How was the effect of Thailand's Consumer Confidence Index on the Private

Consumption Index for Thailand's Non-Durables Goods?

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ภาคเอกชนของสินค้าประเภทไม่คงทนในประเทศไทย. (How was the effect of
Thailand's Consumer Confidence Index on the Private Consumption Index
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หัวข้อการศึกษาหาผลกระทบของดัชนีความเชื่อมั่นผู้บริโภคต่อดัชนีการอุปโภคบริโภค
ภาคเอกชนของสินค้าประเภทไม่คงทน โดยพิจารณาตัวแปรต่างๆจากทฤษฎีการบริโภคของเคนส์
เซียน (1936) สำหรับตัวแปรด้านวัตถุ ซึ่งสามารถวัดค่าได้ หรือ ที่รู้จักกันในนาม เครื่องชี้วัด
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ผลลัพธ์แสดงความสัมพันธ์เชิงบวกของดัชนีผู้บริโภคโดยรวมกับดัชนีการอุปโภคบริโภคภาคเอกชน
ของสินค้าประเภทไม่คงทน อย่างไรก็ตามดัชนีการอุปโภคบริโภคภาคเอกชนของสินค้าประเภทไม่
คงทนยังส่งผลเชิงบวกกับ ดัชนีราคาผู้บริโภค การใช้จ่ายรัฐบาลที่เกี่ยวข้องกับเศรษฐกิจ และ การ
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ถอนเงินสดของบัตรเครดิตและเดบิตที่ตู้เอทีเอ็ม

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This paper studies the effect of Thailand's consumer confidence index on the private consumption index of Thailand for non-durables goods as well as considering the control variables from Keynesian theory of consumption (1936) for the objective factors that are quantifiable as known as economic indicators and use time-series data that is obtained from secondary data research over the past 10 years since January, 2011 until December, 2020 and then applies the ordinary least squared regression to examine. The result shows the positives relationship between the overall consumer confidence index and the private consumption index for non-durables goods, moreover, the consumer price index, the government spending on economic activities and the credit card spending are positive relationship to the private consumption index for non-durables goods, unlike, the private investment index, the interest rate of saving and the cash withdrawal in both of credit card and debit card are negative relationship to the private consumption index for non-durables goods.

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CHAPTER 1 INTRODUCTION

In Thailand, the private consumption expenditure is contributed about 55 percentages of the expenditure on gross domestic product in year 2020 and growth about 28 percentages of comparison over past 10 years since year 2011 to 2020, The consumption expenditure is affected by many factors referred to the concept of consumption function from Keynes (1936) not only factors related to people income or wealth but also on consumer sentiment or confidence. The consumer confidence reflects people's attitude toward the economy, job securities and income for two conditions of current and future situations that is indicated by the consumer confidence index (CCI).

Many researchers studied the relationship of consumer confidence or consumer sentiment to quantifiable economic indicators such as Bittencourt, Campelo and Malgarini (2020) studied the effect from household's consumption, Fereidouni and Tajaddini (2017) studied the effect from wealth, housing and financial, Bielen, Marneffe and Vanlaer (2020) studied the effect of household's saving and Iyke and Juhro (2020) studied the effect from labor income, stock price and interest rate, moreover, Iyke and Juhro (2020) found that the consumer confidence can predict consumption growth in Indonesia as well as Brinca and Dees (2013) also found the consumer confidence is able to be the good predictor of the consumption expenditure in the United State and the Euro area. Therefore, this paper proposes to continue studying the effect of the consumer confidence index on the private consumption index in Thailand.

For the private consumption index is a composite index representing private consumption conditions that comprises five main components. First, non-durables index consists of Nielsen's fast moving consumer goods of four categories including food, non-food, beverage and impulse, retail sales of alcohol and tobacco, household electricity consumption and fuel consumption. Second, semi-durables goods index consists of retail sales of clothing, footwear, furniture, household equipment and maintenance of the house and import of textiles and clothing. Third, durables goods index consists of sales of passenger cars, motorcycles and commercial cars. Fourth, service index consist of value added tax (VAT) of hotel and restaurant and sales of passenger transportations. Fifth, non-residents expenditure index consists of net tourist spending for personal travel. Therefore, in this paper offers to use non-durables goods that is any consumer goods in an economy either consumed for one used or used over the period of time in short term because non-durables goods has a short life cycle about one – three years and consumer behavior of non-durables goods remains consistent because it is necessary goods that consumer must purchase in any economic situation (Krugman, 2020), therefore, non-durables goods is suitable to study for this paper unlike semi durable goods and durable goods because durables goods and semi-durables goods are used over long period of time more than three years, moreover, durables goods semi-durables goods are purchased depending on the

economic situation (Krugman, 2020) and expectation for consumer spending on durables consumption goods is not expected to be as frequent as spending on non-durables consumption goods (Brand, 2012).

To emphasize the consumption expenditure of non-durables goods is necessary goods that is used over period of time for consumer, the figure 1 is showing the trend line over ten years of the private consumption index for durables goods, semi-durables goods and non-durables goods, the trend line of non-durables goods continues to grow over part ten years and the value of the private consumption index for non-durables goods is higher than the private consumption index of semi-durables goods, moreover, the trend line of durables goods has rose and declined during period of time depending on Thailand government policy, for example, the first-car tax rebate policy during period 2012 to 2013 and Thailand economic situation, for example, economic regression dye to Covid-19 pandemic in 2020.
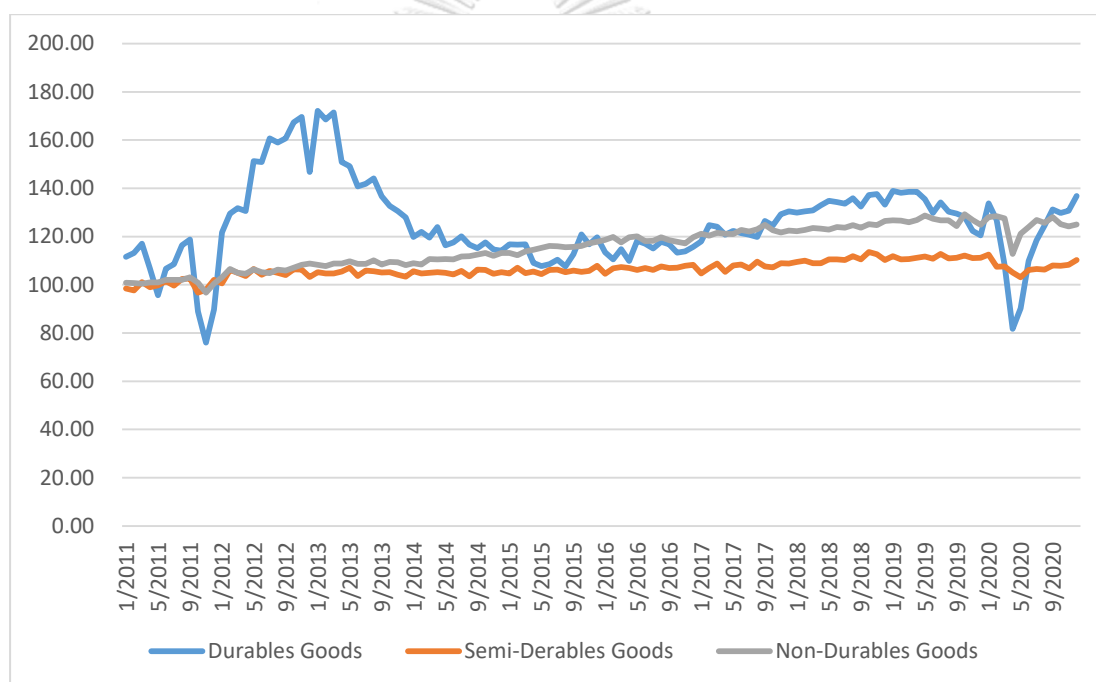
Figure 1: *The trend line of the private consumption of Thailand for durables goods, semi-durable goods and non-durables goods over since January, 2011 until December, 2020.*

