



CHAPTER 3

DETERMINANTS OF IMPORT DEMAND FUNCTIONS

This chapter contains the research methodology, which is choice of variables, research instruments, data collection procedure, and data analysis procedure and the expectation of relation of the variables. And the graphs in this chapter show the trend of path of variables and lead to easier understanding the econometric model in chapter 5.

Because of this study want to see the whole picture of the effect of change in exchange rate to the intermediate imports and raw material of Thailand so the expectation of this study is the sign of the variables, which should opposite sign with the exchange rate.

Devaluation is a deliberate increase in the exchange rate by a nation's monetary authorities from one fixed or pegged level to another.¹ As we know that Thailand has many devaluation in Baht. And many times adopted exchange rate regime. This study want to prove how the change in exchange rate effect to the intermediate imports of Thailand, the hypothesis that expected is that After devaluation or change in exchange rate, the value of imports should decrease because we don't want to buy foreign goods in the more expensive price. But Thailand import-export structure of export must import intermediate goods and raw material to export, so when Thailand change in exchange rate, trade balance won't not improve in the same time but there will be fall down because of import-export structure of Thailand.

The dependent variable. As already mentioned our focus here will be on import side. The most readily available data on imports are in value rather than quantity terms. However, the theory of demand² suggests that quantity is the appropriate dependent variable, but for Thailand the data about quantity or price is not completely enough. So we will use value of intermediate imports as Dependent Variable

¹ Dominick Salvatore, International Economic (New York: Macmillan publishing Company, 1983.), p.417.

² $M = V_m/P_m$, where M = quantity of imports of some commodity class; P_m = price of imports; V_m = value of imports

Independent or explanatory variables. The basic explanatory variables are suggested by the theory of demand, according to which the consumer allocates his income among consumable commodities in an effort to achieve maximum satisfaction, the quantity of imports purchased by any consumer will thus depend on his income, the price of imports, and the price of other consumable commodities. This suggests that for an economy we may write import demand as³

$$M = V_m/P_m = Q_m = f(P_m, Y) \dots\dots\dots(1)$$

Where Y is domestic money income, P_m is the price level of imports. But in the case of this study we use exchange rate in term of Baht per Dollars as price, because price is equal value / quantity. If there is no quantity data, there is cannot find price data.

But anyway the exchange rate can tell us the same sign as price and finally effect to the demand of imports. For example: Devaluation can make foreign price more expensive and make Thailand decrease in demand for imports.

For this study, the model will be;

$$Imt_t = f(Exc, GDP) \dots\dots\dots(2)$$

Then use log-linear in the model;

$$LogImt_{it} = C + p_{it} \log Exc + H_{li} \log GDP \dots\dots\dots(3)$$

- Where
- Imt_{it} = value of intermediate and raw material imports at t.
 - Exc = Exchange rate (Baht/US.dollars) at t.
 - GDP = Gross Domestic Products of Thailand at t
 - C = Constant
 - p_{it} = Elasticity of value of intermediate and raw material imports to exchange rate at t
 - H_{li} = Elasticity of value of intermediate and raw material imports to GDP at t

³ Dominick Salvatore, International Economic (New York: Macmillan publishing Company, 1983.),p.419

In this thesis the sign of the variables is important, the expectation of the results will be as follow:

$$\text{From (1)} \quad Q_m = f(P_m, Y)$$

If price increase and make Quantity decrease, we call this situation “Elastic” so the result of Price * Quantity will be decrease too. ($P \uparrow \rightarrow Q \downarrow \rightarrow P * Q \downarrow$)

If price increase and make Quantity a little decrease, we call this situation “Inelastic” so the result of Price * Quantity will be increase. ($P \uparrow \rightarrow Q \downarrow \rightarrow P * Q \uparrow$)

If price increase and make Price * Quantity constant, we call this situation “Unitary”. ($P \uparrow \rightarrow \bar{P} * \bar{Q}$)

When we interpret in the intermediate imports model in this study, we use ΔExc as price and if ΔExc increase and make $P * Q$ in this study mean value of intermediate imports of Thailand decrease or opposite sign there will be “elastic”.

