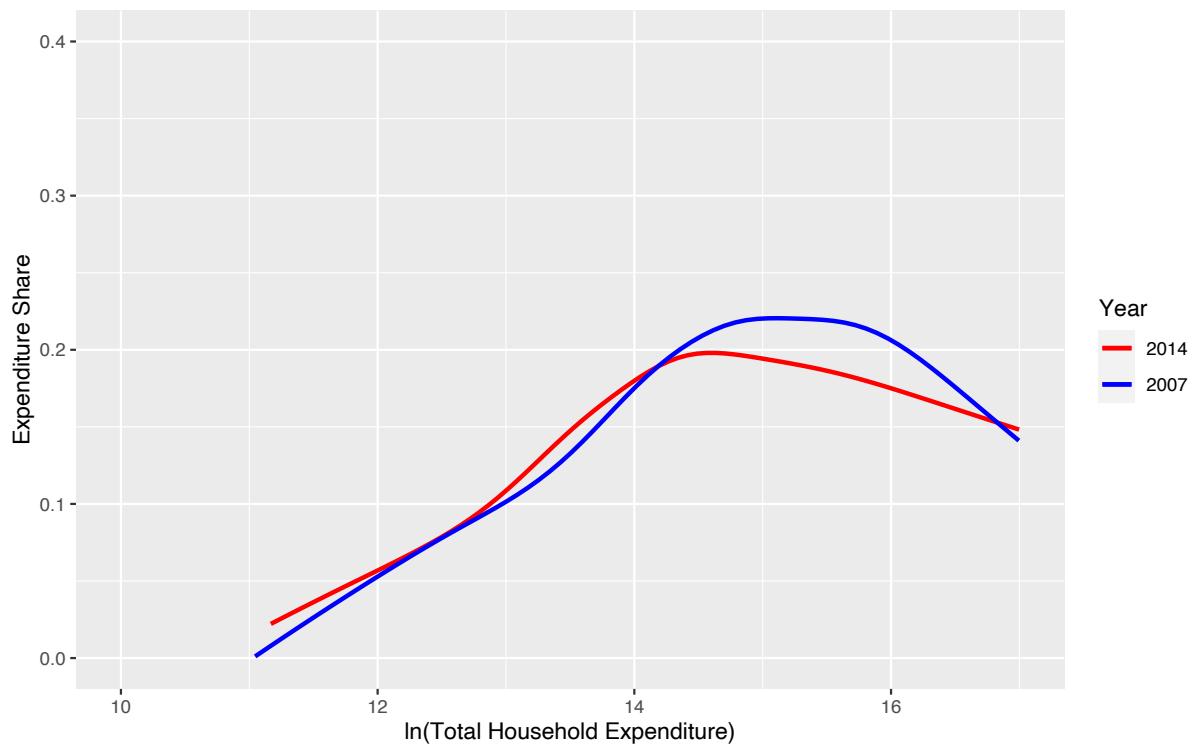
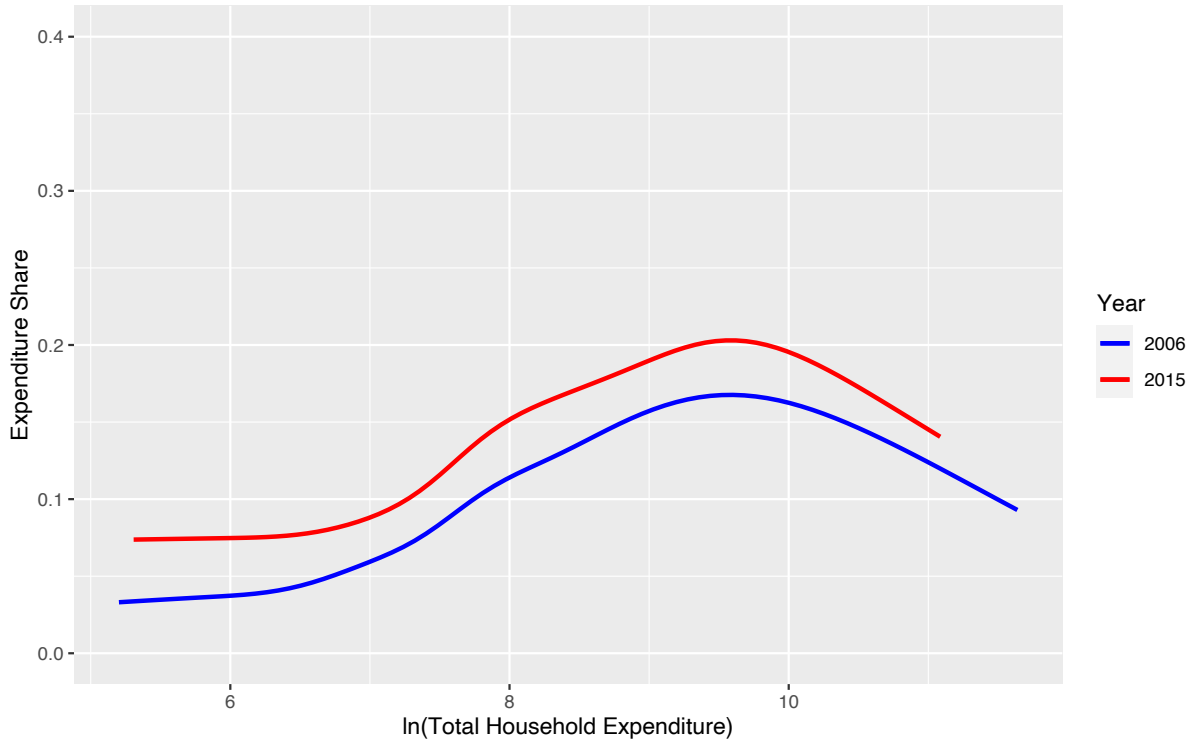


Figure 4.2: Engel Curves for Visible Expenditure in the Philippines



Figures 4.1 and 4.2 show the Engel curves for visible goods for both countries. The Engel curves are obtained by the regression of log visible expenditure on log household expenditure, with household controls included as an instrument. The x-axis of the Engel curve represents the logarithmic transformation of total household expenditure, whereas the y-axis represents the share of expenditures for visible goods. The blue lines represent the Engel curves derived from the first wave, whereas the red lines represent the second wave. The Engel Curve for visible goods in both countries has a general upward sloping trend but starts to slope downwards at very high levels of household expenditure. This suggests that most households perceive these visible goods as more non-essential but highly affluent households perceive these goods as more essential. Figures A.1 and A.3 support this finding as the Engel curves for most of the different visible goods show a similar trend.

The Engel curve for the Philippines noticeably shifts upwards in the second wave compared to Indonesia, which only shows a slight shift on the lower bounds of the curve. This means that there is a more significant increase in visible expenditure share in the Philippines than

that of Indonesia despite the sustained economic growth in both countries. Furthermore, the 2014 Engel curve for Indonesia has flattened considerably at higher values of total household expenditure than in 2007. This means that wealthy households in Indonesia have reduced their expenditure share of visible goods and perceive these visible goods as more essential than before. The Engel curves for Indonesia are also generally steeper than the curves for the Philippines, which imply that the general population in Indonesia perceive visible goods as less essential than the general population of the Philippines.

## 5 Method

As stated in the previous sections, the paper focuses on identifying key visible consumption patterns and studying the impact of the emerging middle class on visible consumption patterns. K-means clustering and regression techniques will be used to answer the research questions stated in section 1. This particular section explains both methods in detail and the rationale of using these methods for the study.

### 5.1 K Means Clustering

K-means clustering identifies key patterns of visible consumption and market segments in Indonesia and the Philippines. The clusters identified from the clustering algorithm will be then used in a regression analysis that allows for an understanding of the relationship between the rising middle class and a cluster's visible expenditure.

The K-means algorithm (MacQueen, 1967) is an unsupervised machine learning algorithm since it detects patterns in data that is not labelled. This technique divides data into  $k$  groups that are of similar variance.  $K$  points are first chosen to be the centres of the initial cluster. This is then followed by an assignment of each observation to a particular cluster. Observations are assigned to the cluster that has the closest mean as the Euclidean distance is computed. The centres of the cluster are then updated based on the centroid of the points found within the cluster. This iterative process stops until the centres remain constant or the within-cluster sum-of-squares (WCSS) is minimised, implying that the best clusters have been found.

