

EE489: Seminar in Industrial Economics
CAN GIFT SHOP SALES PREDICT THE FUTURE OF THE
ECONOMY?
(THE CASE OF THAILAND)

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1. ABSTRACT

Gross Domestic Product (GDP) is considered as one of the main determinants of a country's overall economic level. In this study, Manufacturing Production Index (MPI) is used as a proxy for the GDP. This paper tries to investigate whether the sales of Gift shop market could be a leading indicator of the Gross Domestic Product (GDP) whereby Thailand is chosen as the country to analyze. To analyze the data, a regression model is formed by having MPI as the dependent variable. Other six independent variables are export of goods, import of goods, consumer price index (CPI), interest rate, exchange rate and private consumption. This paper would also explore and discuss factors that could influence the GDP of Thailand. In order to estimate the regression, the Autoregressive Distributed Lag model (ARDL) was selected to test for the result. Moreover, the variables were checked for stationarity using the Augmented Dicky-Fuller (ADF) tests for the Unit Roots. The collected data are covered for 7 years period, from 2009 to 2015. The regression result revealed that the gift shop sales could be served as a leading indicator for MPI.

Key words: *Gross Domestic Product (GDP), Manufacturing Production Index (MPI), determinant of GDP, Gift shop, leading indicator, Thailand*

2. INRODUCTION

Most of the people must have gone to or at least walked pass a Gift shop store that are located in many familiar places such as Central plaza, The Mall, Chinatown or any pop-up market along the streets. So, what does Giftshop really mean? Giftshop is defined as a store that is primarily selling variety of items across different category or seasonal products ranging from household accessories, car accesories, stationary, bags, dolls, special day cards to hand made goods collection. These products are either made domestically or mainly import from the neighboring countries such as China, Japan or Korea. Recently, the Thai economy has been fluctuating due to many circumstances such as the occurrence of natural disaster (flood in 2011), political instability and upturn or downturn in the world economy. Due to this fluctuation, it is essential for entrepreneurs in the gift shop market to predict the future economy so that they could adjust their business strategies according to the economic condition. The faster the prediction, the faster the company could adjust themselves to the ever-changing economy. Therefore, this raises a question of whether the sales of Gift shop market could be a leading indicator of economics?

In order to answer this question, the time series data of factors that could affect the country's economy as well as the sales of gift shop are being collected to estimate the regression result and analysis. To see the relationship between the gift shop market and the economy, a graph of gift sales and MPI against time represented in figure 1 was plotted to observe the trend during the past 7 years (2009-2015).