We can explain that increase in exchange rate of Thailand make value of intermediate imports of Thailand decrease because the value of intermediate imports of Thailand elastic to exchange rate change. ($\Delta Exc \uparrow \rightarrow P * Q \downarrow = \text{Elastic}$)

If ΔExc increase and make $P * Q$ (value of intermediate imports of Thailand) increase or positive sign there will be “inelastic”. We can explain that increase in exchange rate of Thailand make value of intermediate imports of Thailand increase because the value of intermediate imports of Thailand inelastic to exchange rate change. ($\Delta Exc \uparrow \rightarrow P * Q \uparrow = \text{Inelastic}$)

And if ΔExc increase and make $P * Q$ (value of intermediate imports of Thailand) constant. There will be “Unitary”. We can explain that increase in exchange rate of Thailand make value of intermediate imports of Thailand constant because the value of intermediate imports of Thailand cannot affect by exchange rate change. ($\Delta Exc \uparrow \rightarrow \bar{P} * \bar{Q} = \text{Unitary}$)

To have an appropriate equation or model from regression analysis to predict changing of the dependent variable, we need to consider some problems in statistics.

Autocorrelation is supposed to occur in this case. We will detect and discuss them, if they are present.

This study use time period from 1964 – 2000 because it's the longest completely data that can be collected in Bank of Thailand Annual report to evaluate the fluctuation of variable between 2 times devaluation of Thailand. But there is the problem about some variables that exist around the last fifteen years but they are quite important variables to the import of Thailand example: Fish and preparations, Fabrics and Jewelry, including silver bars beginning with February 1983 issue. And the Capital goods as Computer, Computer components and Integrated circuits beginning with 1987 issue. So this study cannot add this variable in the model but plot graph to see the path of data before and after change in exchange rate in Thailand at last in this chapter.

The values of intermediate and raw material imports of Thailand in this study separate in 4 categories.

A. Intermediate products chiefly for consumer goods

- Imt₁ = Animal and vegetable crude materials
- Imt₂ = Tobacco leaves
- Imt₃ = Wood, lumber, cork, pulp, waste paper
- Imt₄ = Textile fibers
- Imt₅ = Textile yarn and thread
- Imt₆ = Paper and paperboard
- Imt₇ = Chemical.

B. Intermediate products chiefly for capital goods

- Imt₈ = Crude minerals
- Imt₉ = Base metals
- Imt₁₀ = Iron and steel
- Imt₁₁ = Others

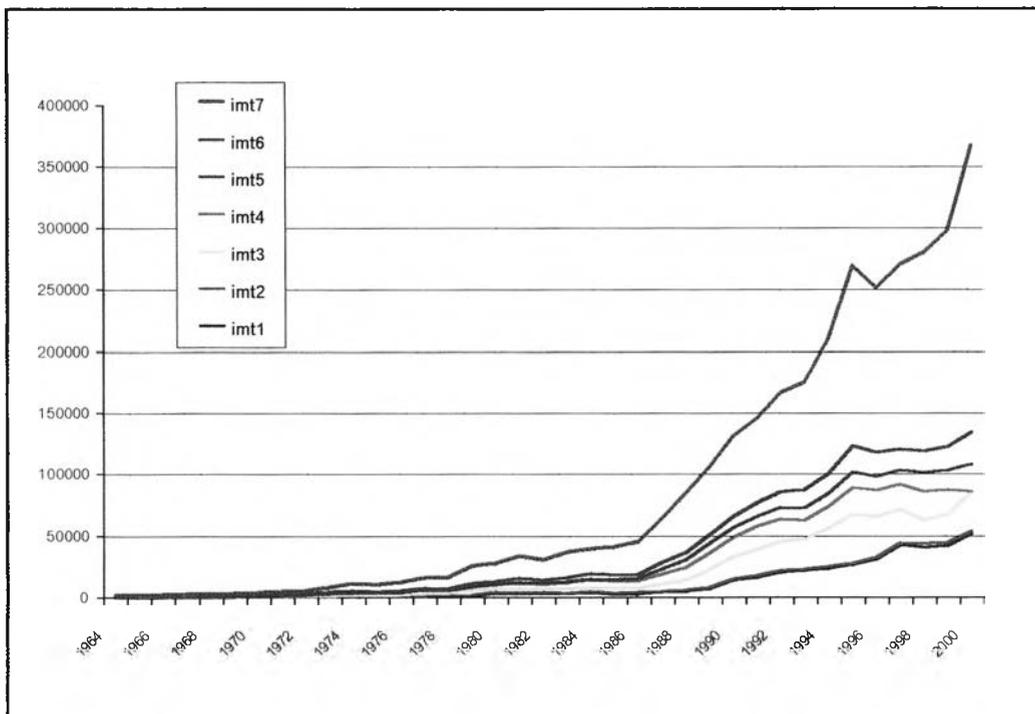


Figure 3.1 Intermediate Products Chiefly for Consumer Goods Data (Imt1-Imt7)

