CHPTER 4
METHODOLOGY

4.1 Data Collection

For data collection methods, historical data is required to complete the paper, and the data will be in the range of 24 years between 1992 and 2015. Four sets of data will be used for trade, exchange rates, trade agreements and tariff barriers in Thailand and China.

A data collection system (DCS) is a computer application that facilitates the process of data collection, allowing specific, structured information to be gathered in a systematic fashion, subsequently enabling data analysis to be performed on the information. Typically, a DCS displays a form that accepts data input from a user and then validates that input prior to committing the data to persistent storage such as a database.

Many computer systems implement data entry forms, but data collection systems tend to be more complex, with possibly many related forms containing detailed user input fields, data validations, and navigation links among the forms.

4.1.1 Import and Export Data

The import and export of data is the automated or semi-automated input and output of data sets between different software applications. It involves "translating" from the format used in one application into that used by another

Import and export data, the trade between Thailand and China from the comprehensive trade solution [43] is divided into 20 kinds of capital goods, intermediate goods, consumer goods, machinery and electronics, textile and clothing, metal, chemical industry, raw materials, miscellaneous, plastic or rubber, fuel, vegetables, food, hide and skin, stone and glass, minerals, wood, footwear, animals, and transport.

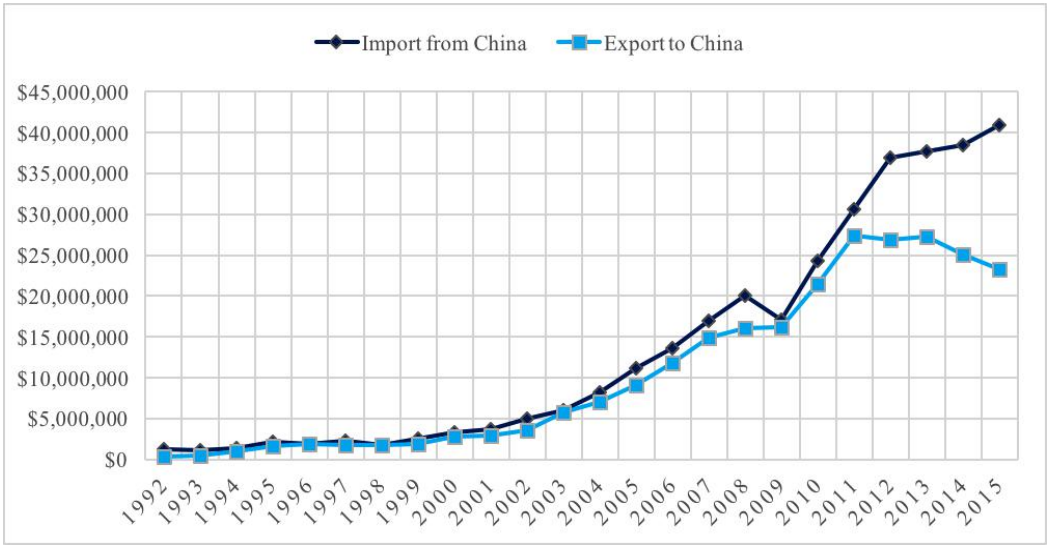
4.1.1.1 Thailand and China Trade

The table shows the import and export data between Thailand and China from 1992 to 2015.
Table 1-1 Value of Thailand imports from China and exports to China (Value in thousands of US$) between 1992-2015

1992-2015		
Year	Import from China	Export to China
1992	1219869.06	385927.58
1993	1090449.15	538637.63
1994	1387632.64	927901.5

1995	2094621.18	1640100.48
1996	1953412.74	1869145.34
1997	2255084.29	1790157.18
1998	1811858.38	1766240.69
1999	2494975.66	1861171.05
2000	3369097.63	2816304.97
2001	3715825.49	2862718.11
2002	4932099.56	3554360.38
2003	6065207.12	5701476.62
2004	8187808.54	7097953.56
2005	11157870.68	9134204.23
2006	13617176.19	11774180.47
2007	16979861.8	14872545.73
2008	20045768.98	15997870.4
2009	17028921.05	16123831.4
2010	24239367.07	21473195.34
2011	30581153.42	27402402.32
2012	36956544.13	26899634.09
2013	37726632.74	27238223.9
2014	38498344.67	25084369.43
2015	40919104.56	23311428.6

Figure 2-1 Graph of Thailand's value of product import from China and export to China (value in thousands of US$) between 1992 and 2015.