Figure 1: Graph of MPI and Giftsales against time

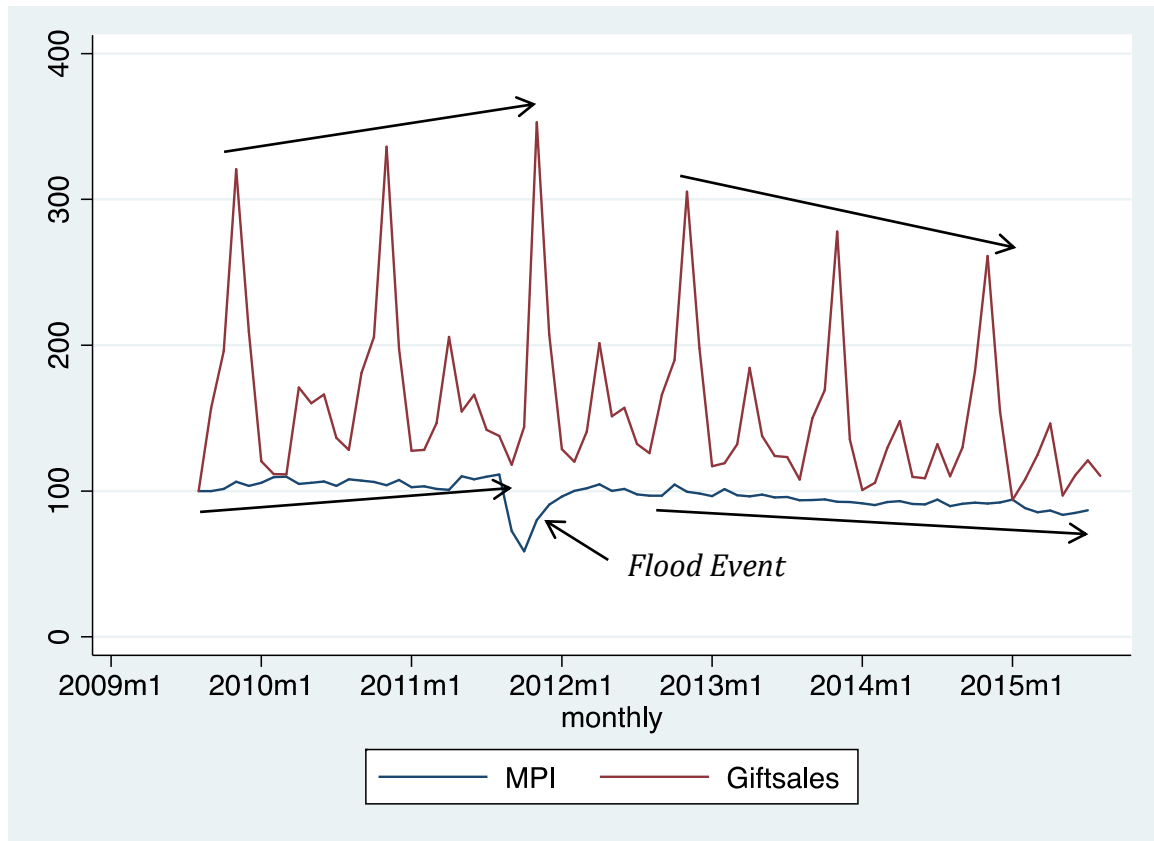


Figure 1 is a graph showing the value of gift shop sales and Manufacturing Production Index (MPI) against time. According to the graph of gift shop sales, it could be observed that the sales of gift shop have been increasing and decreasing depending on the month of sales. The overall trend shows that the sales of gift shop, from year 2009 to 2012, have been increasing gradually. However, after the year 2012, the sales have been decreasing gradually up until year 2015. By observing the sales yearly, approximately, the sales of gift shop are quite low starting from the period of February to October and would increase largely during November then most likely to reach its peak in December. In January, the sales drop dramatically by about 40%. These trends imply that gift shop product is considered to be seasonal products.

According to the graph of MPI, it could be observed that the trend of MPI have been increasing moderately from year 2009 towards the end of year 2011 and

reached its peak in the month of October 2011. In October 2011, the MPI falls sharply until the end of November 2011 and slowly rises again to reach its stable state by the middle of year 2012. This sudden drop of MPI in October 2011 is mainly due to the worst flood that has ever occurred in Thailand. The total damage that the flooding has caused is around 1,440 billion baht. During that period of time, more than 10,000 factories are closed and over 350,000 workers are being laid off (Chayut Setboonsarng, 2011). This shows that the severe flooding has affected the production rates strongly, all over Thailand.

In order to see the degree of how these two graphs are correlated, the STATA 13 program is used to test their correlation. The result is shown in the Table 1.

Table 1: Correlation between giftsales and MPI

Observation = 72

	Giftsa~s	MPI
Giftsales	1.00	
MPI	0.1192	1.00

It shows that there is correlation between gift sales and MPI of around 11.92%. To compare these two graphs, the data have been rescaled, starting from 100 in the first period for both variables. From the graph, it shows that gift shop sales actually have a positive relationship with the MPI. The evidence could be found in the graph during the period of 2009 to 2012, the sale of gift shop is increasing gradually as well as the MPI. Moreover, in the period of 2012 to 1015, both MPI and gift shop sales both decrease slowly. This could imply that during the bad economic situation, both gift shop sales and MPI had dropped. This positive correlated movement provides a signal that the gift shop sales could possibly be the leading indicator of the economic.

Gift shop is one of the largest components in Thailand retailing market. It is considered as luxury goods as the demand for Gift shop product is highly and positively associated with the wealth of the consumers (Tejvan Pettinger, 2011) This means that the higher the wealth or income, the more likely the consumers would buy these products. While the sales of necessary products such as food and water is considered to be less responsive to income. When consumer income rise or fall, the increase or decrease in demand of the necessity good is less than the rise or fall income. With the nature of gift shop product, the growth of the Gift shop market in Thailand would be growing in line or the same direction with the country economy (Gross domestic product).

Many researchers have investigated on leading indicators by analyzing the stock market. Apart from that, there is another previous research on the consumption as a leading indicator of economic. Both studies used the Autoregressive AR(1) to find out the result and it turned out to be positive as both factors could forecast the economy to a certain extend. However, there is no research that focus on the performance of a single industry. Therefore, there is still a huge research gap for further studies to fill in. Thus, this study would use the gift shop market to analyze by using Autoregressive Distributed Lag (ARDL) model to estimate the result. The gift shop market is selected in this study because it is considered as a luxury product, which known to be highly responsive to the changes in income or the overall economy.

Objective of study

The main objective of this paper is to find out if the sales of Gift shop market a leading indicator of Thailand Gross Domestic Product (GDP). Apart from this, this study would also review the factors, which are the independent variables that could also influence the Gross Domestic Product (GDP) in Thailand.

3. LITERATURE REVIEW

3.1 The determinants of Gross Domestic Product (GDP)

There have been a numbers of theoretical and empirical researches that study on the relationship between specific factors such as the stock market, interest rate and unemployment rate on the growth of a country's economy, in the context of both developed countries and developing countries. According to the research, there have been no studies that focus on the factors that influenced the Gross Domestic Product (GDP) in Thailand. Therefore, this literature would be providing a brief review on the factors that influence the economy (GDP). Apart from this, there would also be a review about the gift market.