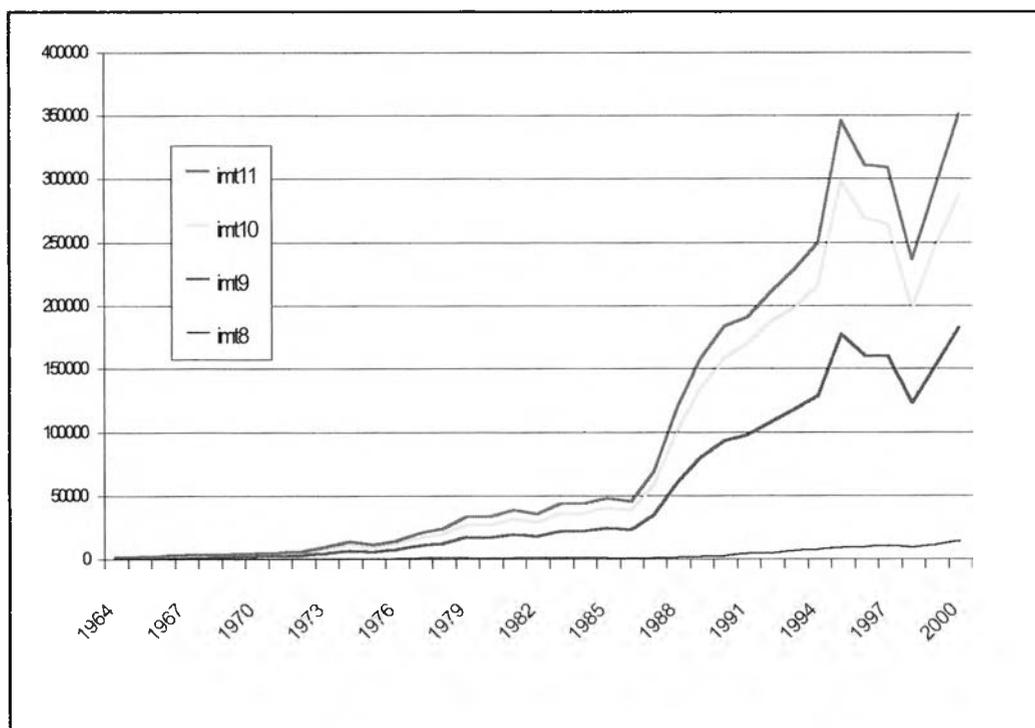


Figure 3.2 Intermediate Products Chiefly for Capital Goods Data (Imt8-Imt11)

C. Capital goods

Imt₁₂ = Fertilizers and pesticides
Imt₁₃ = Cement
Imt₁₄ = Construction materials
Imt₁₅ = Tubes and pipes
Imt₁₆ = Glass and other mineral manufactures
Imt₁₇ = Rubber manufactures
Imt₁₈ = Metal manufactures
Imt₁₉ = Non-electrical machinery and parts
Imt₂₀ = for agricultural use
Imt₂₁ = Tractors
Imt₂₂ = for industrial use
Imt₂₃ = Electrical machinery and parts
Imt₂₄ = Scientific and optical instruments
Imt₂₅ = Aircrafts and ships
Imt₂₆ = Locomotive and rolling stock

D. Other imports

Imt₂₇ = Vehicles and parts
Imt₂₈ = Passenger cars
Imt₂₉ = Buses and trucks
Imt₃₀ = Chassis and bodies
Imt₃₁ = Tires
Imt₃₂ = Fuel and lubricant
Imt₃₃ = Coke, briquettes, etc.
Imt₃₄ = Crude oil
Imt₃₅ = Gasoline
Imt₃₆ = Diesel oil and special fuels
Imt₃₇ = Lubricant, asphalt, etc.
Imt₃₈ = Miscellaneous
Imt₃₉ = Fish and preparations
Imt₄₀ = Fabrics
Imt₄₁ = Jewelry, including silver bars
Imt₄₂ = Computer
Imt₄₃ = Computer components
Imt₄₄ = Integrated circuits
Imt₄₅ = Integrated circuits components