According to the consumer confidence index is the good predictor for the consumption expenditure in Indonesia (Iyke & Juhro, 2020) and in the United State and the Europe (Brinca & Dees, 2013), for this study proposes to use Thailand data to study the effect of the overall consumer confidence index and the private consumption for non-durables goods and check consistency of the effect from the consumer confidence index by using the current consumer confidence index and future consumer confidence index. Refer to the figure 2, the consumer confidence index for overall, current and future have rose and declined over the past ten year unlike the

private consumption in Thailand for non-durables goods have continued to grow over the past ten years, however in this study assume that the overall consumer confidence index is positive relationship to the private consumption in Thailand for non-durables goods by using the ordinary least squared regression (OLS) to address the result of the hypothesis.
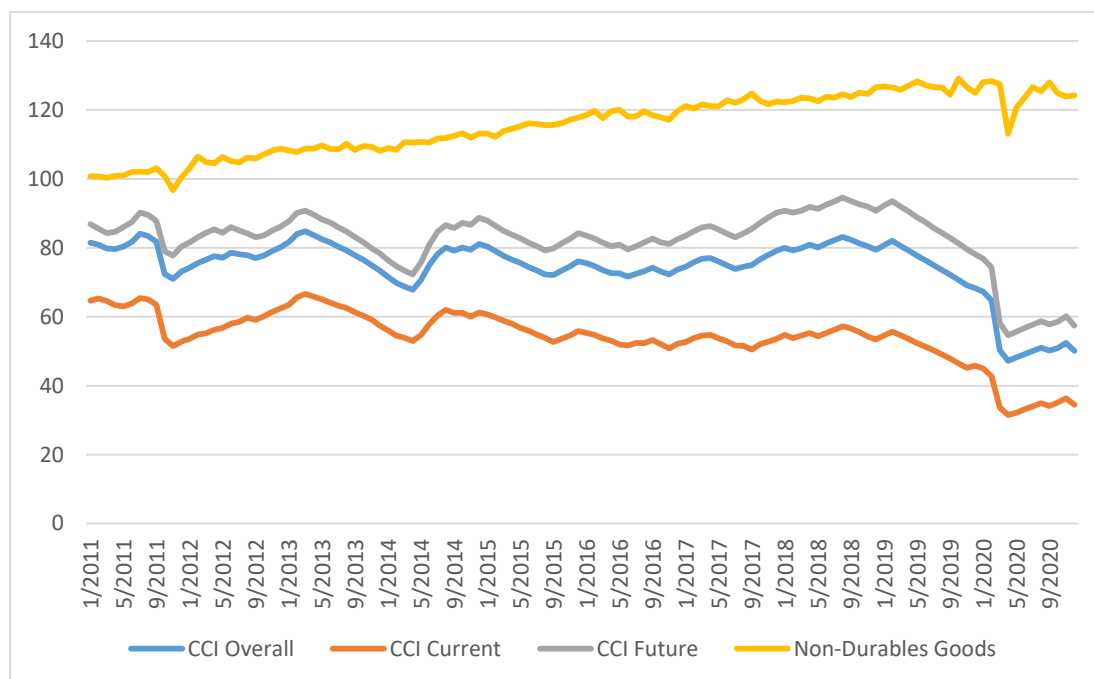
Figure 2: The trend line of Thailand's confidence index of overall, current and future and the private consumption of Thailand for non-durables goods over since January, 2011 until December, 2020.

This paper proposes to study the effect of Thailand's consumer confidence index on the private consumption index of Thailand for non-durables goods as well as considering the control variables from Keynesian theory of consumption (1936) for the objective factors that is quantifiable as known as economic indicators and uses time series data that is obtained from secondary data research in format of monthly data basis over the past 10 years since January, 2011 until December, 2020 and then applies the ordinary least squared regression to examine the hypothesis and the result shows the positives relationship between the overall consumer confidence index and the private consumption index for non-durables goods, moreover, the consumer price index, the government spending on economic activities and the credit card spending are positive relationship to the private consumption index for non-durables goods, unlike, the private investment index, the interest rate of saving and the cash withdrawal in both of credit card and debit card are negative relationship to the private consumption index for non-durables goods. In term of policy implications, Thailand's government should specifically focus on people occupation and income policies or campaigns in order to increase people confidence in job prospects and expected income as well as Thailand's government should increase the confidence on economic conditions to any size business in all of industry.

The conclusion from this paper will be benefit to predict the private consumption index for non-durables goods in case of people has changed their attitude of confidence on economic conditions, job prospects and expected income, moreover the private and publish companies including government in Thailand can also use the result from this paper to initial a campaign or policy to build Thais' confidence to gain more their trust on economic conditions, job prospects and expected income in order to motivate the consumption expenditure which is the important part to computed the gross domestic products in Thailand.

CHAPTER 2 LITERATURE REVIEW

According to the introduction, many researchers tried to study the factor that affects the consumption expenditure in terms of a factor that reflects economic indicators such as household saving, household wealth, household and labor income, government spending and private investment, and a factor from people's attitude such as consumer confidence or sentiment. Also in this section tries to investigate the definition of durable goods, semi-durable goods and non-durables goods and examine consumer behavior for purchasing goods.

Bittencourt, Campelo and Malgarini (2020) studied the relationship of consumers' confidence and households' consumptions in Brazil by using The Fundação Getulio Vargas (FGV) Brazillian Consumer Survey that launched in the third quarter of 2005 and based on a monthly sample of 2,100 Brazilians to calculate the Consumer Confidence Indicator as on both current and future conditions from the general economic situation and the expected household financial condition six months ahead, and those concerning plans to purchase durable goods, Bittencourt, Campelo, & Malgarini (2020) report the result by using univariate and multivariate estimators and according to the result, the overall Consumer Confidence Index and the Present Situation Index are good predictors of consumption and fit to help for consumer spending forecasting model as same as in this paper try to study the effect of all consumer confidence index indicators such as overall, current and future.

Fereidouni and Tajaddini (2017) studied to examine the role of consumer confidence on the relationship between two forms of wealth & housing & financial and four categories of consumption expenditure on total consumption, service, durables goods and non-durable goods consumption by using U.S. quarterly data from 1978 to 2012 and apply the fully modified ordinary least squares (FMOLS) estimation method. The result in this study shows that consumer confidence has a positive effect on the association between housing wealth and consumption expenditure, but shows a negative for the association between financial wealth and consumption expenditure. Therefore, this is different from this paper because this paper focuses on the consumer confidence index and the private consumption for non-durable goods in Thailand.

Bielen, Marneffe and Vanlaer (2020) studied whether decreasing in consumer confidence affected household saving behaviors by exploiting a panel dataset of 18 countries in Europe over the period 2001-2014 by using the Two-stage Least Squares estimator to report the result that confidence in household financial situations has larger effect on household saving that confidence in the general economic situation as same as this paper uses household saving to be a control variable to find the effect between the consumer confidence index and the private consumption index for non-durables goods.