According to the research, it is found that export is considered as one of the most influential factors that stimulate the economic growth. The examination of their relationship is not new as there have been several studies that discuss about the important of export. Feenstra (1990), Baldwin and Forslid (1996) have suggest that export helps a country to enhance their factors of productivity due to the increase in production, which lead to economy of scales. In addition, it also supports other externalities such as the improvement in human skills, transfer of technology and enhance productivity of the overall economy. Apart from this, there are also various studies that discuss about the export performance of the developing countries. Fosu (1990), Greenaway, Morgan and Wright (1999), Harrison (1996), Hussain (1998), Srinivasan and Bhagwati (2001) Crespo-Cuaresma and Wörz (2003) have claimed

that exporting of raw materials and intermediate goods could be affected by the cyclical change of the world economy more than the export of manufacturing products in the international market. This implies that the developing countries could be affected more heavily than the developed countries. In the other study, Ullah et al (2009) has examined the relationship between export and economic growth in one of the developing country, Pakistan. He investigates by using time series econometric method over the period of 1970 to 2008. In this paper, the result shows that an increased or expansion in export has lead to the economic growth of the country. From the studies above, it could be conclude that export has a very strong positive relationship with the growth of the economy (GDP).

Besides export, researchers also consider inflation as one of the variables that is related to the fluctuation of the economy (GDP). An increase or decrease in inflation rate are often meaning either a changes in money supply or overall price level (Ryan Barnes, 2006). To measure the inflation, the consumer price index (CPI) is being used as an inflation indicator. The CPI is the monthly measurement of the changes in price that are paid for all the goods and services. There have been many research papers that investigate on the relationship between inflation and economic growth. One of those is from Fisher (1993), he investigated their relationship by using regression models. The result of his investigation turns out to be that there is a negative relationship between inflation and economic growth. Apart from this, there is also another study by Barro (1997), he did his investigation by gathering the data of a hundred countries for a period of 30 years from 1960 to 1990 and use the regression equation system to analyze his result. The regression result shows that a 10% increase in inflation would lead to a decrease in economic growth rate by up to 0.3% each

year. From these studies, it could be concluded that there is a negative relationship between inflation rate and the growth of the economy.

Stock market is known as one of the vital leading indicators of the economy as the movement of the stock price level is based on the income of the companies that are expected to earn (Brad Comincioli, 1996). Many studies in economics literature have shown that the stock market development has a positive relationship with the economic growth. Neupane (2006) has stated that the fluctuation of the stock market could help investors to predict the growth of the economy in the future. Holger Sandte (2012) stated that the performance of the stock market is always driven by expectations. This means that the changes in stock prices are often closely related to the Gross Domestic Product (GDP). Fama (1981), Geske and Roll (1983), Fama (1990) and Schwert (1990) have also confirmed that stock returns are strongly correlated with future real economic activity. Adajaski and Biekpe (2005) have supported their points by examining the upper middle-income countries and they conclude that there is a considerable positive impact of the stock market development on the economic growth of the countries. Therefore, a decrease in stock price would signal recession in the near future, while an increase in stock price would signal the economic growth. However, it would be accurate if the estimated earnings were correct.

According to economics literature, import of goods and services is also known as one of the factors that influences economic growth. There have been many studies on the relationship between import and economics across many different countries. In the past, the research about trade and economics was started by Little et al. (1970), Balassa and Associates (1971) and Nelson and Winter (1974), their studies have concluded that import of goods and services could lead to the growth of economics. This is because the import activities often lead to a new innovation and induced

competitions. Tong (1995) has studied on the relationship between economic growth and import and the result shows that import value or volume at different times have played a different part in the economy. However, as a whole, he found that there was a positive correlation between import and economic growth of the country. Sangho Kim, Hyunjoon Lim, and Donghyun Park (2007) also investigated on this issue for Korea and they have found out that import has a significant positive impact on the economic growth. Therefore, these studies have shown that import could be considered as one of the main factors that positively influenced the GDP of a country.

Another factor that could affect the GDP of the country is the unemployment rate. According to Okun's law, it states that there is a negative relationship between the unemployment rate and the GDP of a country. Historically, it also state that a 1% decrease in GDP would lead to an about 2% increase in the unemployment rate. However, this change in number might not be true for all cases. Jaun M. Sanchez (2012) studies on the relationship between the unemployment rate and GDP during the recession (2009-2011), he found that with only 0.5% decrease in GDP have lead to an 3 percentage-point increase in unemployment, which is higher that what the Okun's law have stated. Linda Levine (2013) have stated that the decline in unemployment rate often occur some time after the economic have recovered. The reason that unemployment does not drop at the same time as the economic growth is that most of the firms might not immediately realize the effect of the changes of the economy. This occurrence could indicate that the unemployment is a lagging indicator of economics. However, in the case of Thailand, the unemployment rate is very low (below 1% since the year 2011). This is because when the workers get fired or could not find the job, they could basically go to any agricultural sectors or informal sector to find a job. For example, they could just be self-employed by

becoming a taxi or motorbike driver or could buy franchise and open a shop as a street vendors (Jon Fernquest, 2015). Therefore, unemployment rate might not have a very strong relationship with the growth of the economy in Thailand.

Apart from these variables, it is found that the interest rate is also another variable that is used to shape the economic condition of the country. It is considered as one of the economics tools that is being use to stabilize the economy by restricting the unwanted factors such as an increase in consumer expenditure and inflation rate (wiseGEEK). The changes in interest rate could also affect the spending behavior of people and firms in the economy (J.B. Maverick). An increase in interest rate would lead to an increase in the amount of savings or a reduction in spending by consumer. This is because the consumer could benefit from the higher rate of return. On the other hand, a decrease in interest would lead to an raise in consumption or spending as it is cheaper to invest due low borrowing cost. This implies that interest rate has a negative relationship with the GDP. Obamuyi and Olorunfemi (2011) have investigated the involvement of financial reform and interest rate movement on Nigeria economic growth. The result of their study shows that financial reform and interest rate have an essential effect on the economic growth in Nigeria. From the study, it could be implied that the changes in interest rate is significant for the country economic growth.