This study employs the clustering algorithm on different visible expenditure variables such as clothing expenditure and tobacco expenditure. These variables are used to find distinct trends of visible expenditure that represent one particular market segment or socio-economic stratum. The clusters will be then used in a regression analysis that allows for an understanding of how a cluster's visible expenditure is affected by an increase in state-level median incomes. This would highlight the impact of the emerging middle class on the visible consumption habits of different socio-economic groups.

The k-means algorithm was selected over other clustering algorithms as it works well with large datasets such as the FIES and IFLS datasets. Other clustering algorithms, such as hierarchical clustering, do not work well with large datasets as they compute the distance between every observation. This would entail a high computational cost. K-means clustering can also adapt to clusters of different shapes and sizes, which is vital since it allows small segments to be identified. However, an additional consideration for k-means clustering is selecting the number of clusters before implementing an algorithm. Ideally, an optimal value of k has to be chosen. The following section explains the various methods used to determine this particular value.

### 5.1.1 Determining the Optimal Number of Clusters

There are a few methods that are used to select the optimal k value. This includes the elbow method and the silhouette score. The elbow method is based on identifying an angle that appears like an “elbow” on a plot of WCSS against k. This particular point represents a point at which WCSS starts to decrease with an increasing value of k. Equation 1 represents the equation for WCSS, which is the square of the difference between the observation,  $x_i$ , and the sample mean in cluster j,  $\mu_j$ .

$$WCSS = \sum_{j=1}^k \sum_{x_i \in C_j} \|x_i - \mu_j\|^2 \quad (1)$$

Silhouette score is another method that is used to select the k value. The silhouette score measures an observation’s similarity to its own cluster compared to other clusters. This involves the concepts of cohesion and separation, whereby the former is based on the average Euclidean distance between each point and the other points in the cluster. Separation is a measure of the Euclidean distance between the observation and the closest point from a different cluster. The silhouette coefficient falls between the range of -1 to 1, with a positive and higher value indicating that the observation is in the correct cluster. A score that is closer to 0 suggests that the observation is too similar to another cluster, whereas a score closer to -1 indicates that the observation has been allocated to the wrong cluster. Therefore, a k value with the highest silhouette coefficient is then selected.

### 5.1.2 Evaluation of Clusters

It is crucial to evaluate the validity of the clusters, as the clusters are used to inform marketing decisions. Cluster validation allows for the evaluation of the quality of the clusters. Internal cluster validation and external cluster validation are two types of validation that have been studied so far.

Internal cluster validity evaluates the quality of the clusters without having to refer to any external indicators or information. Silhouette coefficient is one of the methods of assessing the internal validity of a cluster. This can be done by calculating the average silhouette width for the clusters. A higher value would indicate that the observations have been assigned to the correct cluster. The Dunn Index (Dunn, 1973) is another internal validity measure. It computes the distance between each of the observations in the cluster and the observations found in the other clusters. The minimum value of the pairwise distance is then used as the separation measure. This is represented by the numerator of equation 2. The distance between the objects within the cluster is then computed, with the maximum within-cluster distance indicating the cluster's compactness. This is represented by the denominator in equation 2. The Dunn index is then obtained by division of the inter-cluster separation by the within-cluster compactness. A high value indicates compact and distinct clusters.

$$D = \frac{\min_{1 \leq i < j \leq n} d(i, j)}{\max_{1 \leq k \leq n} d'(k)} \quad (2)$$

## 5.2 Multiple Linear Regression

This study uses multiple linear regression to examine the impact of the emerging middle class on the visible consumption of other groups and in general. Multiple linear regression predicts a quantitative response based on some explanatory variables. A linear relationship is fitted for each independent variable in the following form.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p + \epsilon \quad (3)$$

Y represents the predicted outcome, whereas  $\beta_0$  is the intercept.  $\beta_1$  indicates the relationship between the independent variable and dependent variable. The coefficients for each variable in equation three are estimated by minimising the sum of squared residuals. In the context of the paper, multiple linear regression is formulated with the logarithm of a visible consumption as the response variable. Dummy variables that are representative of socio-economic strata and other relevant variables are also included. This is seen in the following regression:

$$\begin{aligned}
\ln(\text{visible}_{ist}) = & \beta_0 + \beta_1 \text{Poor}_{ist} + \beta_2 \text{Rich}_{ist} \\
& + \omega \ln(50\text{thPercentileIncome}_{ist}) + \tau [\ln(50\text{thPercentileIncome}) \times \text{Poor}]_{ist} \\
& + \vartheta [\ln(50\text{thPercentile Income}) \times \text{Rich}]_{ist} + \gamma \ln(\text{Income}_{ist}) \\
& + \theta \text{StateYearFixedEffects}_{ist} + \phi \text{HHControls}_{ist} + \varepsilon_{ist},
\end{aligned} \tag{4}$$

where the subscripts i, s and t represent a specific household, province and year, respectively. The response variable is the logarithmic transformation of the visible expenditure for a given household in a particular province and year. The logarithm of the 50<sup>th</sup> percentile income is the one of the key independent variables and is meant to indicate the impact of the local middle class getting more affluent as a result of economic growth.  $\beta_0$  represents the impact of a surge in local median incomes on the visible consumption of the middle class. Poor is a dummy variable that indicates if a given household is classified as poor, whereas Rich indicates if a given household is classified as wealthy. The classification of the income groups is determined by either the income percentiles or the clusters that are identified by the k-means algorithm.  $\beta_1$  and  $\beta_2$  represent the extent of which poor and rich households engage in visible expenditure relative to middle-class households.  $\omega$  indicates the impact of rising state-level median incomes on the visible consumption of a household. The interaction terms in the equation are used to model the impact of a more affluent local middle class on the visible consumption habits of other income groups.  $\tau$  is interpreted as the impact of increasing state-level median incomes on the visible expenditure of a poor household, whereas  $\vartheta$  is interpreted as the impact of increasing state-level median incomes on the visible expenditure of rich households.  $\gamma$  indicates the impact of a change in household income on visible consumption. In the case of Indonesia, household expenditure is used since aggregate



household income data is not available, and household expenditure is a good proxy of income. This equation also takes into account the state and year fixed effects, with  $\theta$  measuring the impact of these fixed effects on visible consumption of the household. The other key variables are household income controls that are likely to influence visible consumption. These control variables include the age of the household head, gender of the household head, marital status of the household head, educational level of the household head and family size.

Multiple linear regression was chosen as one of the methods for this thesis as it provides an understanding of multiple different relationships with just one equation or regression analysis. This is essential as this paper's research questions and hypotheses are centred on relationships between visible consumption and different independent variables.

## 6 Results

The following section details the results that were obtained by using the methods that were described in the previous section. K-means clustering is first used to obtain the clusters for the different waves of the data. The clusters are then interpreted and examined for their validity. This is then followed by regressions which examine the impact of an emergent middle class on the visible consumption of different clusters.

### 6.1 Cluster Analysis of Households

K-means clustering was used to analyse the consumption habits for both waves in Indonesia and the Philippines. For both the FIES and IFLS datasets, the data was further split to reflect the specific waves of 2006/2007 and 2014/2015. After the pre-processing of the data, a subset of the variables in the datasets was selected to be used in the cluster analysis. These variables represent the expenditure shares of different visible goods since this method aims to understand the different spending patterns that exist. The elbow rule and the silhouette score were used to determine the optimal number of clusters (k) for both data sets. This can be seen in Figures B.1 and B.2 in the appendix.

#### 6.1.1 Interpretation of Clusters

Table 6.1: Characteristics of Clusters in Indonesia - 2007

Cluster	Expenditure	Visible Consumption	Visible Consumption Share	Size of Cluster
1	\$ 61,907	\$ 26,090	42.83%	0.07%
2	\$ 1,186	\$ 372	31.42%	99.3%

Table 6.2: Characteristics of Clusters in Indonesia - 2014

Cluster	Expenditure	Visible Consumption	Visible Consumption Share	Size of Cluster
1	\$ 8,804	\$ 2,309	26.02%	12.10%
2	\$ 1,308	\$ 452	34.13%	87.90%

For both waves of the data for Indonesia,  $k = 2$  has the highest silhouette score when  $k$  is tuned. A similar result is obtained when the elbow method is used to determine the best value of  $k$ . Tables 6.1 and 6.2 depict the characteristics of the clusters for the two waves.