Martin and Mehra (2003) tried to investigate why consumer sentiment might predict future household spending with the equation reports the cointegrating regression estimated using real interest rate, consumer spending, labor income and household net worth from dataset over 1959Q1 to 2001Q2 that the result shows that the consumer confidence matters in regression equation for consumer spending because it helps to predict future change in income and the real interest rate, therefore, this study considers to use both of income and interest rate in order to be control variables in the equation in this study.

Iyke and Juhro (2020) studied to find that confidence predicts consumption expenditure in Indonesia by using predictors of consumption from labor income, stock price and interest rate that those data come from CEIC database and restrict the estimations to the period of 2000Q1 to 2019Q1 by estimating several competing regressions and the result shows that confidence predicts consumption expenditure moreover economic and statistical gains from consumption growth that account for consumer confidence that is similar with this study for finding the relationship of consumer confidence index and the private consumption for non-durables goods and use stock price as same as Iyke and Juhro (2020) to be a control variable.

Brinca and Dees (2013) tried to explain the role of confidence in household consumption in the United States and the euro area by using the confidence indicators in the period 1985Q1 to 2010Q2 from the University of Michigan's Consumer Sentiment Index for the United State and use a non-linear estimation of the consumption equation and a threshold model to forecast the U.S. and the euro area consumption, The result shows that the confidence indicators can be a good predictor of household consumption as same as this study would like to find the relationship of consumer confidence index and the private consumption in Thailand.

Abaidoo (2016) tried to understand how specific macroeconomic condition which is economic policy uncertainty and inflation expectations influence micro-level consumer behavior by using structural vector autoregressive estimation technique and the result shows that in the short run, inflation expectation tend to have a significant positive impact on both of non-durable goods and service expenditure as same as in this study tries to find the relationship of consumer confidence index to non-durable goods expenditure and referred to the result from Abidoo (2016), additionally, Abaidoo (2016) found that economic policy uncertainty tends to constrain consumption expenditure.

Gopaul, Kasseeah, Ragoobur and Sobhee (2015) investigated the factor that affect the expenditure of Alcohol-Dependent individual on alcohol on a survey consisting exclusively of 300 Alcohol-Dependent individual to capture the variables influencing on expenditure on alcohol by fieldworkers in the year 2012 that were living in the island of Mauritius and the result shows that expenditure on alcohol increases on the income variable and the coefficient on the income variable is positive. Apart from income, age and family size are important variables influencing the expenditure of alcohol. The expenditure of alcohol is the one of the private consumption expenditure for non-durable goods on this study and alcohol expenditure have more contribution of final private consumption in Thailand and income variable is the one of control variable that is in this study will use as it is positive influencing (Gopaul, Kasseeah, Ragoobur & Sobhee, 2015).

Pandey, Tyagi and Vibhuti (2014) tried to understand the concept of fast moving consumer products that are products that have a quick turnover and relatively low cost as well as having a short shelf life and high consumer demand such as meat, fruits, vegetables, dairy products and baked goods. For products that have high turnover rates such as alcohol, toiletries, pre-packaged foods, soft drinks and cleaning products. Another objective is to identify the factors affecting consumer buying behavior toward fast moving consumer products and finally affecting on decision making process by collecting data from questionnaire and finding theoretically presented and the result shows that consumer behavior is largely effects by place, product, price, promotion, physiological and psychological factors, therefore, this result is benefit to this paper in term of there are several factors affecting to consumer buying behavior for fast moving consumer products.

Kenton (2020) tried to explain, understand and categorize the type of fast moving consumer goods based on literature reviews. Kenton (2020) explained that consumer goods and products are purchased from consumption by the average consumer and divided into three categories: Durable, Non-Durable and Service. Durable goods have a shelf lift of three year or more than while Non-Durable goods have a shelf life of less than Durable goods and fast moving consumer goods are the largest segment of consumer goods that fall into the Non-Durable category as FMCG is consumed immediately and has a short shelf life, however, fast moving consumer goods Kenton (2020) has categorized types of fast moving consumer goods into nine categories: Processed Foods, Prepared Meals, Beverages, Baked Goods, Fresh & Frozen Foods & Dry Foods, Medicines, Cleaning Products, Cosmetics & Toiletries and Other Suppliers as same as this study will define fast moving consumer goods to be only Non-Durable Goods.

Mazurek and Mielcová (2017) examined the statistical relationship between the consumer confidence index and real gross domestic products growth in the USA from 1960 to 2015 that the data include the consumer confidence index monthly data from OECD and quarterly real gross domestic product from FRED and use the simple regression in order to find whether the consumer confidence index can be a suitable predictor of the economic growth or economic recessions respectively. The result indicates that the consumer confidence index can be considered a suitable predictor of

gross domestic products at least in the USA as same as in this study will consider gross domestic products to be a control variable.

Alp, Atasoy, Coskun and Morri (2018) studies the effect of household final consumption to housing wealth and stock wealth for 11 countries including Australia, Canada, Finland, France, Italy, Japan, New Zealand, Sweden, Switzerland, United Kingdom and United State over the period 1970 to 2015 for quarterly data and used regression analysis of the common correlated effects mean group (CCEMG) estimator. For the result showed that the consumption is positive relationship and significantly correlated income and wealth housing, but negative relationship to stock wealth, as same as, in this paper uses wealth housing to be a control variable in an equation.

Ajudua and Ezeji (2015) studies the determinant of consumption expenditure in Nigerian that derived the model form Keynes consumption function where consumption is explained from income over the period 1986-2012 and the result showed that consumption is positive relationship to income, while other factors as control variable weather interest rate, price level and exchange rate are significant variables. The study is similar to this paper in terms of variables in an equation, such as income and other significant variables will be used in this paper.

Venkadasalam (2015) studied the significance of board money, gross domestic product and household final consumption expenditure to the consumer price index in Malaysia and find the relationship of dependent and independent variables by using Vector Error Correction (VEC) model and the result showed that the positive relationship of the consumer price index and the household final consumption expenditure and significantly, therefore, in this paper considers to use the consumer price index to be variable in an equation.

Fosu and Twumasi (2021) studied the effect between government expenditure and household consumption in Ghana for both of in long run and short run by the autoregressive distributed lag (ARDL) model to find the result and used longitudinal data since 1967 until 2018, the result showed that government expenditure had a negative significant effect on household consumption expenditure as same as in this paper proposes to consider government spending to be a control variable affects to consumption in Thailand.

Poterba (2000) studied the change in the value of corporate stock and change in consumer spending by using the data on the distribution of stock ownership from the Survey of Consumer Finance in year 1998 and then used the time-series evidence for the co-movement of stock market wealth and consumer spending to calibrate in the wealth effect to describe how the effect of stock wealth affects to household behavior, especially for consumption and the result shows that after a change in the value of stock market, consumer expenditure is positive relationship to the value of corporation stock that is similar to this paper in term of independent variable affecting on consumption, therefore, in this paper considers to choose stock wealth to be a one of independent variable.

Baker, Nagel and Wurgler (2006) studied the effect of dividends on investor consumption by using two data sets of the Consumer Expenditure Survey (CEX) and a sample of household investment accounts data from a brokerage, net withdrawals from the accounts increase one-for-one with ordinary dividends of moderate size, controlling for total portfolio returns, and also increase with mutual fund and special dividends between year 1991 and 1996. The result shows that investors have a higher propensity to consume from stock return in the form of dividends, therefore, this paper considers using stock return in form of dividend to be an independent variable that affects consumption.