Another economic indicator that most research papers discuss about is the exchange rate. Exchange rate is the price of one currency in relation to the price of another currency. It is considered as a macroeconomic policy variables that able to signal the competitiveness of a country (Mori Kogid, 2012). The number of exchange rate could also be shape by many factors such as inflation as well as GDP. The exchange rate has an impact on the growth of economy because it could shape the

volume of export and import, which in turn affect the GDP of the country. Thapa (2002) states that there is a strong relationship between exchange rate and economic growth in a small open economy. According to one of the study in Kenya by McPherson and Rakovski (2000), it revealed that overvalued of the exchange rate would obstruct the economic growth. Dani Rodrik (2007) has support their claim by stating that decrease in overvaluation would improve the country economy as well as an increase in undervaluation. However, this mechanism would hold only for the developing countries. All in all, Eichengreen (2007) suggest that exchange rate have no direct effect on the growth of the economy, however, keeping an appropriate exchange for the country could support the growth opportunity for the country. This implies that the country must have a strong policy to keep the exchange rate appropriate for the favorability of the trade market.

3.2 Gift shop Market

Private consumption or consumer expenditure is considered as one of the main market indicator as it measures the amount of money that every household spent on both durable goods (machines, cars, houses) and non-durable goods (food, fuel and medication) (Jon Ogg). Mark Skousen (2011) suggests that the consumer expenditure made up to more than 70 percent of the overall economy and the study revealed that consumer is the key that gives boots or shape the economy. The increase in consumer expenditure would lead to a growth in the economy, vise versa. This implies that consumer expenditure has a positive relationship with the economy and could be a leading indicator of economics. The sale of gift shop is considered as one of the components that contribute to a certain portion of the total expenditure. In addition, these products are highly responsive to consumer's income due to its nature of luxury goods. When income increases, the demand for these luxury products would increase

more than the other kind of products. Therefore, it is suggest that the sales of gift shop could be a good leading indicator of economic.

In the past, the worldwide gift shop industry started as a very small industry. Their stores are usually located in the airport and some tourist areas. However, due to the expansion in the gift shop market, the industry has grown larger and became a million dollar business (Veronica G. Rodriguez, 2009). Charles Gordon (2004) has stated that people are now living in a souvenir society, which mean that everything has to be commemorated wherever we go. It could also be considered as a seasonal product because these products are usually brought during the special days such as Children day, Christmas and New Year.

Back in the year 2000, it was found that many consumers are becoming more and more interested in the Gift shop products in Thailand (เดือนจิตร สุรินทวงศ์). This strong megatrend has lead to a massive expansion in the Gift shop market as many entrepreneurs saw this great opportunity and decide to enter the market. This market has greatly contributed to the Thai economy thereafter. Eakarat Petchara and Yuttana Thamcharoen (2010) have revealed that in year 2011, there is an increase in demand for the gift shop product. According to their research, it came out that up to 82.7% of the people in Bangkok that they surveyed buy gift during the New Year. This shows that there is an increasing trend of people in Bangkok that bought gift product during New Year. They also have predicted that this trend would continue to rise in the next coming years. Due to the high growth in the gift shop market, more and more Small Business Enterprise (SME) enters into this market by importing in product mainly from China. However, in 2013 and 1014, it is found that the sales of gift shop product have decreased dramatically by up to 30%. It is predicted to drop even further in the future due to the poor economic condition (Dailynews, 2015).

4. VARIABLES AND DATA USED IN THIS STUDY

Upon reviewing some of the theories and literature reviews that are related to the measurement of economic growth, it shows that all the factors mentioned above either have a positive or negative relationship with the economic. All in all, these factors could influence the GDP of a country. Therefore, the dependent variable that would be applied in the model is the Manufacturing Production Index (MPI). The independent variables used in this model are export, import, gift shop sales, consumer price index (CPI), exchange rate, interest rate and private consumption index (PCI).

For this paper, the study would be using the Marginal Production Index (MPI) as a proxy of GDP. MPI is the indicator for the volume of the production produced by those industrial firms (Bank of Thailand). The MPI is being used as a proxy of GDP because the data for GDP is available in quarterly and annually, while the frequency of data for MPI is available in monthly. The MPI is considered to be a good proxy for GDP because it is considered as a coincident indicator of GDP. It means that the changes in the MPI would be able to reflect or indicate the same movement in the overall economy, which is the GDP of the country (Ryan Barnes, 2009).

Even though the stock market is considered as one of the essential leading indicator of economic, according to the literature review above, the SET index would not be used as one of the independent variables in the model. This is because the independent variables listed above are often measured monthly or annually but the stock prices are revised on a day-to-day basis. In addition, the stock prices are not stable, it often fluctuate on a day-to-day basis. Their movement is often related to the expectation of the buyers and the situation in the market.