The 2007 wave of data has two clusters with average expenditure and visible consumption that differ significantly, with cluster 1 being very small and having a high average household expenditure. Cluster 2 accounts for 99.3% of the dataset and has an average household expenditure that is closer to the mean of \$1,628. The extreme wealth of cluster 1 is explained by the fact that the primary source of income for most of its households is family-owned businesses in lucrative sectors such as palm oil and construction. These sectors contribute a large share of the gross domestic product in Indonesia. Furthermore, Indonesia was the sixth most unequal country in the world as the richest 1% control almost half of the country's wealth, which explains the high concentration of wealth in cluster 1. A similar dynamic is seen for the second wave. Cluster 1 has a higher average household expenditure and visible consumption than that of cluster 2 but does not differ as much as the clusters for the previous wave. However, the average household expenditure and visible consumption share for cluster 1 in the second wave are smaller than that of the first wave. At the same time, there is a slight increase in average household expenditure and visible consumption share for cluster 2 in 2014 as compared to 2007. This coincides with the Engel curves in Figure 4.1, as the visible expenditure share initially increases with household income but starts to decrease at very high household income levels. The proportion of households that belong to cluster 1 also increased significantly in the second wave, although the majority of the households still belong to cluster 2. Based on the clusters' characteristics, it can be concluded that cluster 1 represents the affluent, whereas cluster 2 represents the non-affluent.

Figure 6.1: Consumption Patterns for Clusters in Indonesia

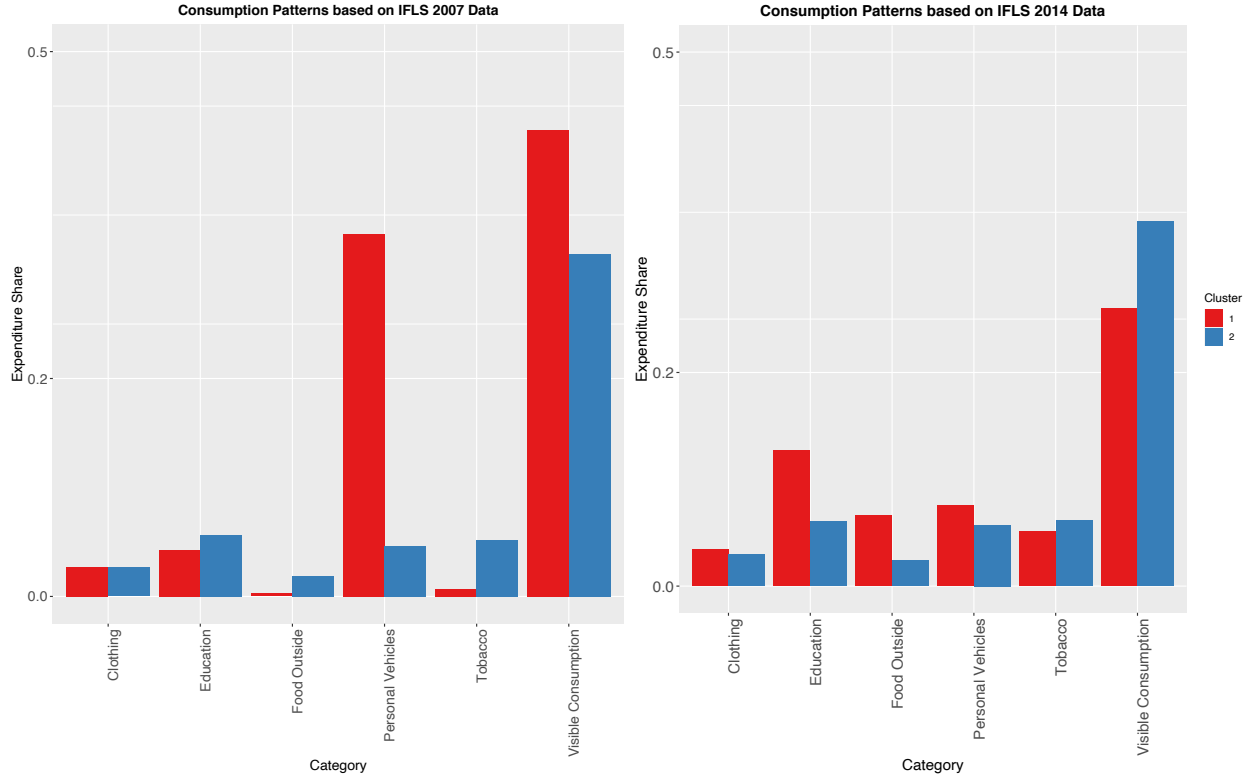


Figure 6.1 illustrates the expenditure shares of different visible goods for each cluster. The x-axis represents the type of goods, while the y-axis represents the expenditure share. Households in cluster 1 or affluent households are shown to have substantially decreased their expenditure share on personal vehicles in 2014 as compared to 2007. This change in expenditure share translates to an increase in expenditure shares of other visible categories in 2014, with education having the highest visible expenditure share for cluster 1. In contrast, there is no significant change in the visible expenditure shares for cluster 2. Households in cluster 2 or non-affluent households allocate the highest visible expenditure shares to education, personal vehicles and tobacco.

The results obtained for the cluster analysis of the IFLS dataset indicate that there are two key segments in Indonesia. One segment represents the affluent due to the relatively high average household expenditure and visible consumption that is characteristic of cluster 1. Another segment is made up of non-affluent households. These segments are similar to that of the paper by Burgess and Steenkamp (2006) since the affluent and non-affluent are

theorised to be the two key segments. This suggests that there is no distinguishable stratum that solely accounts for middle-income households' visible consumption habits. Although the affluent in Indonesia are found to have significantly larger expenditures on visible goods which differentiates them from the rest of the households, average visible expenditure has decreased over time. The significant increase in the proportion of households that belong to cluster 1 implies an increase in the number of wealthy households in Indonesia.

Table 6.3: Characteristics of Clusters in Philippines - 2007

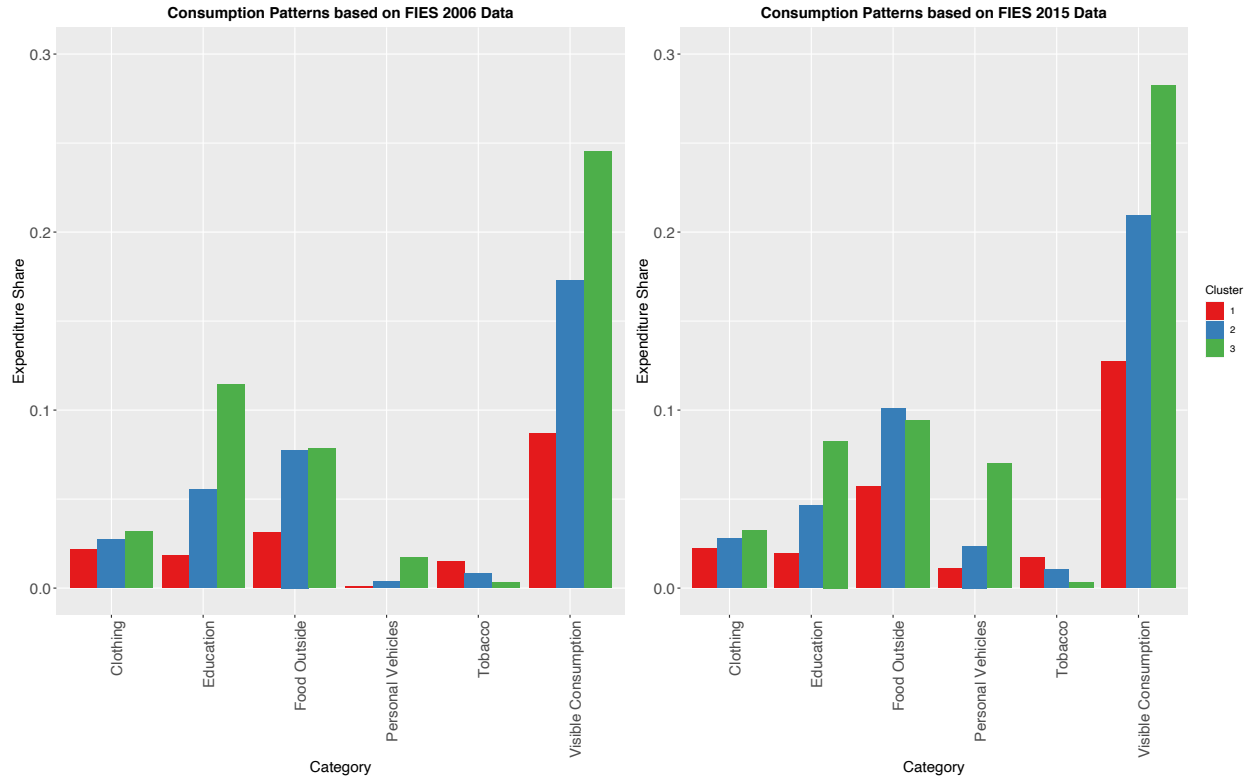
Cluster	Income	Expenditure	Visible Consumption	Visible Consumption Share	Size of Cluster
1	\$ 2,578	\$ 2,313	\$ 215	8.7%	77.1%
2	\$ 8,783	\$ 7,218	\$ 1,174	17.3%	20.3%
3	\$ 23,054	\$ 18,311	\$ 4,013	24.3%	2.6%