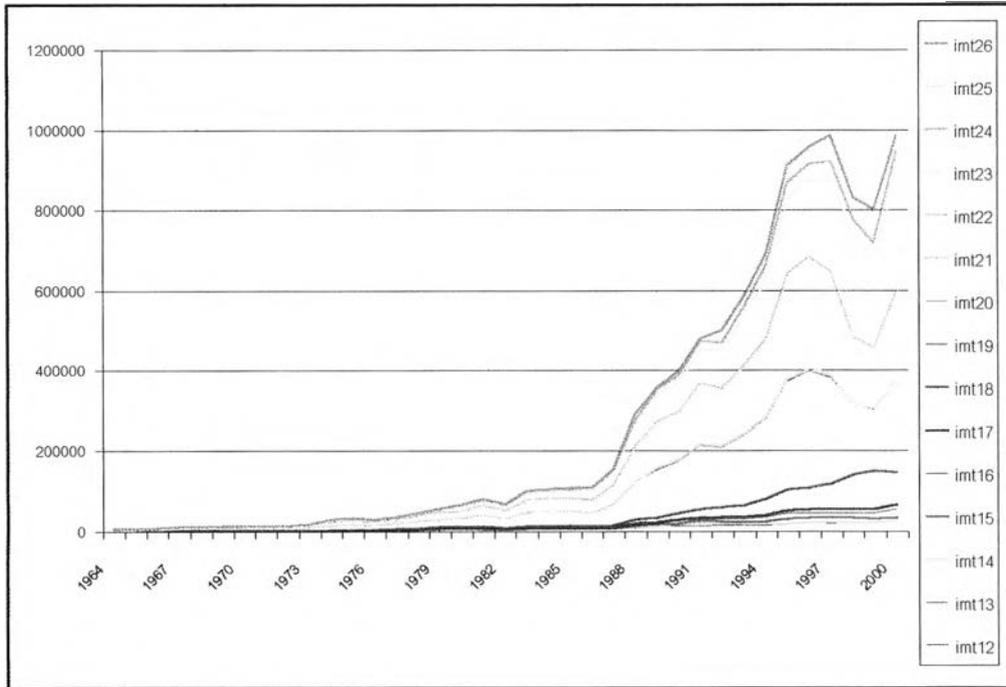


Figure 3.3 Capital Goods Data

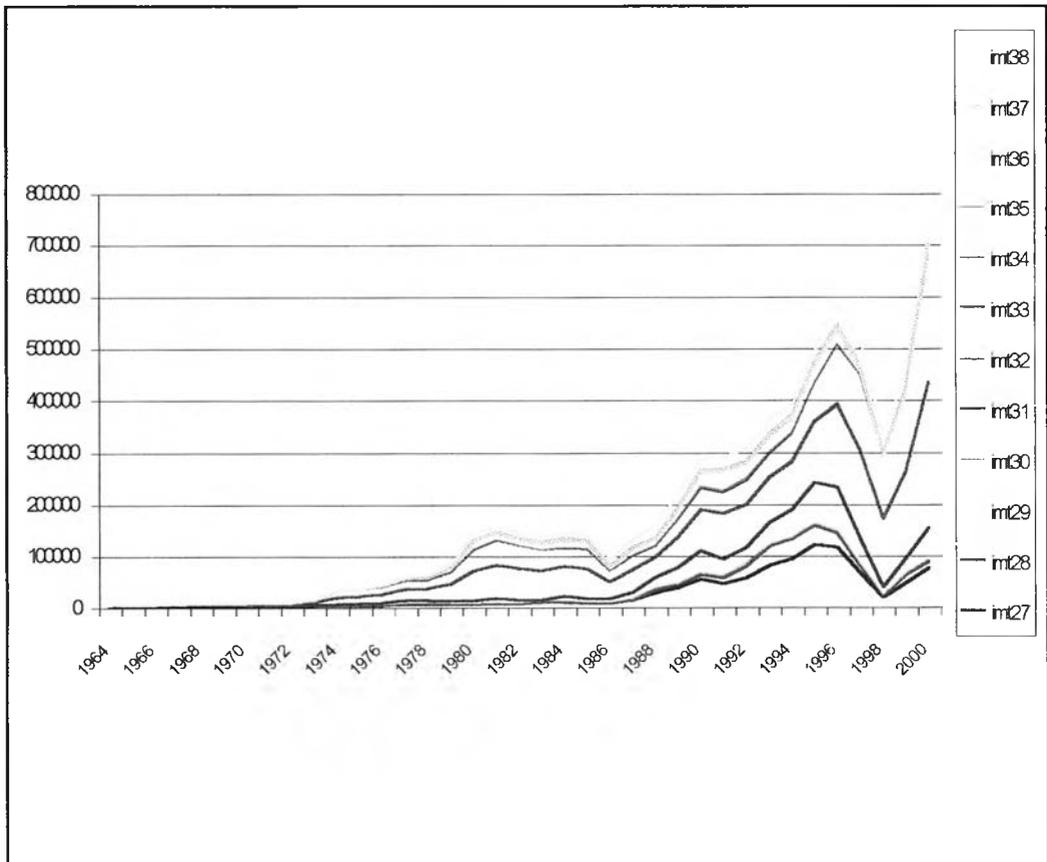


Figure 3.4 Other Imports Data

From the graphs, each category of intermediate and raw material goods have different pattern but the same structure that is around the year change the exchange rate the value of import is decrease and increase in the next year, that because Thailand still have to import all this goods for export.

As we can see at the next two graphs, first are Fish and preparations, Fabrics and Jewelry, including silver bars beginning with February 1983 issue. And second are Computer, Computer components and Integrated circuits beginning with 1987 issue.