To examine the relationship between these selected dependent and independent variables, the export, import, unemployment rate, CPI and PCI data were

being collected from the Bank of Thailand (BOT) Official website. The data on interest rate and exchange rate were collected from the CEIC Database (Thammasat University). The data on the sales of gift shop (Giftsales) were taken from one of the company in Thailand. As the company data is confidential, I have rescaled the data to disguise its true value. All these collected monthly time series data were collected covering the period from 2009 to 2015 for the past 7 years. Table 2 shows the statistic on the time series data of Thailand from the period of 2009 to 2015.

Table 2: Summary statistic table

Variable	Obs	Mean	Std. Dev.	Min	Max
mpi	80	176.1037	18.6716	106.2	216.5
export	80	5500.938	712.3201	3598.809	6467.137
import	80	5608.813	1013.904	2859.613	7706.779
giftsales	73	471.0546	167.9312	282.4565	1062.766
exchange	79	31.92011	1.551353	29.0573	36.0114
ir	79	3.574557	0.4412447	2.51	4.44
cpi	81	101.4723	5.022467	91.1	107.9
pci	81	110.454	9.622961	91.18	131.45

5. METHODOLOGY AND MODELS

As this research paper would investigate whether gift shop sales could be used as leading indicator of economic and also analyze the relationship between the independent variables (export, import, consumer price index, interest rate, exchange rate, private consumption and gift shop sales) and dependent variable (manufacturing production index). This paper would be using the econometric model to find the result and analyze the findings. The econometric model could be done through statistical software (STATA 13). This program would be used to run the Autoregressive Distributed Lag model (ARDL) by Ordinary Least Square (OLS) method and analyze the constructed linear regression. The ARDL regression model is estimated in the following form:

$$\begin{aligned}
Y_{t-2} = & \beta_0 + \beta_1 \text{export}_{t-3} + \beta_2 \text{import}_{t-3} + \beta_3 \text{ir}_{t-1} \\
& + \beta_4 \text{cpi}_{t-2} + \beta_5 \text{ex}_{t-2} + \beta_6 \text{giftsales}_{t-2} \\
& + \beta_7 \text{pci}_{t-3} + \beta_7 \text{flood} + \mu_1
\end{aligned}$$

Since the collected data are time series, therefore, it is necessary to conduct the Unit Root Test to test for the stationary of the collected data. In order to test their stationary, Augmented Dickey-Fuller (ADF) test is being adopted to check for stationarity. The data have to be non-stationary in order for the model to behave better (Norman Arshed, 2014). Once the data are non-stationary, it is also required to check for the optimal lag for each specific variable. The optimal lag is the number of lag that should be use in the regression model. This could be done through Vector Auto Regressive Specification Order Criterion (VARSOC) table (Norman Arshed, 2014). After checking the stationary of data and the optimal lag, the data available for finding the result. After running the OLS regression system, Durbin-Watson test is being adopted to test check for spurious problem. In other words, it could help to detect false relationship in the model.

6. RESULT AND DISCUSSION

6.1 Test of Stationary (Unit Root test)

Testing for the stationarity is a very important step in finding the result. This is because regression that has the non-stationary data could lead to a counterfeit result (Mian Sajid Nazir, 2010). The result of the ADF test are presented in the Table 3:

Table 3: Augmented Dicky-Fuller test for unit root

Number of observation = 78

	mpi	Export	Import	d.import	cpi	d.cpi	ir	d.ir	ex	d.ex	giftsales	pci	d.pci
P-value	0.0009	0.0184	0.6193	0	0.9933	0.0019	0.2608	0.000	0.9596	0	0	0.536	0

According to the table above, the test result revealed that the null hypothesis of unit root is rejected for four variables, which include MPI, export and giftsales at different significant level (MacKinnon approximate P-value for $Z(t) < 0.05$). This implies that these four variables contain no unit roots and are stationary at level form $I(0)$. However, the table shows that there are two variables that fail to reject the null hypothesis (MacKinnon approximate P-value for $Z(t) > 0.05$). These three variables are import, interest rate, cpi, pci and exchange rate. To correct this, first different method is adopted to make the data become stationary, as it is required for further test. After applying the first difference, it is found that the three variables were stationary at order $I(1)$. With this result, the collected variables are ready for further tests.

6.2 ARDL Estimation Results

Upon using the Autoregressive Distributed Lag model (ARDL) model to run an Ordinary Least Square (OLS) regression analysis through STATA 13, the R-square shows that the independent variables are able to explain the dependent variable (MPI) in this model by up to 90 percent. In addition, the overall F-test is also statistically significant. This shows that the overall regression result turned out fine.

The main interest of this study is to estimate whether gift shop sales could predict the future of the economy. The result turns out to be that the gift shop sales (giftsales) has a positive and statistically significant relationship with the manufacturing production index (MPI) as presented in the Table 4. According to Table 4, it could be observed that for individual t-test, both gift sales and gift sales lag (1) are statistically significant at 0.01 level. In addition, MPI lag (1) is also statistically significant at 0.01 level. This means that giftsales variable could be used to explain the changes in MPI. When the gift shop sales increase, the MPI also move

in the same fashion in the following period. The result follow the intuition that gift shop products are very sensitive to the change in income, implying that the sales would increase/decrease instantly after the change in the state of economy. Therefore, the empirical result of gift sales could be used to tell whether the MPI would increase or decrease in the next period (month by month), thus acting as a signaling indicator of economic and could be use to predict the future of economy.