Table 6.4: Characteristics of Clusters in Philippines - 2015

Cluster	Income	Expenditure	Visible Consumption	Visible Consumption Share	Size of Cluster
1	\$ 2,941	\$ 2,440	\$ 322	12.7%	76.2%
2	\$ 9,047	\$ 7,142	\$ 1,421	20.9%	21.5%
3	\$ 25,070	\$ 17,859	\$ 4,665	28.2%	2.3%

For the FIES data of the Philippines,  $K=3$  yielded the highest silhouette coefficient and therefore was identified as the optimal number of clusters for both waves. The elbow method also corroborates this finding as the within-cluster-sum of squared errors starts to decrease around  $K=3$ . Tables 6.3 and 6.4 illustrate the characteristics of the clusters. Cluster 1 accounts for 77.1 % of the first wave and has the lowest average household income, expenditure and visible consumption share among other clusters. The proportion of households belonging to cluster 3 is the smallest, but the cluster has the highest average household income and visible consumption share. These general characteristics of the clusters were similar for both waves. However, an increase in the average household income, expenditure and visible consumption share was observed across clusters in the second wave. These findings support the theory that visible consumption and expenditure share on visible consumption increases during periods of economic growth. The increase in visible consumption shares for cluster 3 was also marginally higher than that of other clusters. Based on the characteristic of the clusters in Tables 6.3 and 6.4, it can be concluded that the clusters reflect the basic socio-economic structure of a society that is made up of the poor, middle class and the rich.

Figure 6.2: Consumption Patterns for Clusters in the Philippines



The expenditure shares of different visible goods for each cluster are illustrated in Figure 6.2. All households have increased their expenditure share on personal vehicles and food consumed outside the household, in the second wave. Households in clusters 2 and 3 have also slightly decreased their expenditure shares on education in the second wave. This change results in all households allocating the highest visible expenditure to food consumed outside of the household. However, cluster 3 also allocates a slightly lesser but similar expenditure share to education. This leads to the conclusion that rich households in the Philippines spend larger amounts on education and food outside than other visible goods.

The cluster analysis for Philippines shows that the population can be divided into three main segments. Cluster 1 from both waves is interpreted as being representative of households that are poor. Cluster 2 is indicative of the middle class, while cluster 3 represents the rich. This differs from the cluster analysis results for Indonesia as there is a distinct stratum that accounts for middle-income households' visible consumption habits. The analysis for the 2015 wave illustrates that there is a marginal decrease in the proportion of households that belong

to cluster 1 and cluster 3, as compared to 2006. There is also an increase in the proportion of households in cluster 2. The change in the proportion of clusters demonstrates an increase in households considered middle class. Expenditure shares spent on visible goods have also increased among the poor, middle class and wealthy, with the increase being marginally higher for poorer households. This coincides with the findings of Bertrand and Morse (2016).

### 6.1.2 Evaluation of Clusters

The validity of clusters is then assessed to determine the quality of the clusters. Table 6.5 shows the silhouette scores and the Dunn Index for the cluster analysis. For the IFLS dataset, the quality of clustering is better for the first wave than the second wave, as its silhouette score is higher. However, the score for the second wave is still acceptable as it is not close to 0. This suggests that it is unlikely to have many wrongly clustered observations. The clusters obtained for the FIES dataset have an average silhouette width closer to 1, suggesting that the clusters are appropriately clustered. The Dunn index for both datasets are also sufficiently high. Thus, the clusters for both waves and countries can be utilised.

Table 6.5: Internal Validity of Clusters

Country	Year	Average Silhouette Width	Dunn Index
Indonesia	2006	0.96	0.36
	2015	0.59	0.29
Philippines	2007	0.90	0.43
	2014	0.92	0.39

## 6.2 Impact of Reference Groups on Visible Consumption

Given that the clusters can be interpreted as being representative of different socio-economic strata, a regression analysis using clusters was implemented to understand the impact of socio-economic strata on conspicuous consumption. A separate regression analysis that used income percentiles as an indicator of status was used as a robustness test. These results can be found in Tables B.1 and B.2 in the appendix.

Table 6.6: Regressing Visible Consumption on Different Clusters in Indonesia

	<i>Dependent variable:</i>		
	Ln(Visible Consumption)		
	(1)	(2)	(3)
Ln(50th Percentile Income)	0.4931*** (0.084)	0.033** (0.013)	-0.150*** (0.050)
Rich		3.271*** (0.567)	1.964*** (0.578)
Ln(Household Income)		0.724** (0.006)	0.728** (0.006)
Rich x Ln(50th Percentile Income)		-0.398*** (0.083)	-0.211** (0.085)
Constant		0.430*** (0.088)	
State-Year Fixed Effects	Yes	No	Yes
Household Controls	Yes	Yes	Yes
Observations	22,988	22,988	22,988
R <sup>2</sup>	0.369	0.679	0.679
Adjusted R <sup>2</sup>	0.368	0.679	0.679
Residual Std. Error(df = 22948)	1.396	0.824	0.824

*Note:*

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

In the context of Indonesia, cluster 1 represents affluent households, whereas cluster 2 represents non-affluent households. Cluster 2 is chosen as the reference group since it includes middle-income households. Column (1) in Table 6.6 illustrates the relationship between rising local median incomes and visible consumption while accounting for state and year fixed effects simultaneously. In this thesis, a surge in state-level median incomes represents economic growth and the emergence of the middle class. The other two columns in the table are based on equation 4 in Section 5. Unlike column (2), column (3) considers state and year fixed effects, with cluster 2 or the non-affluent being the reference group. There is a greater emphasis on column (3) since the paper focuses on the impact of surging state-level median incomes on visible consumption.

The first column of Table 6.5 demonstrates that a 1% increase in the state-level median income increases the visible consumption of a household by 0.4931%. This confirms H1,



suggesting a general increase in visible consumption when the middle class in a particular state in Indonesia becomes richer. These findings coincide with the Engel curve in Figure 4.1, as the curves indicate that households spend more on visible consumption when there is economic growth. The upward sloping portion of the Engel curve also affirms the fact that there is a significant positive association between household incomes and visible consumption. Column (3) in Table 6.5 also demonstrates that wealthy households or households in cluster 1 are likely to engage in two times more visible consumption than non-rich households. However, an increase in state-level median income reduces visible consumption for wealthy households. This means that H2b is rejected in the context of Indonesia. The rejection of the hypothesis is also supported by the downward-sloping portion of the Engel curve illustrated in Figure 4.1, as it is evident that visible expenditure shares in 2014 have decreased significantly for wealthy households compared to that of 2007. These insights can be attributed to the possibility that the elite segment seeks different types of visible goods that are unattainable by the non-affluent as the status-signalling value of visible mainstream goods has diminished with increased mass-market consumption. Thus, the affluent spend less on visible mainstream goods and reallocate their expenditure to exclusive goods. This is reflected in the study of Bursztyn et al. (2017), whereby high-income individuals sought visible goods that were only available to individuals of a certain income. In this case, wealthy households do still regard the non-affluent as a dissociative reference group but do not respond as hypothesised. Lastly, H2b is not applicable in the context of Indonesia, as both middle-income and low-income groups belong to the same segment.

Table 6.7: Regressing Visible Consumption on Different Clusters in the Philippines

	<i>Dependent variable:</i>		
	Ln(Visible Consumption)		
	(1)	(2)	(3)
Ln(50th Percentile Income)	0.095*** (0.013)	-0.042** (0.017)	-0.071*** (0.018)
Poor		-3.628*** (0.166)	-1.318*** (0.164)
Rich		0.660 (0.411)	-0.108 (0.393)
Ln(Household Income)		0.907*** (0.006)	0.846*** (0.006)
Poor x Ln(50th Percentile Income)		0.370*** (0.020)	0.087*** (0.020)
Rich x Ln(50th Percentile Income)		-0.035 (0.050)	0.067 (0.048)
Constant		-1.435*** (0.154)	
State and year Fixed Effects	No	Yes	
Household Controls	Yes	Yes	
Observations	79,692	79,692	79,692
R <sup>2</sup>	0.413	0.637	0.667
Adjusted R <sup>2</sup>	0.413	0.636	0.667
Residual Std. Error(df = 79659)	23.259	18.304	17.518

*Note:*

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

A similar analysis was done for the Philippines. Cluster 1 is representative of the poor, whereas cluster 3 is indicative of the rich. The remaining cluster represents the middle class. A regression with year and province fixed effects was then implemented, with cluster 2 or the middle class being the reference group.