For the conclusion of literature review, there are many factors related to the consumption expenditure weather the consumer confidence index, the consumer price index, wage, investment, saving, interest rate, government spending, housing wealth, stock wealth. By the way, many researchers found that the consumer confidence index is able to be a good predictor to the consumption expenditure in Indonesia, Brazil, United State and Euro area. Therefore, in this paper aims to study the effect between the consumer confidence and the consumption expenditure which there are enough evidences to support a lot of factors that affect to the consumption function.

CHAPTER 3 CONCEPTUAL AND EMPIRICAL FRAMEWORKS

3.1 CONCEPTUAL FRAMEWORK

The effect to the consumption expenditure form Keynes' theory of consumer in General Theory was published in 1936 explained the principle determinant of consumption function is income, however, there are many factors affecting consumption function beside income. Keynes (1936) explained the other important factors under the wording of subjective factors and objective factors that affect consumption. The subjective factors are psychological which consist of change in expectations and attitudes of consumers there are not quantifiable as economic factors as Brand (2012) explained consumer confidence is a psychological concept that is designed to signal changes in economic activities and used for macroeconomic evaluations and forecasts.

Another factor that Keynesian (1936) introduced is called objective factor as known as economic factors that are quantifiable which affect to the propensity of consume including change in general price level, change in wage level, fiscal policy, the rate of interest, stock of wealth, cost and availability of credit, holding of saving and liquid asset and financial policy of corporation. According to subjective factors and objectives factors, in this paper derives the conceptual framework of factors that is implied by Keynesian (1936) affecting to change in consumption expenditures as in figure 3.
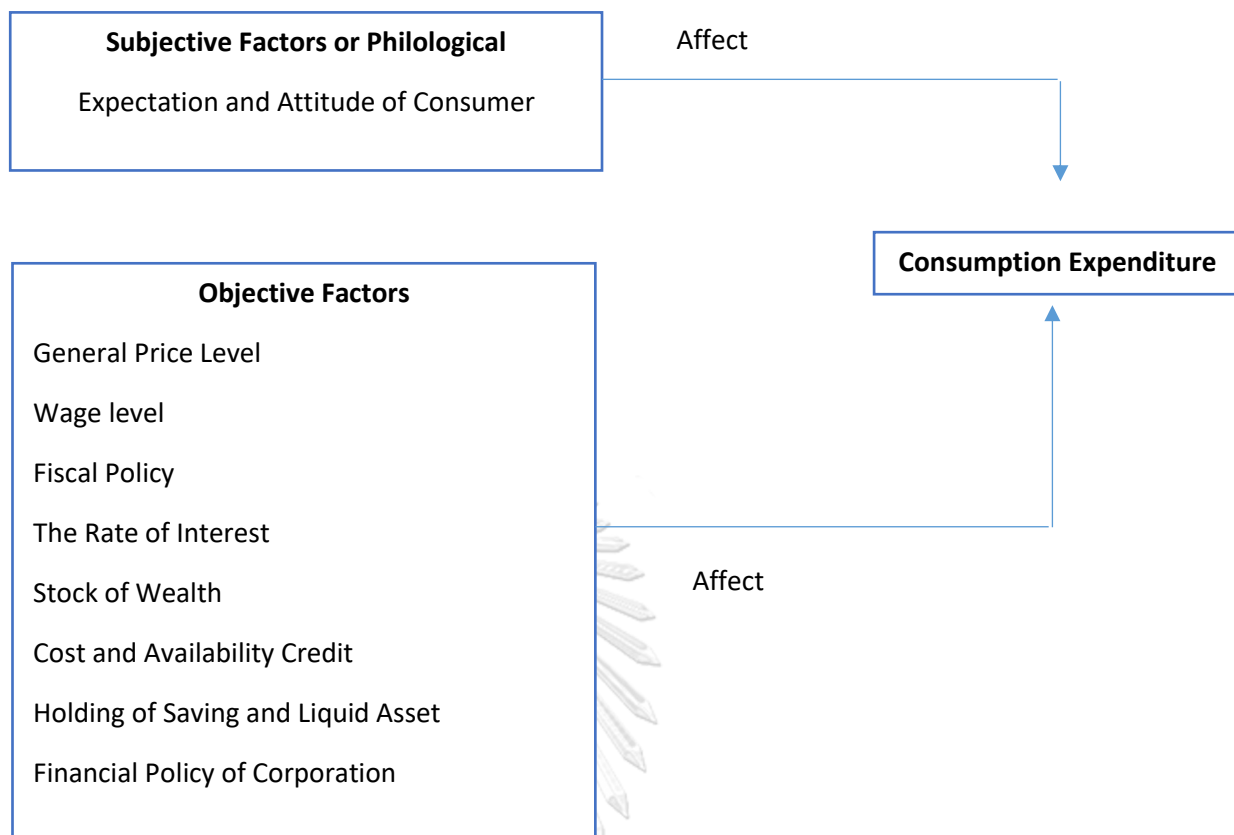
Figure 3: *The Conceptual Framework of Subjective Factors and Objective Factors.*

3.2 EMPIRICAL FRAMEWORK

Refer to figure 3 the conceptual framework of subjective factors and objective factors as Keynes (1936) introduced to affect consumption expenditure, in this paper proposes to use consumption expenditure to be a dependent variable that in Thailand has measures in form of the private consumption index. The private consumption index is for monitor real private consumption activities and better reflect to the private consumption expenditure (PCE) which consists of 5 categorizes that are non-durables goods index, semi-durables goods index, durables goods index, service index and non-resident expenditure index that in this paper aims to use non-durables index because non-durables goods is necessary goods that consumer much purchase in any economics situation (Krugman, 2020). Non-durables goods consist of Nielsen's fast moving consumer goods for 4 categories (Food, Non-Food, Beverage and Impulse), retail sales of alcohol and tobacco form VAT, fuel index and household electricity usage.

In terms of independent variables, this paper classifies into 2 groups. First is subjective factors used for being the key variable as Bittencourt, Campelo and Malgarini (2020) found that consumer confidence index is a good predictor to consumption expenditure. The consumer confidence index is a measure of consumer attitude by reporting on consumer view about current and future economic conditions, current and future job prospects and income expectation Second is objective factors is considered to be the control variable referred to figure 3 there are eight factors. First, the consumer price index represents the general price level. Second, average wage represents wage level. Third, government spending on economic activities represents fiscal policy. Fourth, the interest rate of saving at commercial banks represents the rate of interest. Fifth, land and house expenditures and market stock exchange index represent stock of wealth. Sixth, credit card spending represents cost and available credit. Seventh, deposits at all commercial banks and cash withdrawal in both credit card and debit card from automated teller machines (ATM) represent holding of saving and liquid assets. Eighth, dividend yield and private investment index represent financial policy of corporations.

For the consumer confidence index consists of the overall consumer confidence index is averaged from the current consumer index is reported the index of consumer confidence on current economic condition and current job prospect and the future consumer confidence index is reported the index of future economic condition, future job prospect and expected income, therefore, the main scenario address to the overall consumer confidence index and examining consistency check the sign of coefficient from scenario 2 with replacing the overall consumer confidence index to the current consumer confidence index and scenario 3 with replacing the overall consumer confidence index to the future consumer confidence index. Then for those of subjective factors that is the overall, current and future consumer confidence index, objective factors as control variables in this paper and the private consumption index for non-durables goods are transformed to the empirical framework as figure 4 as below.