Beside the gift shop sales, the result also shows that both export lag (1) and import lag (1) have statistically significant positive impact on the MPI at 0.05 level. This means that when import and export increase, the MPI also move in the same fashion as those two variables. Therefore, import and export could be used to tell whether the MPI would increase period per period. This implies that these two independent variables could act as a signaling indicator of economic as well.

This result has confirmed the intuition that when the markets are performing well (increase in sales) and there is an increase in import and export of goods, the rise values have a delay effect in contributing to the overall economy (vise versa when the market perform poorly and the value of export decreases). According to the research from Uttaradit Rajabhat University, the Thai economy is considered as an emerging economy and it is heavily depending on the export of their domestic product especially rice and rubber. These two products have a very high export value of 5,438 and 6,021 million baht respectively in 2014. Thailand is known as the number one rice exporter in the world due to the availability of land and suitable climate. With this, the Thailand export value is accounted up to almost two-third of the country Gross Domestic Product (GDP). In addition, the import value could also boots the economy as their activities could lead to an access to the internal market. This would lead to a transfer of new innovation, skills, and advancement in technology, and also

induced competition. With these, the country could stay competitive in the market and provide positive effect to the country economy.

Besides export and import, another interesting implication from the regression is that the consumer price index (CPI) has a negative coefficient. This means that the CPI has a negative relationship with the GDP. According to the research, it is found that there are both positive and negative effects on the rise in inflation rate. However, from the regression result, the negative effects dominate the positive effect. The negative relationship between these two variables because when there is an increase in inflation rate, there is an increase in an opportunity cost in holding the money, as people would feel that money is worth more today than tomorrow. When this happened, people would increase their spending and save less amount of money. This would lead to a negative impact on the economy as a whole because there is less saving in the economy to finance for economy investment. In addition, it would also discourage investors to invest in their business, as they have to charge higher price for their product to cover their cost, which they have no idea about how the demand in the market would change (Donal Gerolamo, n.d.).

Table 4: Regression Result

Variables	Model 1	Model 2	Model 3	Model 4 (Full model)
L.mpi	0.464*** -3.29	0.494*** -3.33	0.499*** -3.39	0.445*** -3.17
L2.mpi	0.097 -0.92	0.081 -0.72	0.1 -0.87	0.122 -1.14
export	0.023*** -6.17	0.023*** -5.97	0.021*** -5.83	0.017*** -4.82
L.export	-0.013*** (-2.76)	-0.013** (-2.46)	-0.013** (-2.66)	-0.012** (-2.47)
L2.export	-0.006 (-1.56)	-0.007 (-1.66)	-0.007* (-1.73)	-0.006 (-1.45)
L3.export	-0.003 (-1.05)	-0.003 (-1.24)	0 (-0.02)	-0.001 (-0.30)

<i>giftsales</i>	0.017*	0.019*	0.020**	0.016**
	-1.8	-1.99	-2.21	-2.31
<i>L.giftsales</i>	0.029***	0.028***	0.026***	0.026***
	-3.53	-3.39	-2.8	-2.77
L2.giftsales	-0.008	-0.006	-0.01	-0.002
	(-0.91)	(-0.58)	(-1.09)	(-0.17)
D.exchange	1.266	2.458	-0.045	-0.339
	-0.36	-0.71	(-0.01)	(-0.10)
LD.exchange	-12.423***	-12.198***	-10.042***	-9.454**
	(-3.89)	(-3.71)	(-3.02)	(-2.67)
L2D.exchange	-1.826	-1.874	-0.574	-0.793
	(-0.49)	(-0.52)	(-0.16)	(-0.22)
D.pci	0.254	0.302	0.344	0.389**
	-1.16	-1.33	-1.45	-2.1
LD.pci	-0.29	-0.223	-0.309	-0.23
	(-1.47)	(-0.98)	(-1.19)	(-0.88)
L2D.pci	-0.273	-0.251	-0.2	-0.106
	(-1.00)	(-0.89)	(-0.72)	(-0.40)
L3D.pci	0.053	0.102	0.11	0.089
	-0.27	-0.48	-0.45	-0.37
flood	-19.719**	-18.936**	-19.290**	-22.391***
	(-2.19)	(-2.14)	(-2.52)	(-3.31)
D.ir		-0.126	-0.326	1.176
		(-0.02)	(-0.06)	-0.24
LD.ir		-10.398	-13.739*	-13.639**
		(-1.38)	(-1.84)	(-2.04)
D.import			0.004	0.005*
			-1.57	-1.87
LD.import			0.007**	0.006**
			-2.14	-2.05
L2D.import			0.003	0.003
			-1.25	-1.15
L3D.import			-0.001	-0.001
			(-0.55)	(-0.63)
D.cpi				-8.415**
				(-2.48)
LD.cpi				0.75
				-0.15
L2D.cpi				9.939***
				-3.31
_cons	56.705*	55.445**	52.625**	66.037***
	-2	-2.08	-2.24	-2.9

Note: 0.01-***, 0.05-**, 0.1*

6.3 Durbin-Watson test

Upon running ARDL model by OLS estimation method, Durbin-Watson test is being performed to check for spurious problem as mention in the methodology above. According to the result, it is found that the number shown in Durbin-Watson d-statistic is equal to 2.114026, which is more than the R-square (0.9045). This implies that there is no spurious problem occurs in this model.