Column (1) in Table 6.7 illustrates a statistically significant and positive relationship between local median incomes and visible consumption in the Philippines. This allows for H1 to also be accepted in the context of the Philippines. The Engel curve in Figure 4.2 also affirms these findings. Poor households or households in cluster 1 spend 131.8% less on visible consumption

than the middle class, while there is no statistical relationship between affluent households and visible consumption. There is also no significant relationship between affluent households and state-level median incomes, implying that wealthy households in the Philippines do not consider the middle class as a reference group. The negligible proportion of affluent households in the Philippines can explain the absence of such a relationship. However, poor households increase their visible expenditure by 0.087% when there is a surge in local median incomes. This implies that economic growth and the emergence of the middle class in the form of rising median incomes drive the poor to consume more visible goods, affirming that state-level median incomes have a trickle-down effect. These findings also demonstrate that the poor in the Philippines engage in upward social comparison. Therefore, it can be concluded that H2a has sufficient evidence while H2b has insufficient evidence in the context of the Philippines.

The dynamic between the emerging middle class and the visible consumption of other groups differs in Indonesia and the Philippines. Visible consumption does generally increase with the rise of state-level median incomes in both countries. However, there is evidence that a richer middle-class acts as an associative reference group for the poor in the Philippines, unlike Indonesia, where both the poor and the middle class constitute one segment. Wealthy households in Indonesia engage in lesser visible consumption when the middle class becomes richer. In contrast, there is no significant relationship between the visible consumption of the rich and the local median incomes in the Philippines. These differences can be attributed to how both countries are socially stratified. The social stratification of the Philippines is more hierarchical, which allows for the poor to engage in social comparison with households that are slightly richer than them. Conversely, the social stratification of Indonesia is in line with the dual-market theory, in which the affluent belong to a niche segment, whereas the rest of the population belong to a segment that accounts for the mass market. This allows for the rich to engage in downward social comparison with households that belong to the mass market.

## 7 Conclusion

This paper studies the impact of economic growth and the emerging middle class on conspicuous consumption, particularly in the context of Indonesia and the Philippines. In this study, an increase in state-level median incomes represents economic growth and the emergent middle class, whereas conspicuous consumption is measured by visible consumption. The research also focuses on the impact of the emerging middle class on the conspicuous consumption of other socio-economic groups and how this relationship differs in both countries. In order to understand the socio-economic stratification of each country, the paper also seeks to identify market segments that arise from visible consumption patterns.

Indonesia's market is composed of two segments in which one is representative of the rich whereas the other is representative of the non-rich. This coincides with the findings of Burgess and Steenkamp (2006) as they describe emerging countries as being "dual-markets". Based on the 2014 data, it is also evident that the affluent segment has expanded considerably as compared to 2007. In contrast, the market segments of the Philippines are similar to the traditional socio-economic hierarchy composed of the poor, middle class and the rich. The proportion of households that belong to the middle class has also increased in 2015 as compared to 2006.

The segments that are analogous to different socio-economic strata are used to examine the relationship between rising state-level median incomes and visible consumption. The increase in local median incomes, which is indicative of economic growth and the emerging middle class, leads to the general increase in visible consumption. This supports H1. Furthermore, there is evidence for the "expenditure cascades" theory in the Philippines since poor households engage in more visible consumption when they are exposed to an increase in local median incomes. However, no such significant association is replicated in Indonesia since both the middle-class and the poor form one segment. Unlike the findings of Bertrand and Morse (2016), wealthy households in Indonesia are found to engage in less visible consumption when there is an increase in local median incomes. This is not seen in the Philippines as there is no significant relationship between the affluent and state-level median incomes. Therefore, H2a is supported in the context of the Philippines but has insufficient evidence in the context of

Indonesia. The evidence for both countries suggests that H2b is rejected. These different relationships between the emerging middle class and other socio-economic strata can be attributed to how both countries are socially stratified.

## **7.1 Managerial Implications**

The insights gained from this study may assist companies that seek to establish or expand their market share in Indonesia and the Philippines. Despite sustained economic growth, the results of this study show that the poor and the middle class still form a significant portion of the population in both countries. However, these groups have significantly increased their consumption of visible goods over the years. This implies that businesses should avoid solely focusing on marketing strategies that target the affluent segment since they risk being perceived as inaccessible by a substantial segment.

Firms can employ bottom of pyramid marketing strategies, which involves marketing products at low prices to the poor. These strategies can emphasise the visibility of their products or position their products as having status-signalling features since there is evidence of increased visible consumption during economic growth. The study's findings imply that companies can expand beyond marketing basic necessities to the poor. For example, the non-rich in Indonesia are found to allocate the highest visible expenditures shares for education, personal vehicles and tobacco. This suggests that automobile companies can capture a substantial segment by marketing low-cost cars or motorcycles in Indonesia. The same applies to businesses in the education and tobacco industry. In the case of the Philippines, the poor and the middle class are found to allocate the highest visible expenditure share on food consumed outside of the household. This implies that businesses that deal with food or food production have a substantial market, especially in terms of ready-to-eat or packaged food that can be sold and consumed in convenience stores or minimarts. Such stores ensure accessibility for the poor and the middle class. Fast-food chains are also likely to attract a substantial market by offering affordable meals. Given that the Philippines is more hierarchical in terms of social stratification, it would be beneficial for these companies to have a product portfolio with differing qualities and prices. This ensures that there are products well-suited for both the

middle-class and the poor.

Businesses can also target the affluent segment in emerging markets such as Indonesia by developing exclusive or premium products. By positioning their products as scarce and niche, they increase the signalling value of their goods. This can be achieved by restricting access to the good. For example, a minimum income requirement for VIP members increases the exclusivity of a good. Such product qualities would attract the affluent in Indonesia. These strategies would be more lucrative in Indonesia than in the Philippines since the affluent segment is considerably larger.

## **7.2 Academic Implications**

The paper contributes to the literature on conspicuous consumption, reference groups and the relative income hypothesis in the context of emerging countries. Firstly, there is evidence that emerging countries can be stratified differently despite sharing many similarities. Secondly, the trickle-down effect is examined by using the state-level median incomes rather than 80<sup>th</sup> percentile incomes. This is done to understand the impact of the emerging middle class on the visible consumption of different socio-economic strata. Evidence of the "expenditure cascades" theory in the Philippines' setting suggests that it is possible for higher local median incomes to "trickle-down" and influence visible consumption in poorer households. Unlike previous literature that indicates no relationship between the non-rich incomes and the consumption of rich households, the studies show evidence of a negative association between local median incomes and the visible consumption of the rich in Indonesia. This implies that downward social comparisons are also meaningful in emerging countries with two distinct and varied segments.

## **7.3 Limitations and Future Research**

A number of important limitations need to be considered. Firstly, the lack of information on different expenditure categories in the IFLS survey meant that many of these categories are very broad. There might be sub-categories within these broad visible categories that are relatively more visible and, thus, a better indicator of visible consumption. For example,

accessories such as jewellery are likely to be more visible than the broad category of clothing. Future studies could obtain detailed breakdowns of expenditure and use the most visible sub-category for the analysis. Further, a visibility survey similar to that of Charles et al. (2009), Heffetz (2011) and Roth (2014) could also be conducted in the context of the Philippines, since this study assumes that Filipinos' perception of visibility of goods does not differ significantly from that of Indonesians'.

Another limitation stems from the lack of detailed geographical information of the households in the survey. Both Indonesia and the Philippines have high levels of inequality between different locations. Future studies could also look into conducting the study at the level of regencies or cities and compare the results with a study that occurs at a regional level.

Future research could investigate the relationship between conspicuous consumption and local median incomes in a period of economic contraction, given that Indonesia and the Philippines experienced negative economic growth in 2020. This could provide insight into the impact of negative economic growth on conspicuous consumption in emerging markets since previous literature provides a perspective centred on developed countries.