Main Independent Variable

Overall Consumer Confidence Index

Average from

Consumer Confidence Index

Consistency Check

Current Consumer Confidence Index

Future Consumer Confidence Index

Control Variables

Consumer Price Index

Averaged Wage

Private Investment Index

Government Spending on Economic Activities

Deposits at All Commercial Banks

Interest Rate of Saving at Commercial Bank

Land and House Expenditures

Market Stock Exchange Index

Market Dividend Yield

Credit Card Spending

Cash Withdrawal for Credit Card and Debit Card from ATM

Dependent Variables

The Private Consumption Index for Non-Durables Goods

Figure 4: The Empirical Framework

Many researchers studied a factor that affects consumption weather Venkadasalam (2015) found that consumer price index is a positive relationship to the private household consumption expenditure. Change in wage directly affects income, if wage increasing leads to increasing income as the result from Ajudua and Ezeji (2015) found that people will spend more on consumption if they get more income, therefore, change in wage is a positive relationship to change in consumption. Alp, Atasoy, Coskun and Morri, (2018) showed the positive relationship between housing wealth and consumption, that means if people spend on land and house to increase

their wealth, there might be positively affected to consumption in the future as same as Poterba (2000) studied the effect between stock wealth and consumption and found that there are positive relationship. Fosu and Twumasi (2021) studied the effect of fiscal policy that is government expenditure that affects consumption expenditure as a negative significant relationship. However, Nyol (2018) explained interest rate and saving affect to consumption, if interest rate of saving increases, it induces people to save more money or deposits more money at banks and finally affects to consume less, therefore, interest rate of saving and deposit money at bank are negative relationship to consumption, in another hand, if people withdraw more cash or hold more cash, the purchasing power of people will increase as same as holding credit card or personal loan that leads to consume more. For financial policy of corporation is a corporation that makes a decision in term of financial weather a dividend payment and investment, if the corporation reserves money to invest more, they will distribute less profit as dividend to investor that affect to investor income (Pal, 2015) as well as Baker, Nagel and Wurgler (2006) studied the effect of dividend and consumption and they found that there are positive relationship to consumption.

Therefore, in this paper rearranges the function that affects to consumption expenditure from the literature review as below and determines to examine the effect to nondurables goods expenditures only because non-durables goods has consumed in the short period of time and re-purchased again about one-three years unlike durables goods or semi-durables goods, people will hold off on purchasing (Krugman, 2020).

Non-Durable Goods Expenditure = f (Consumer Confidence + Consumer Price Index + Wage + Private Investment Index + Government Spending + Deposits + Interest Rate + Land & House Expenditure + Market Stock Index + Market Dividend Yield + Credit Card Spending + Cash Withdrawal)

According to the literature review as mentioned on above, this paper derives the empirical model as below and in order to examine the empirical model, in this paper use the ordinary least square (OLS) regression.

$$NONDURABLE_t = \alpha + \beta_0 CCIOVERALL_t + \beta_1 CPI + \beta_2 WAGE_t + \beta_3 PII_t \\ + \beta_4 GECON_t + \beta_5 SAVING_t + \beta_6 INRR_t + \beta_7 L\&H_t + \beta_8 SET_t \\ + \beta_{10} DIVIDEND_t + \beta_{11} CREDIT_t + \beta_{12} ATMCASH_t + \epsilon$$

Where;

The dependent variable is NONDURABLE stands for the private consumption index for non-durables goods. The key independent variable in scenario 1 is

CCIOVERALL stands for the overall consumer confidence index. The remaining independent variables are control variables that consist of CPI stands for the consumer price index, WAGE stands for averaged wage per month, PII stands for the private investment index, GECON stands for the government spending on economic activities, SAVING stands for the deposits at all commercial banks, INRR stands for the interest rate of saving at commercial bank, L&H stands for land and house expenditure per month, SET stands for the market stock exchange index, DIVIDEND stands for the market dividend yield, CREDIT stands for credit card spending per month and ATMCASH stands for the withdrawal cash in both of credit card and debit card at ATM.

Then, for accuracy of the empirical model to find the effect between CCIOVERALL and NONDURABLE, this paper applies the natural logarithms (ln) into the equation all of variable weather dependent variable and independent variables, excluding INRR and DEVIDEND because there are currently in term of percentage, in order to interpret the coefficient in form of change in percentage, therefore, the reformed empirical model as following:

$$
\begin{aligned}
ln(NONDURABLE)_t \\
= \alpha + \beta_0 ln(CCIOVERALL)_t + \beta_1 ln(CPI)_t + \beta_2 ln(WAGE)_t \\
+ \beta_3 ln(PII)_t + \beta_4 ln(GECON)_t + \beta_5 ln(SAVING)_t + \beta_6 (INRR)_t \\
+ \beta_7 ln(L\&H)_t + \beta_8 ln(SET)_t + \beta_{10}(DIVIDEND)_t \\
+ \beta_{11} ln(CREDIT)_t + \beta_{12} ln(ATMCASH)_t + \epsilon
\end{aligned}
$$

After examination the first scenario as the equation above, in this paper proposes to examine the sign of coefficient for CCIOVERALL, the second scenario replaces from CCIOVERALL to CCICURRENT and the third scenario replaces from CCIOVERALL to CCIFUTURE for testing consistency check because CCIOVERALL has computed by averaging between CCICURRENT and CCIFUTURE.

CHAPTER 4 DATA

4.1 DATA COLLECTION

According to the empirical model, this paper obtained data from secondary research and uses data in form of monthly basis over the past 10 year from January, 2011 until December, 2020 as the number of observations as 120 data points. The dependent variable is the private consumption index in Thailand for non-durables goods (NONDURABLE) is obtained from the Bank of Thailand (BOT). The main dependent variable is Thailand's consumer confidence index (CCI) consists of Thailand's overall consumer confidence index, current consumer confidence index and future consumer confidence index are obtained from the University of the Thai Chamber of Commerce (UTCC), there are other two parties for collecting CCI in Thailand weather The Conference Board in the United State and Thailand's Ministry of Commerce, however, The Conference Board reports CCI in term of quarterly basis and Thailand's Ministry of Commerce have revised procedure and sample size since 2018 that affect to data is inconsistency , therefore, there are not suitable in this paper because this paper proposes to use monthly data basis over the past 10 years. The remaining variables, excluding the consumer price index in Thailand, the market stock exchange index in Thailand and the market dividend yield in Thailand, are obtained from the Bank of Thailand that are the average wage per month in Thailand (WAGE), the private investment index in Thailand (PII), the government spending for economic activities per month in Thailand (GECON), the deposits of all commercial bank in Thailand (SAVING), the interest rate of saving in Thailand (INRR), the land and house expenditure per month in Thailand (L&H), the credit card spending in Thailand (CREDIT) and the cash withdrawal for credit card and debit card at ATM in Thailand. The consumer price index is obtained from Thailand's Ministry of Commerce. The market stock exchange index in Thailand (SET) and the market dividend yield in Thailand (DIVIDEND) are obtained from the Stock Exchange Thailand. The table 1 shows type of variable, symbol, description of symbol, unit for data measurement, sign and source of data obtaining.