6.4 Robustness test

To determine that the core variable, gift sales, could strongly explain the MPI, the robustness check is applied by modifying the repressors. In Table 4, it shows a total of four specifications with different number of variables. Each specification is being modified by putting in more variables into the model, starting from model 1. According to Table 4, interest rate is added into model 2, import is then added into model 3 and lastly CPI is added in to the model 4 (full model). From these four models, we could observe that the core variable, which is gift sales lag (1), is statistically significant at 0.01 level in all the models. Therefore, it could be concluded that gift sales is robust and able to explain the MPI effectively, thus this result implies that gift sales is a good “predictor” or leading indicator of the economy.

7. CONCLUSION

In conclusion, it is very important to observe the economic situation and try to link it the business world, as there could be a significant impact in the market. By recognizing and understanding the situation, business owners would be able to shape their business model or strategy around to cope with the unforeseen changes in economy. In addition, the importance of determinants of the growth of economy has urged the researchers to investigate and analyze the impact of it on the economic growth. This present study attempt to examine whether the sales of gift shop could

predict the future of the economy by collecting and using the data of the sales of gift shop as an independent variables along with the other variables (export, import, consumer price index, interest rate, exchange rate and private consumption) that are collected from the Bank of Thailand and CEIC program from Thammasat University. These variables are tested on the Manufacturing Production Index (MPI), which was used as a proxy of Gross Domestic Product (GDP). As the main research question was whether the sales of gift shop is a leading indicator of GDP, the Autoregressive Distributed Lag model (ARDL) was used as the methodology to analyze the result. The result turn out that the sales of gift shop and MPI are positively correlated. The results also suggest that the sales of gift shop could explain an increase/decrease in MPI period by period, thus acting as a leading indicator of economy.

8. LIMITATION AND FURTHER RECCOMENDATION

In this study, there are some limitations to the collected data, the period of the data and the method used to test the result. The study used Manufacturing Production Index (MPI) as a proxy of Gross Domestic Product (GDP). However, the MPI is not the most accurate data that used to measure the overall well being of the economy. In addition, there are insufficient observations in the model due to the unavailability of data. This lack of data might lead to an inaccurate result, which might lead to false analysis. Due to limited time constraint, the models that are used to test for the result are insufficient. This might lead to a less accuracy of result as well. In the future, the result of this study could be more generalized by gathering enough data to test for the result. Moreover, the accuracy of result could be enhanced by the use of Granger Causality test. This statistical hypothesis test could be used to determine if one time series variable could predict or forecast another variable. It could be a good test for the leading indicator.

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APPENDIX

Raw data

Monthly	MPI	Export	Import	Exchange	ir	CPI	PCI	giftsales
2009m1	141.3	3598.81	3162.38			91.1	125.98	
2009m2	142.3	4056.30	2859.61			92	121.42	
2009m3	162.8	4040.18	3346.78	35.74	3.6	92.44	123.64	
2009m4	148.9	3674.87	3494.65	35.40	3.16	93.33	124.57	
2009m5	163.2	4112.97	3300.98	34.62	4.12	93.07	124.95	
2009m6	174.1	4217.20	3941.24	34.10	3.8	93.42	125.52	
2009m7	172.6	4377.42	4160.51	34.03	3.78	93.42	127.33	
2009m8	174.2	4486.28	3826.37	34.01	3.93	93.78	127.74	
2009m9	191	5036.22	4416.44	33.79	4.18	93.96	130.54	301.20
2009m10	185.2	4952.92	4412.11	33.39	4.44	94.14	130.61	472.16
2009m11	185	4573.33	4289.28	33.26	4.41	94.41	131.45	590.29
2009m12	199.2	4819.48	4809.47	33.20	4.34	94.32	131.3	965.88
2010m1	183.5	4456.13	4412.71	33.03	4.12	94.84	98.66	630.40
2010m2	186.8	4644.58	4626.00	33.12	4.01	95.37	91.18	362.60
2010m3	216.5	5317.43	5159.16	32.49	4.05	95.59	103.42	336.37
2010m4	184.1	4480.78	4722.45	32.27	3.67	96.06	107.15	335.59
2010m5	189.2	5261.00	4641.53	32.37	3.49	96.25	96.67	514.88
2010m6	198.6	5763.58	5105.26	32.45	3.33	96.5	96.39	482.36
2010m7	194.2	4965.57	5363.55	32.29	3.44	96.65	101.27	500.80
2010m8	188.2	5228.88	5125.20	31.72	3.01	96.88	100.4	411.04
2010m9	205.8	5620.39	4753.25	30.78	3.12	96.81	100.02	386.33
2010m10	195.6	5174.78	4624.22	29.92	3.18	96.83	95.98	544.98
2010m11	194.7	5169.93	5192.54	29.87	3.59	97.04	99.11	618.97
2010m12	192.9	5050.30	4840.02	30.09	3.77	97.19	109.79	1012.27
2011m1	191.9	4834.54	5335.32	30.55	3.85	97.72	101.59	594.71
2011m2	182.4	5574.79	5256.15	30.70	3.89	98.11	94.04	384.37
2011m3	204.1	6347.01	5992.20	30.33	3.75	98.59	108.04	385.92
2011m4	170.7	5183.85	5582.20	30.04	3.7	99.95	108.17	441.38
2011m5	183.8	5661.61	5790.51	30.22	3.79	100.29	99.92	619.46
2011m6	207.5	6085.51	6028.89	30.50	3.91	100.42	97.91	465.51
2011m7	194.4	6198.46	5743.42	30.05	4.02	100.6	102.68	500.12
2011m8	201.7	6303.84	6849.26	29.87	3.51	101.04	103.48	427.71
2011m9	211.2	6145.07	6384.00	30.46	3.75	100.7	105.18	414.94
2011m10	131.3	5112.21	5541.33	30.84	3.38	100.89	94.73	355.39
2011m11	106.2	4715.54	5225.12	30.93	3.42	101.11	96.05	433.57
2011m12	146.5	4917.45	6100.62	31.17	3.35	100.62	109.59	1062.77
2012m1	164	4886.97	5300.78	31.51	3.21	101.02	103.31	623.81
2012m2	176.4	5971.46	5873.16	30.69	3.58	101.39	99.93	387.49
2012m3	198.1	6064.50	7706.78	30.70	3.83	101.99	111.48	361.75
2012m4	169.9	5153.61	6199.83	30.86	3.83	102.42	113.93	423.86
2012m5	193.7	6409.97	7113.52	31.29	3.74	102.82	109.1	606.42
2012m6	187	6163.34	6438.02	31.62	3.57	102.99	103.24	455.42