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# A Appendix 1

Figure A.1: Engel Curves for Visible Goods in Indonesia

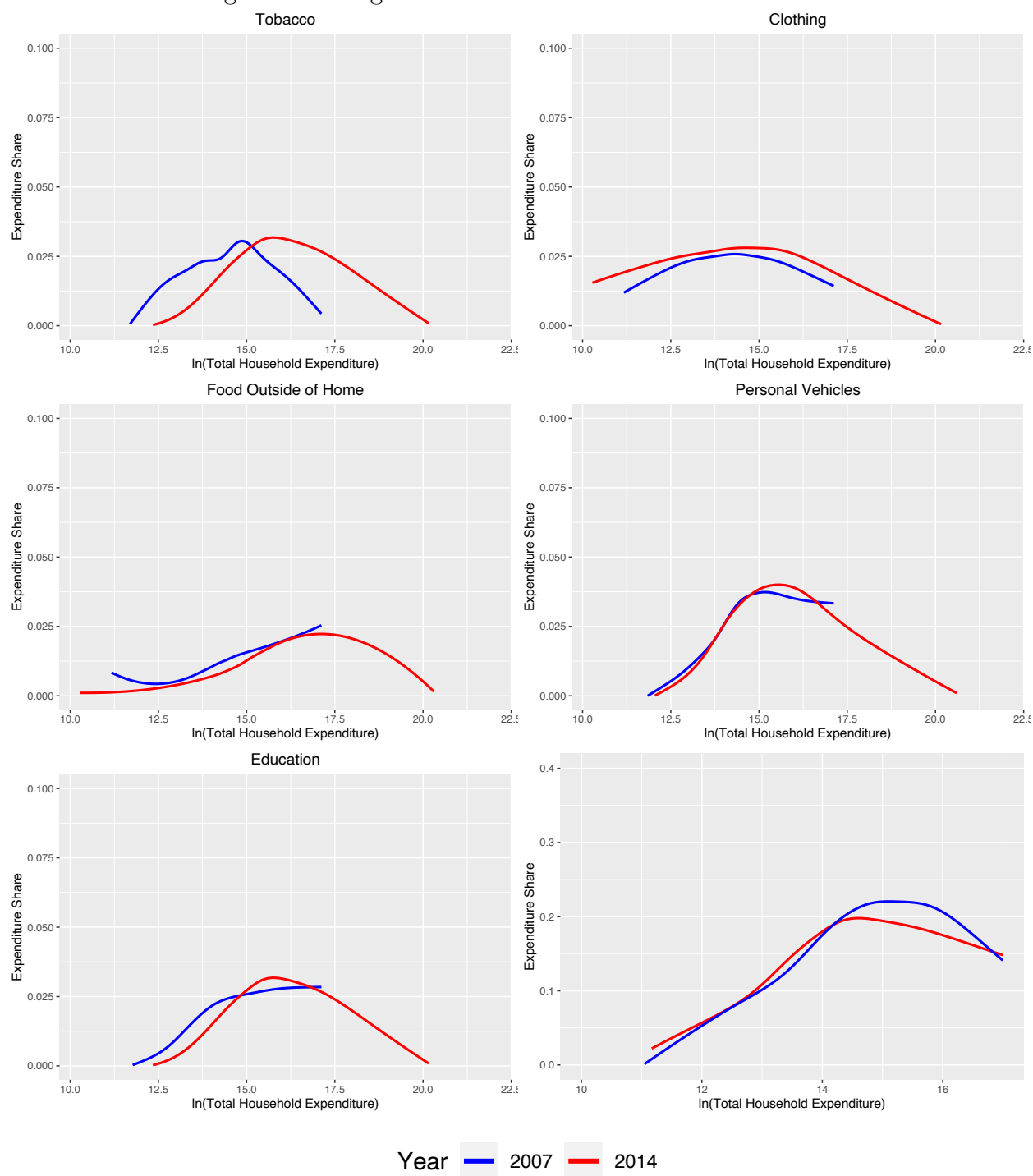


Figure A.2: Engel Curves for Non-visible Goods in Indonesia

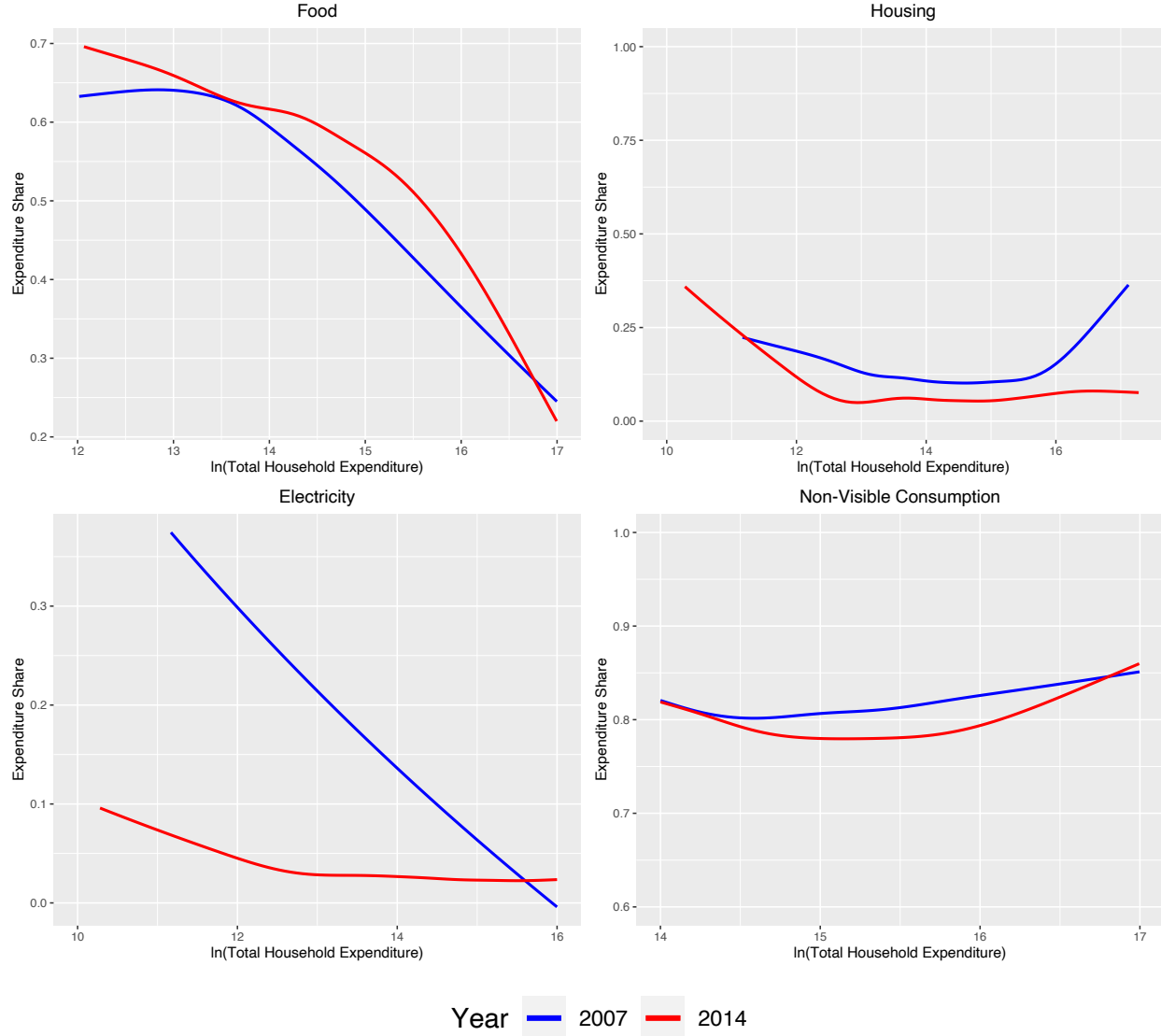


Figure A.1 shows the Engel curves for different visible goods in Indonesia. The Engel curves have an upward slope for smaller household expenditures and start to slope downwards for significantly large household expenditures. This implies that the poor and the middle-income groups perceive these goods as more non-essential, while richer households tend to perceive these goods as relatively more essential. The change in perception of rich households also supports the finding that visible consumption of rich households decreases when there is an increase in state-level median income. Additionally, the Engel curve for clothing was the only curve that noticeably shifted upwards, which corroborates the theory that consumption

of visible and non-essential goods increases during periods of economic growth. Poorer households also allocated a lower expenditure share on tobacco in the second wave. However, this can be explained by the fact that tobacco is viewed as being an essential good despite its high visibility. It is also theorised that consumption of tobacco decreases with economic growth. Lower-income and middle-income households also perceived education as more essential in the second wave as compared to the first wave since the Engel curve became slightly less steep. The Engel curves for the other visible goods did not show any noticeable shifts or changes in slope.