Variable Type	Symbol	Description	Unit(s)	Sign	Source
Dependent Variable	NONDURABLE	The Private Consumption Index in Thailand for Non-Durable Goods	Point		The Bank of Thailand (BOT)
Independent Variable	CCIOVERALL	Thailand's Overall Consumer Confidence Index	Point	Positive	The University of the Thai Chamber of Commerce (UTCC)
Independent Variable	CCICURRENT	Thailand's Current Consumer Confidence Index	Point	Positive	The University of the Thai Chamber of Commerce (UTCC)
Independent Variable	CCIFUTURE	Thailand's Future Consumer Confidence Index	Point	Positive	The University of the Thai Chamber of Commerce (UTCC)
Control Variable	CPI	The Consumer Price Index in Thailand	Point	Positive	Thailand's Ministry of Commerce (MOC)
Control Variable	WAGE	Average Wage per Month in Thailand	Baht	Positive	The Bank of Thailand (BOT)
Control Variable	PII	The Private Investment Index in Thailand	Point	Negative	The Bank of Thailand (BOT)
Control Variable	GECON	The Government Spending for Economic Activities per Month in Thailand	Million Baht	Negative	The Bank of Thailand (BOT)

Control Variable	SAVING	Deposits of All Commercial Banks	Million Baht	Negative	The Bank of Thailand (BOT)
Control Variable	INRR	Interest Rate of Saving for Commercial Bank	Percentage	Negative	The Bank of Thailand (BOT)
Control Variable	L&H	Land and Household Expenditure per Month in Thailand	Million Baht	Positive	The Bank of Thailand (BOT)
Control Variable	SET	Market Stock Exchange index in Thailand	Point	Positive	The Stock Exchange Thailand (SET)
Control Variable	DEVIDEND	Market Dividend Yield in Thailand	Percentage	Positive	The Stock Exchange Thailand (SET)
Control Variable	CREDIT	Credit Card Spending per Month in Thailand	Baht	Positive	The Bank of Thailand (BOT)
Control Variable	ATMCASH	Cash Withdrawal for Credit Card and Debit Card at ATM in Thailand	Baht	Positive	The Bank of Thailand (BOT)

Table 1: Description of Data Variable Types, Symbol, Description, Unit, Sign and Sources

4.2 DESCRIPTIVE STATISTICS

This section explains data analysis from the basic statistics summary in terms of minimum, maximum, average and standard deviation (S.D.). For NONDURABLE is a format of index that is computed from Fixed Weighted Composite and the highest index of NONDURABLE at 129.10 points, the lowest index at 96.71 points and the average at 115.80 points over the past 10 years since January, 2011 until December, 2020. The higher index of NONDURBLE reflects the expenditure of non-durables

goods increasing. CCIOVERALL, CCICURRENT and CCIFUTURE are the format of index that CCIOVERALL has the value of index between CCICURRENT and CCIFUTURE because CCIOVERALL is computed from the average of CCICURRENT and CCIFUTURE and the value of CCI has index between 0-200. If CCI has the value of index higher than 100, it reflects to consumer view of confidences are better, the value of index equals to 100 that reflects to consumer view of confidences are not change or remain the same and the value of index less than 100 that reflects to consumer view of confidences are worse. At the table 2 indicates the value of CCI consists of CCIOVERALL, CCICURRENT and CCIFUTURE have the value of index in both of maximum and minimum less than 100 that mean consumer always concerns of confidences over the past 10 years. Moreover, the standard deviation between NONDURABLE and CCIOVERALL have the value of index quite close at 8.56 and 8.47.

In Thailand, CCI has index instability that reflects from consumer view during any situation at those periods. During 2013, CCI increased because of the result from flood rehabilitation campaigns and nationwide minimum wage and salary increases. At the beginning of year 2014, CCI decreased because of political unrest due to declare 60-days state of emergency and Thai coup d'état, however since the middle of year 2014 until the end of year 2014, CCI recovered to increase because of political stability from National Council for Peace and Order focus core policies; anticorruption, economic stimulus and national reform. The last big impact to CCI is Covid19 pandemic because of lockdown restriction and economy in Thailand shut down that directly affects people income and job securities and impact to the lowest CCI over the past 10 years.

Data Symbol	Min	Max	Average	S.D.
NONDURABLE	96.71	129.10	115.80	8.56
CCIOVERALL	47.20	84.80	74.56	8.47
CCICURRENT	31.50	66.60	54.34	7.86
CCIFUTURE	54.60	94.60	82.52	8.83
CPI	90.71	100.40	97.20	2.63
WAGE	9,176.00	14,836.00	13,012.00	1,420.00
PII	105.30	157.90	130.00	11.60
GECON	14,918.00	131,100.00	46,054.00	25,503.00
SAVING	7,485,000.00	15,720,000.00	11,940,000.00	2,188,000.00
INRR	0.25	1.25	0.67	0.19
L&H	41,182.00	143,000.00	83,001.00	19,489.00
SET	916.20	1,830.00	1,438.00	212.90
DEVIDEND	2.58	4.40	3.21	0.37
CREDIT	2,663.00	7,595.00	5,345.00	853.80
ATMCASH	8,974.00	21,783.00	17,011.00	3,018.00

Table 2: The Basic Statistics Summary for Minimum, Maximum, Average and S.D.

CHAPTER 5 EMPIRICAL RESULT

According to the empirical model, this paper aims to examine the hypothesis that the overall consumer confidence index is positive relationship to the private consumption index for non-durables goods in Thailand by examining from the ordinary least squared (OLS) regression for 3 scenarios. In each scenario, this paper runs OLS for 3 times and the objective for each OLS model is as follows; OLS I, this model applies all independent variables as mentioned from the empirical model. OLS II, this model applies the natural logarithm in both dependent variables and independent variables in order to interpret the meaning value of coefficient in terms of percentage. OLS III, this model applies the natural logarithm in both dependent variable and independent variables and removes the high correlation that the value is more than 80 percentages or less that -80 percentages and then removes insignificant variables from OLS II in order to find only significant independent variables. The result of the first scenario shows the relationship between the main independent variable that is CCIOVERALL and dependent variable that is NONDURABLE as figure 5. The second scenario is for consistency check the sign of coefficient for CCICURRENT as figure 6 and the third scenario is for consistency check the sign of coefficient for CCIFUTURE as figure 7.

Scenario 1: The Ordinary Least Squared Regression				
Dependent Variable: NONDURABLE				
Main Independent Variable: CCIOVERALL				
Variables	**OLS I**	**OLS II**	**OLS III**	**OLS IV**
Intercept (Constant)	−179.470 *** (−4.682)	−7.20531 *** (−7.151)	−5.84429 *** (−12.35)	−3.91641 *** (−5.144)
CCIOVERALL (ln)	0.252581 *** (5.233)	0.131807 *** (5.028)	0.0925317 *** (5.265)	0.0361633 * (1.959)
CPI (ln)	2.90660 *** (5.511)	2.42325 *** (6.344)	2.26893 *** (22.15)	1.33628 *** (5.522)

WAGE (ln)	−0.000926504 * (−1.734)	−0.135216 ** (−2.524)		
PII (ln)	−0.0187207 (−0.8855)	−0.0329247 (−1.379)	−0.0411088 * (−1.886)	
GECON (ln)	7.10651e-06 (0.9337)	0.00535450 (1.564)	0.00768911 ** (2.300)	
SAVING (ln)	9.35287e-07 * (1.780)	0.102596 ** (2.121)		
INRR	−4.26756 *** (−3.659)	−0.0364755 *** (−3.714)	−0.0435998 *** (−4.471)	−0.0310588 *** (−3.184)
L&H (ln)	−8.62655e-06 (−0.6804)	−0.00446951 (−0.5012)		
SET (ln)	−0.00272051 (−0.7444)	−0.00993717 (−0.2295)		
DEVIDEND	1.09362 (0.7077)	0.0149238 (1.105)		
CREDIT (ln)	0.00119415 *** (3.043)	0.0557329 *** (3.291)	0.0642326 *** (3.977)	0.0299672 ** (2.422)
ATMCASH (ln)	−0.000321386 *** (−2.984)	−0.0377893 *** (−2.802)	−0.0607917 *** (−5.410)	