2012m7	183.2	6048.84	6680.85	31.62	3.33	103.35	110.58	473.10
2012m8	178.9	6196.18	6684.25	31.40	3.43	103.76	110.07	398.52
2012m9	177.9	6441.60	6274.96	30.94	3.59	104.1	110.8	379.33
2012m10	178.4	5974.55	6928.62	30.68	3.37	104.24	108.57	500.29
2012m11	192.6	5957.49	6249.22	30.69	3.55	103.87	113.38	571.51
2012m12	179.7	5515.69	6411.32	30.62	3.52	104.27	118.78	919.36
2013m1	180.6	5549.34	7435.18	30.04	3.67	104.44	110.64	596.22
2013m2	173.9	5295.22	5953.89	29.81	3.6	104.66	101.54	352.28
2013m3	199.6	6098.09	6461.96	29.49	3.53	104.73	116.65	358.73
2013m4	163	5059.51	6445.43	29.06	3.4	104.9	118.14	397.80
2013m5	179.3	5656.88	6443.40	29.76	3.5	105.15	110.92	555.44
2013m6	180.2	5641.62	6280.40	30.82	3.75	105.31	103.24	414.79
2013m7	174.2	5840.96	6388.88	31.11	4	105.42	111.14	373.54
2013m8	173.9	6291.68	6454.79	31.56	4.32	105.41	110.7	371.15
2013m9	172.8	6053.69	6023.82	31.63	3.94	105.58	110.64	324.78
2013m10	171.3	6030.71	6661.51	31.19	3.94	105.76	108.79	450.83
2013m11	171.9	5789.60	6035.23	31.62	4.14	105.86	111.35	509.77
2013m12	168.3	5790.10	5988.98	32.35	4.01	106.01	118.07	836.88
2014m1	170.5	5766.40	6670.07	32.93	4.04	106.46	108.89	407.76
2014m2	166	5988.84	5476.41	32.62	3.76	106.71	101.49	303.48
2014m3	178.5	6374.03	6028.90	32.36	3.78	106.94	116.27	318.14
2014m4	156.2	5512.08	6065.88	32.30	3.69	107.47	119.12	390.87
2014m5	172	6211.83	6480.83	32.53	3.77	107.9	112.42	445.60
2014m6	168.9	6359.11	5889.77	32.49	3.78	107.79	107.28	330.47
2014m7	165	6085.87	6516.77	32.09	3.63	107.7	113.44	327.70
2014m8	169.4	6004.81	5709.93	32.00	3.55	107.61	112.32	397.66
2014m9	166	6307.53	6958.67	32.20	3.47	107.43	112.69	331.82
2014m10	166.1	6467.14	6519.47	32.44	3.24	107.32	109.73	391.16
2014m11	165.6	5951.59	6054.31	32.79	3	107.19	112.75	548.52
2014m12	168.2	6101.43	5667.97	32.89	2.83	106.65	120.61	786.42
2015m1	169.2	5632.18	5848.29	32.73	2.61	106.02	111.22	465.45
2015m2	171	5582.92	5520.75	32.56	2.69	106.15	102.42	282.46
2015m3	175.4	6109.84	5693.00	32.62	2.68	106.33	117.61	325.12
2015m4	145.2	5484.61	5722.84	32.51	2.51	106.35	118.47	376.31
2015m5	158.9	5925.24	5209.57	33.52	2.77	106.53	110.97	440.66
2015m6	155.8	6033.82	6055.34	33.72	2.95	106.64	107.96	291.97
2015m7	154.6	6091.32	5902.11	34.35	2.82	106.57	112.1	333.41
2015m8	155.4	6043.61	5864.60	35.39	2.81	106.33	111.46	364.33
2015m9				36.01	2.8	106.28	116.09	332.64