4.1.2 Exchange Rate

The exchange rate data is collected from Fxtop. The following table shows the annual exchange rate data of Thailand and China from 1992 to 2015.

Table 2-1 Chinese Yuan to Thai Baht exchange rate between 1992 and 2015

Year	Average CNY/THB
1992	4.59622
1993	4.38361
1994	2.91234
1995	2.97795
1996	3.04118
1997	3.76409
1998	4.99051
1999	4.58161
2000	4.87206
2001	5.39424
2002	5.19432
2003	5.02157
2004	4.86395
2005	5.39424
2006	5.19432
2007	4.75668
2008	4.24554
2009	4.75914
2010	5.02369
2011	4.68261
2012	4.71955
2013	4.99991
2014	5.27254
2015	5.45252

4.1.3 Trade Agreement

For trade agreement variables, 0 and 1 will respectively represent the time before and after the trade agreement. Since the launch of the China-ASEAN free trade area in 2010, the 2010 trade agreement will be zero.

4.1.4 Tariff and Trade Barrier

For tariff rate, this study will adopt effective weighted average tax rate. The data source comes from the world integrated trade solution [43]. The table below shows the weighted average tariff imposed by one country on another. Table 3-4 shows tariffs for Thai and Chinese products.

Table 3-1 Average tariff of Thai and Chinese product during 1992 and 2015

Year	Thailand imposes on Chinese products	Chinese imposes on Thailand products
1992		29.89
1993	47.89	28.86
1994		25.9
1995	15.41	
1996		32.81
1997		23.1
1998		21.61
1999	40.81	16.92
2000	11.68	22.55
2001	11.51	22.27
2002		8.9
2003	10.33	6.95
2004	6.67	7.36
2005	5.95	4.89
2006	6.2	4.61
2007	5.25	4.7
2008	5.61	3.59
2009	6.05	2.47
2010	5.97	2.55
2011	6.26	2.76
2012		
2013	7.3	
2014	1.36	0.37
2015	1.43	1.96

4.2 Model

In the study, a commonly used linear regression statistical analysis method was used. Because it is used to determine the degree of linear relationship between the dependent variable and one or more independent variables. The dependent variable can be measured by a continuous

measurement scale (for example, 0-100), and the independent variable can be classified (for example, male to female) or continuous measurement scale.

In the study, multiple linear regression will be proposed, because there are four factors to consider and trade agreement; Tariff barriers; And the exchange rate. Here is the equation model:

$$Y = a+bX_1+cX_2+dX_3+\dots \quad (3\text{-}1)$$

Y represents the dependent variable, in this case the import value and the export value.

a, b, c, d... Represents a constant value.

$X_1, _2, _3$... Represents each independent variable, namely exchange rate, trade agreement, tariff barrier.

4.3 Data Processing

In the data processing process, there are two dependent variables, including the import value and the export value. The average exchange rate will be used for this study. For trade agreements, the year of entry into force of a trade agreement will be represented by the number 0 and the other will be 1. In addition to the national variables, China will also indicate 0, and the United States will indicate 1 that these data will be converted in the process. Therefore, due to the loss of some customs data, only complete cases can be used for analysis.

The data will be divided into two phases. The first stage will examine the relationship between economic factors and trade between Thailand and China, so there will be no national variables. On the other hand, the relationship between non-economic factors and trade between Thailand and China is tested by adding U.S. data to the table.

4.4 Brief Summary

The chapter consists of three parts: data collection, model research and data processing. The first part is mainly about import and export, exchange rate and tariff statistics between Thailand and China. Trade agreements are only shown when they are affected. The model section describes the mathematical model used in this study, namely linear regression model.