The Engel curves for non-visible goods in Indonesia are reflected in Figure A.2. As food is an essential good, it is downward sloping. The slope of the curve for the second wave is also less steep than that of the first wave, which suggests that food is seen as less of a necessity. The downward sloping Engel curve for housing also shifts slightly downwards in the second wave, suggesting that households spend slightly less on this essential good during a period of economic prosperity. Furthermore, this shift is much smaller than the shift for the Engel curve for electricity, implying that electricity is viewed as more of an essential good than housing. The Engel curve for the overall expenditure share on non-visible goods shifts downwards slightly.

Figure A.3: Engel Curves for Visible Goods in the Philippines

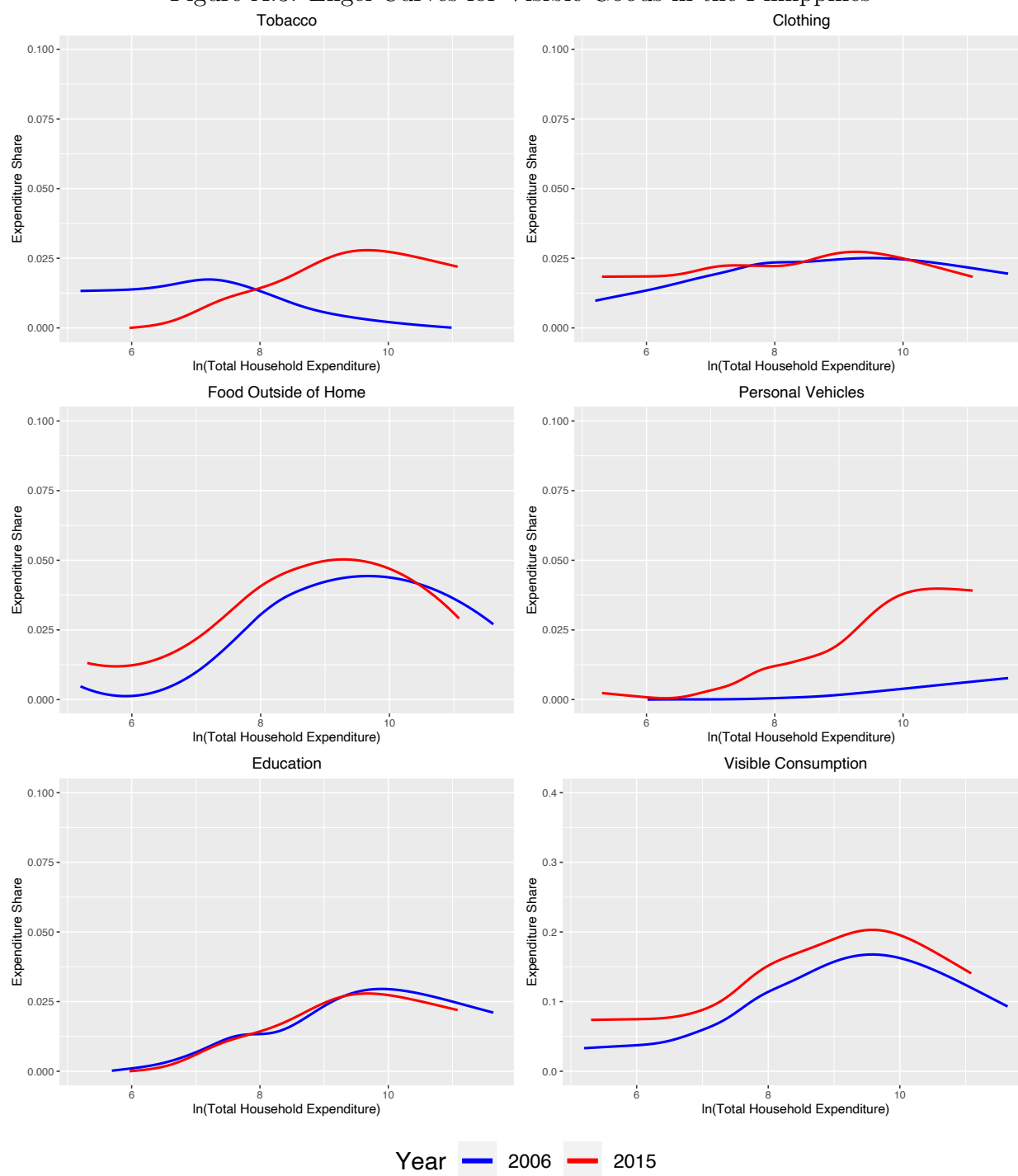


Figure A.4: Engel Curves for Non-visible Goods in the Philippines

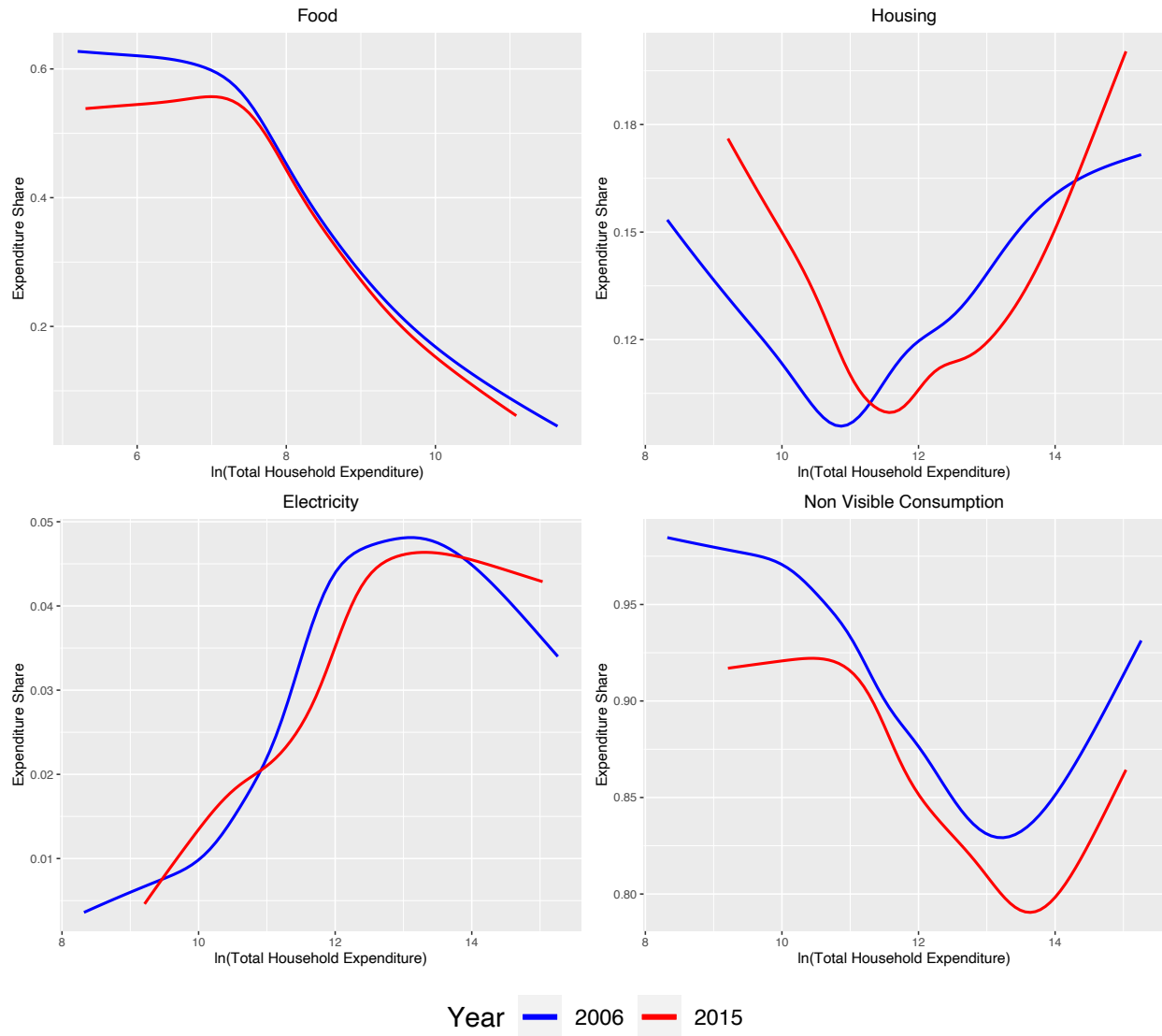


Figure A.3 illustrates the Engel curves for different visible goods in the Philippines. The upward-sloping Engel curves for most visible goods in the second wave shift slightly upwards, except for tobacco. The Engel curves for tobacco show that poorer households decrease their expenditure share, while richer households increase their expenditure share as compared to the first wave. The Engel curves for personal vehicles also became steeper, implying that these goods are considered more essential than before. Unlike Indonesia, there was not much change in the Engel curves for education.