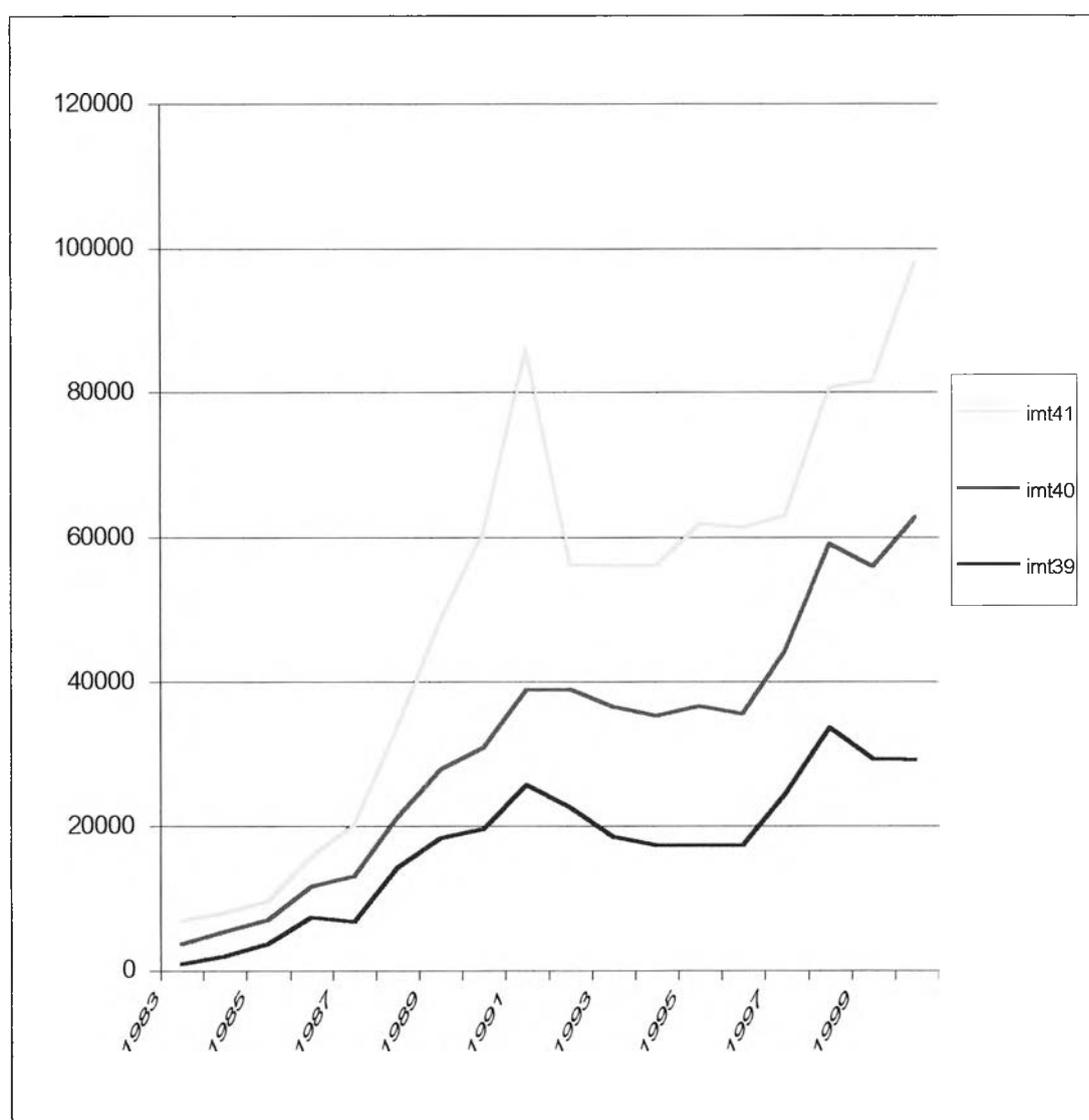


Figure 3.5 Fish and Preparations, Fabrics and Jewelry Data

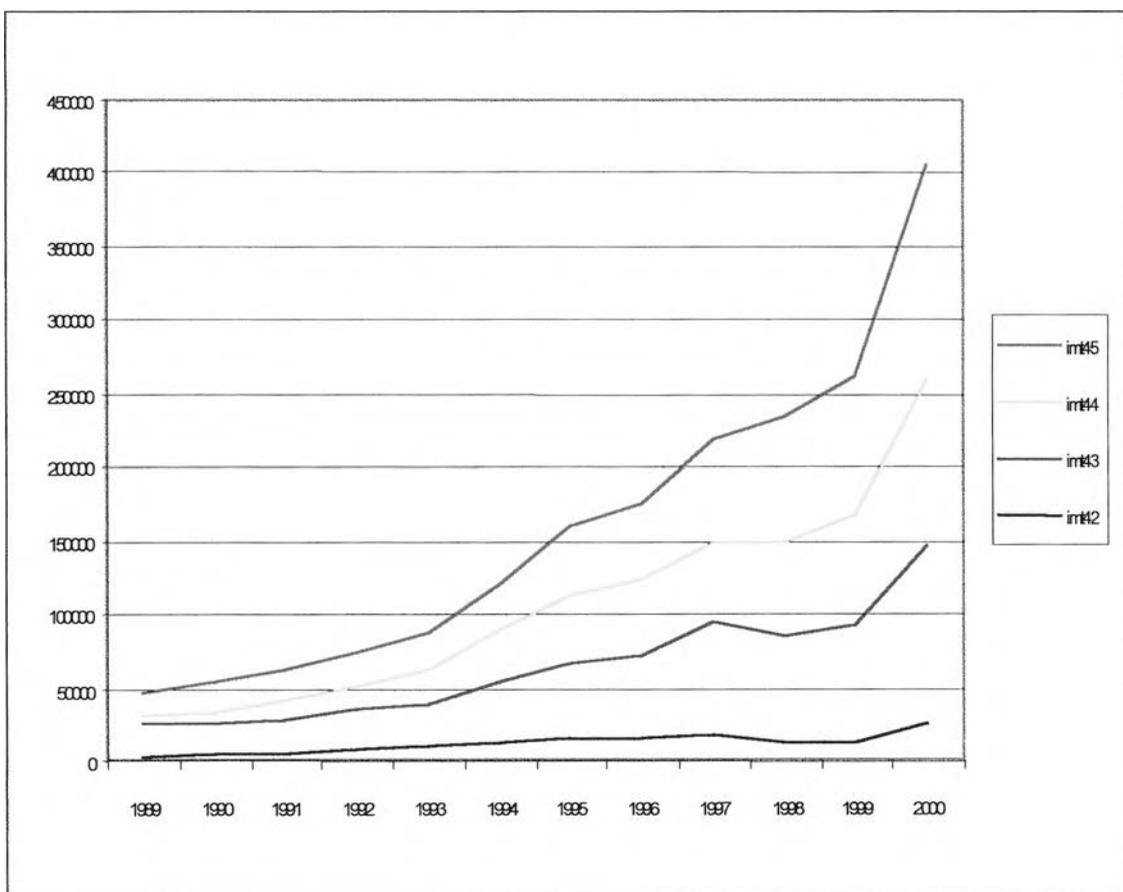


Figure 3.6 Computer, Computer Components, Integrated Circuits and Integrated Circuits Components Data