NONDURABLE$_{t-1}$ (ln)				0.454657 *** (5.801)
Adjusted R^2	0.960802	0.964555	0.962389	0.963376
Number of Observation	120	120	120	119
Note: * Indicates significant at 90% level of confidence ** Indicates significant at 95% level of confidence *** Indicates significant at 99% level of confidence				

Figure 5: The Ordinary Least Squared Regression from Gretl for scenario 1

According the result of the ordinary least squared regression for scenario 1, in the model OLS1 shows the high positive significant variables for the overall consumer confidence index (CCIOVERALL) to the private consumption index of non-durables goods at the value of coefficient as 0.25 that means if the overall consumer confidence index increases by 1 point, the value of the private consumption index of non-durables goods increases by 0.25 point, however, there are other two independent variables that are highly significant as indicating at 99 percentages level of confidence to the private consumption index for non-durables goods that are the consumer price index (CPI) and credit card spending (CREDIT) and another one independent variable is significant as indicating at 90 percentages level of confidence is the deposits at all commercial banks (SAVING). In the other hand, the interest rate of saving at commercial bank (INRR) and cash withdrawal in both of credit card and debit card at ATM are highly negative significant as indicating at 99 percentages level of confidence to the private consumption index for non-durables goods as well as the another independent variable is also negative significant as indicating at 99 percentages level of confidence that is average wage per month (WAGE).

For OLS II as transforming the equation in term of the natural logarithm in both of dependent variable and independents variables, the sign and number of significant independent variables remain the same as same as OLS I, however, the coefficient of CCIOVERALL is transform to term of percentage as 0.13 percentage that means if the overall consumer confidence index increases by 1 percentage, the private consumption index for non-durables goods increases by 0.13 percentage. After that to remove a high correlation independent variables, in this paper uses Correlation Matrix from Gretl to remove an independent variables that have the value of correlation more than 80 percentages or less than -80 percentages and the result show that the consumer price index (CPI), average wage per month (WAGE) and deposits at all commercial banks (SAVING) are correlation, therefore, in this paper keeps only the consumer price index because CPI is the high significant as indicating at 99

percentages level of confidence, while, the other two variables that are WAGE and SAVING have significant as indicating at 95 percentages level of confidence.

Before examination for OLS III, in this paper uses the equation as same as OLS II with the natural logarithm format and remove insignificant independent variables from the result of OLS II that are the land and house expenditure (L&H), the market stock exchange index (SET) and the market dividend yield (DIVIDEND) out of the model OLS III and the result of OLS III shows that the overall consumer confidence index is positive relationship to the private consumption index for non-durables goods and the value of coefficient is 0.09 percentage that means if the overall consumer confidence index increases by 1 percentage, the private consumption index for non-durables goods increases by 0.09 percentage as indicating at 99 percentage level of confidence, however, there have three independents variables are positive relationship with significant that are the consumer price index (CPI), the government spending on economic activities (GECON) and the credit card spending (CREDIT) and three independent variables are negative relationship with significant that are the private investment index (PII), the interest rate of saving (INRR) and the cash withdrawal in both of credit card and debit card at ATM (ATMCASH)

However, in order to examine the accuracy of OLS III in scenario 1, in this paper would like to examine two solutions. The first solution is adding another model as OLS IV for increasing another independent variable from the lagged one month period of dependent variable as the notation as NODURABLEt-1 into the natural logarithm equation as same as the OLS II and then removing insignificant independent variables. For the assumption of checking accuracy of OLS III, in this paper considers the R-Square of OLS IV that should be higher than OLS III and the sign of significant independent variables remains the same sign. According to the result OLS IV as the figure 5, the R-Square of OLS IV is 0.963 which is higher than the R-Square of OLS III is 0.962 and the sign of coefficient for CCIOVERALL is the same sign as positive, moreover, for the significant independent variables from the OLS IV remain the same sign as the OLS III, therefore, the assumption for checking the accuracy of OLS III by using R-Square comparison is acceptable.

Another solution for checking the accuracy of OLS III is consistency check for the scenario 2 and scenario 3 as the figure 6 is for the ordinary least squared regression by replacing the current confidence index (CCICURRENT) to the overall consumer confidence index (CCIOVERALL) and the figure 7 is for the ordinary least squared regression by replacing the future confidence index (CCIFUTURE) to the overall consumer confidence index (CCIOVERALL). In both scenario 2 and scenario 3 assume that the sign of coefficient of CCICURRENT and CCIFUTURE are the same sign as the coefficient of CCIOVERALL in scenario 1. For the result of the scenario 2 and scenario 3 show the sign of coefficient for CCICURRENT and CCIFUTURE are the same sign as the sign of coefficient for CCIOVERALL in the scenario 1, therefore, the assumption of checking the accuracy of OLS III by using consistency check is acceptable.

Scenario 2: The Ordinary Least Squared Regression (Consistency Check)			
Dependent Variable: NONDURABLE			
Main Independent Variable: CCICURRENT			
Variables	**OLS I**	**OLS II**	**OLS III**
Intercept (Constant)	−246.743 ***	−8.51368 ***	−5.92709 ***
	(−5.893)	(−7.566)	(−11.47)
CCICURRENT (ln)	0.252646 ***	0.0998992 ***	0.0743972 ***
	(4.312)	(4.167)	(4.196)
CPI (ln)	3.74882 ***	3.01217 ***	2.30914 ***
	(6.821)	(7.673)	(20.28)
WAGE (ln)	3.74882 **	−0.170065 ***	
	(−2.432)	(−3.069)	
PII (ln)	−0.0150684	−0.0291485	−0.0435835 *
	(−0.6879)	(−1.180)	(−1.927)
GECON (ln)	9.19860e-06	0.00604358 *	0.00715925 **
	(1.171)	(1.714)	(2.064)
SAVING (ln)	4.26053e-08	0.0350347	
	(0.08813)	(0.7783)	
INRR	−4.06501 ***	−0.0344712 ***	−0.0381498 ***
	(−3.372)	(−3.410)	(−3.824)

L&H (ln)	−1.12102e-05 (−0.8493)	−0.00617508 (−0.6687)	
SET (ln)	0.000424210 (0.1163)	0.0173037 (0.3964)	
DEVIDEND	1.69231 (1.042)	0.0172772 (1.226)	
CREDIT (ln)	0.00146135 *** (3.675)	0.0633813 *** (3.684)	0.0780282 *** (4.859)
ATMCASH (ln)	−0.000424213 *** (−3.860)	−0.0446076 *** (−3.197)	−0.0714368 *** (−5.907)
Adjusted R^2	0.958056	0.962299	0.959452
Number of Observation	120	120	120
Note: * Indicates significant at 90% level of confidence ** Indicates significant at 95% level of confidence *** Indicates significant at 99% level of confidence			

Figure 6: The Ordinary Least Squared Regression from Gretl for scenario 2 (Consistency check).