As seen from Figure A.4, there are no significant changes with regards to the Engel curves



for most non-visible goods, except for a slight downwards shift. Unlike the Engel curves for food, housing and overall non-visible expenditure, the Engel curve for electricity is generally upward sloping. This suggests that electricity is perceived as more of a non-essential good in the Philippines.

## B Appendix 2

### B.1 Selection of Optimal Number of Clusters

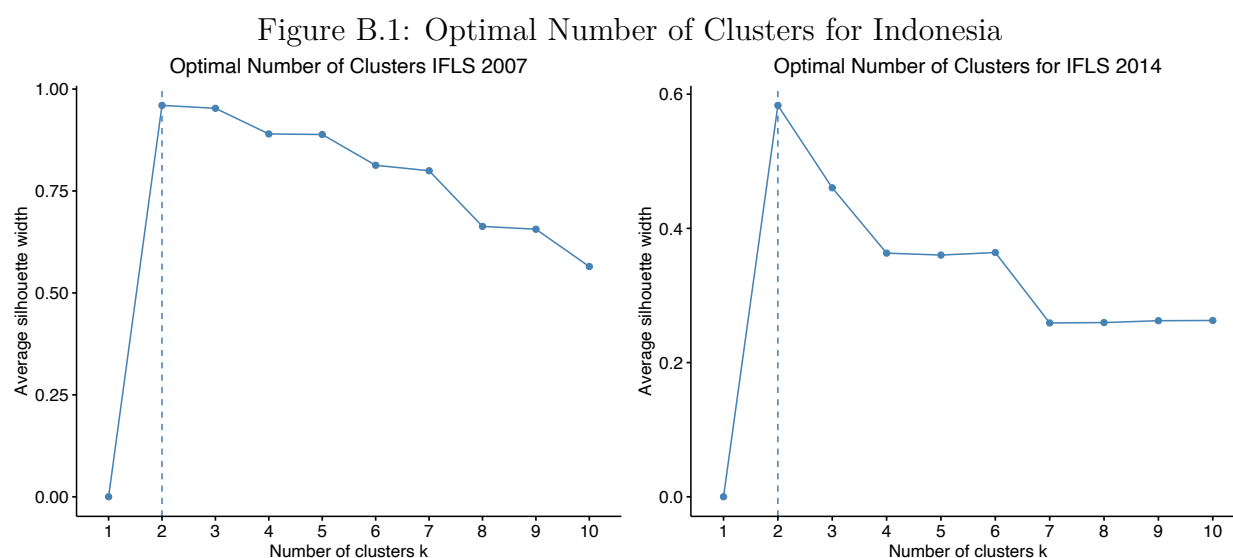
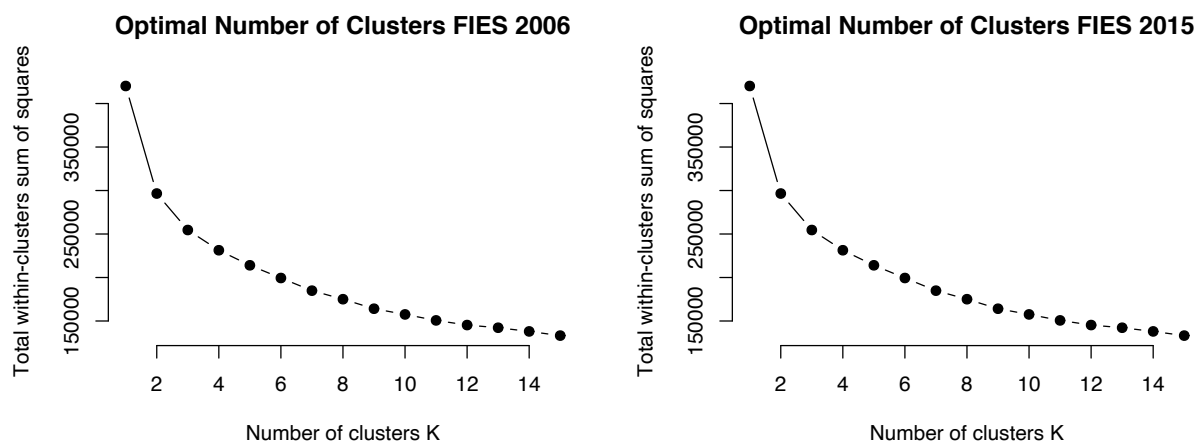


Figure B.2: Optimal Number of Clusters for the Philippines



## B.2 Robustness Tests

Table B.1: Regression of Visible Consumption on Different Income Percentiles in Indonesia

	<i>Dependent variable:</i>	
	Ln(Visible Consumption)	
	(1)	(2)
<50thPercentile Income	-2.281*** (0.702)	-0.200 (0.179)
>80th Percentile Income	-0.045*** (0.227)	-1.123*** (0.227)
Ln(50th Percentile Income)	-0.083*** (0.063)	-0.254*** (0.063)
Ln(Household Income)	0.768*** (0.006)	0.771*** (0.009)
<50th Percentile Income x Ln(50th Percentile Income)	-0.010 (0.697)	-0.010 (0.028)
>80th Percentile Income x Ln(50th Percentile Income)	0.120*** (0.006)	0.120*** (0.035)
Constant	1.248*** (0.708)	
State and year Fixed Effects	No	Yes
Household Controls	Yes	Yes
Observations	22,988	22,988
R <sup>2</sup>	0.979	0.685
Adjusted R <sup>2</sup>	0.979	0.684
Residual Std. Error (df = 22946)	0.814	0.814

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table B.1 shows the impact of rising median incomes on the visible consumption of other socio-economic classes in Indonesia. The regression analysis uses income percentiles to determine the different socio-economic groups, as explained in Section 4.1.2. It is only implemented as a robustness check since the clusters obtained from k-means clustering are used to better

capture the social stratification of the households in each country. Column (1) is an OLS regression, whereas column (2) takes into account the state-year fixed effects. From column (1), it can be seen that a middle-class household increases its visible consumption when the state-level median incomes increase. There is also no significant association between a poor household and visible consumption, whereas there is a negative relationship between rich households and visible consumption. However, the relationship between state-level median income and the visible consumption of the rich is positive. These results differ from the results shown in Table 6.6, although that is perhaps due to the different methods used to socially stratify households.

A similar analysis was done for the Philippines and is reflected in table B.2. The middle class increase their visible consumption significantly when they become richer. This is contrary to the observation that an increase in local median incomes results in an overall decrease in visible consumption in the Philippines. There is also evidence of a statistically significant and negative relationship between poor households and visible consumption. No such relationship is observed for rich households. Unlike the findings of Table 6.7, both interaction variables are positive and significant, implying that poor households and rich households engage in more visible consumption when there is a surge in local median income.

Table B.2: Regression of Visible Consumption on Different Income Percentiles in the Philippines

	<i>Dependent variable:</i>	
	Ln(Visible Consumption)	
	(1)	(2)
<50th Percentile Income	-0.752*** (0.702)	-0.790*** (0.179)
>80th Percentile Income	1.508*** (0.227)	3.376 (0.107)
Ln(50th Percentile Income)	-0.258*** (0.063)	-0.595** (0.002)
Ln(Household Income)	1.136*** (0.009)	1.092*** (0.003)
<50th Percentile Income x Ln(50th Percentile Income)	0.081*** (0.006)	0.010*** (0.001)
>80th Percentile Income x Ln(50th Percentile Income)	0.123*** (0.001)	0.531* (0.005)
Constant	4.832*** (0.001)	
State and year Fixed Effects	No	Yes
Household Controls	Yes	Yes
Observations	22,988	22,988
R <sup>2</sup>	0.979	0.685
Adjusted R <sup>2</sup>	0.979	0.684
Residual Std. Error (df = 22946)	0.814	0.814

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01