Scenario 3: The Ordinary Least Squared Regression (Consistency Check)			
Dependent Variable: NONDURABLE			
Main Independent Variable: CCIFUTURE			
Variables	**OLS I**	**OLS II**	**OLS III**
Intercept (Constant)	−246.743 *** (−3.665)	−6.31905 *** (−6.384)	−5.66731 *** (−12.50)
CCIFUTURE (ln)	0.235918 *** (5.467)	0.141234 *** (5.388)	0.0953389 *** (5.606)
CPI (ln)	3.74882 *** (4.595)	2.08786 *** (5.337)	2.21883 *** (22.70)
WAGE (ln)	−0.000701180 (−1.313)	−0.114137 ** (−2.147)	
PII (ln)	−0.0204181 (−0.9748)	−0.0352186 (−1.497)	−0.0405627 * (−1.885)
GECON (ln)	5.98766e-06 (0.7924)	0.00491926 (1.455)	0.00763023 ** (2.316)
SAVING (ln)	1.22430e-06 ** (2.250)	0.129600 ** (2.608)	
INRR	−4.28280 *** (−3.709)	−0.0371012 *** (−3.831)	−0.0445420 *** (−4.638)

L&H (ln)	−7.29875e-06 (−0.5818)	−0.00389126 (−0.4428)	
SET (ln)	−0.00364180 (−0.9937)	−0.0180262 (−0.4197)	
DEVIDEND	0.715756 (0.4693)	0.0137341 (1.035)	
CREDIT (ln)	0.00113053 *** (2.891)	0.0552437 *** (3.320)	0.0614804 *** (3.843)
ATMCASH (ln)	−0.000274914 ** (−2.539)	−0.0346188 ** (−2.598)	−0.0553814 *** (−4.995)
Adjusted R^2	0.961516	0.965533	0.963360
Number of Observation	120	120	120
Note: * Indicates significant at 90% level of confidence ** Indicates significant at 95% level of confidence *** Indicates significant at 99% level of confidence			

Figure 7: The Ordinary Least Squared Regression from Gretl for scenario 3 (Consistency check).

For the result of the empirical model refers to the scenario 1 of the OLS III, the overall consumer confidence index is positive relationship to the private consumption index for non-durables goods in Thailand as same as the result of literature review from Iyke and Juhro (2020) in Indonesia and the result from Brinca and Dees (2013) in the United State and the euro area, moreover, there are four variables of the significant independent variables in the OLS III are the same sign as the result of the literature review. The result from Venkadasalam (2015) showed the positive relationship between the consumption and the consumer price index, Pal (2015) explained the investment of corporations is negative relationship to consumption, Nyol (2018) explained interest rate of saving is negative relationship to consumption and credit card spending is positive relationship to consumption. By the

way, there are two variables of the significant independent variables show the difference sign of coefficient unlike the result for the literature review which are government spending on economic activities is positive relationship unlike Fosu and Twumasi (2021) showed the result is negative and the cash withdrawal in both of credit card and debit card from ATM is negative relationship unlike Nyol (2018) explained holding cash is positive to consumption.

CHAPTER 6 CONCLUSIONS AND POLICY IMPLICATIONS

This paper proposes to study the effect of Thailand's consumer confidence index on the private consumption index of Thailand for non-durables goods as well as considering the control variables from Keynesian theory of consumption (1936) for the objective factors that is quantifiable as known as economic indicators and uses time series data that is obtained from secondary research in format of monthly data basis over the past 10 years since January, 2011 until December, 2020 and then applies the ordinary least squared regression to examine the hypothesis and the result shows the positives relationship between the overall consumer confidence index and the private consumption index for non-durables goods, moreover, the consumer price index, the government spending on economic activities and the credit card spending are positive relationship to the private consumption index for non-durables goods, unlike, the private investment index, the interest rate of saving and the cash withdrawal in both of credit card and debit card are negative relationship to the private consumption index for non-durables goods.

In term of policy implications, Thailand's government should specifically focus on people occupation and income policies or campaigns in order to increase people confidence in job prospects and expected income as well as Thailand's government should increase the confidence on economic conditions to any size business in all of industry. Especially in economic crisis of Covid-19 pandemic in 2020, the consumer confidence index and the private consumption index significantly declined, however, after Thailand's government launched the campaign of the 50:50 co-pay purchase subsidy campaign and the registration to applicant a 3,000 baht credit, the consumer confidence index slightly increase.

In this paper has the obstacle in term of available data in Thailand, most of data are macro level that cannot break down into sub-group, for example, by geography, by income-class or by aging, if we have specific data to sub-group, there would be great to address the question into those group and for policy implication might accurate more than the question with the big picture, therefore, the suggestion in this paper for future study should consider to the structure factor, for example, income distribution or demographic factors, especially for demographic factors because there are difference on consumption expenditure with identical income, for example of demographic factors are size of family, stage in the family life cycle, plate of residence, etc.

APPENDIX

APPENDIX 1: CORRELATION MATRIX

	CCIOVERALL	CCICURRENT	CCIFUTURE	CPI	WAGE	PII	GECON	SAVING	INRR	L&H	SET	DEVIDEND	CREDIT	ATMCASH
CCIOVERALL	1.0000	0.9403	0.9797	-0.4213	-0.3891	0.0747	-0.2079	-0.4797	0.6383	-0.1423	0.1777	-0.5863	0.3338	0.6352
CCICURRENT		1.0000	0.8538	-0.6399	-0.5632	-0.0418	-0.2733	-0.6515	0.6676	-0.2416	-0.0330	-0.4913	0.1510	0.7608
CCIFUTURE			1.0000	-0.2606	-0.2552	0.1442	-0.1509	-0.3413	0.5846	-0.0673	0.3015	-0.6184	0.4257	0.5254
CPI				1.0000	0.9594	0.4053	0.3658	0.9771	-0.4666	0.5416	0.7234	-0.1932	0.4833	-0.5530
WAGE					1.0000	0.4257	0.3558	0.9595	-0.3980	0.5197	0.7415	-0.2663	0.4957	-0.4145
PII						1.0000	0.5103	0.4069	-0.0067	0.6333	0.4522	-0.3172	0.6199	0.0500
GECON							1.0000	0.3913	-0.1123	0.2994	0.1991	-0.0244	0.2372	-0.1715
SAVING								1.0000	-0.4959	0.5651	0.7162	-0.2144	0.4384	-0.5375

INRR								1.0000	-0.2837	-0.0636	-0.3088	0.0464	0.5174
L&H									1.0000	0.4572	-0.1876	0.5589	-0.1315
SET										1.0000	-0.7860	0.6628	-0.0883
DEVIDEND											1.0000	-0.5661	-0.3683
CREDIT												1.00000	0.2377
ATMCASH													1.0000

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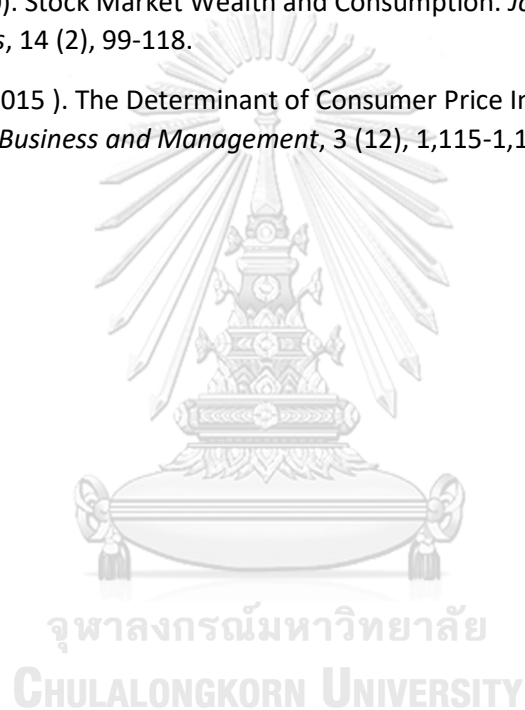
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