INTRA INDUSTRY TRADE BETWEEN UNITED STATES AND CHINA IN MANUFACTURING SECTOR.

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Bachelor of Economics with Honours
(International Economics)

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INTRA INDUSTRY TRADE BETWEEN UNITED STATES AND CHINA IN MANUFACTURING SECTOR

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This project is submitted in partial fulfillment of the requirements for the degree of Bachelor of Economics with Honours (International Economics)

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2011
Statement of Originality

The work describe in the Final Year Project, entitled

“Intra Industry Trade between United States and China in Manufacturing Sector”

is to the best of the author’s knowledge that of the author except

where due reference is made.

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(Date Submitted)                                                          (Student’s Signature)
Josep Ak Francis
21150
ABSTRACT

INTRA INDUSTRY TRADE BETWEEN UNITED STATES AND CHINA IN MANUFACTURING SECTOR

By

Josep Ak Francis

The main purpose of this study is to investigate the IIT between United States (U.S) and China in manufacturing sector for the period of 1989 until 2009. The Grubel-Llyod model was adopted in order to measure the IIT index. The results show that the level of IIT in manufacturing sector between these two countries is very high. The IIT has increased from year to year. Apart from that, the results also indicate that the IIT between these countries is dominated by vertical IIT.
ABSTRAK

PERDAGANGAN INTRA INDUSTRI ANTARA AMERIKA SYARIKAT
DENGAN CHINA DALAM SEKTOR PERKILANGAN

Oleh

Josep Ak Francis

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Besides that, I would also like to thank my friends for helping me by sharing useful information with me. My grateful thanks also go to my family for their moral support and also financial support.

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# TABLE OF CONTENTS

List of Table ........................................................................................................................................ix

List of Figure .........................................................................................................................................x

Chapter 1: INTRODUCTION

1.1 Background of study ..................................................................................................................... 1

1.2 Problem statement .......................................................................................................................... 7

1.3 Objectives of the Study .................................................................................................................. 10

1.4 Significance of study ..................................................................................................................... 10

1.5 Scope of Study .............................................................................................................................. 11

1.6 Summary ....................................................................................................................................... 12

Chapter 2: LITERATURE REVIEW

2.1 Introduction .................................................................................................................................... 14

2.2 Intra Industry Trade Theories ....................................................................................................... 15

2.2.1 Comparative Advantage Theory .............................................................................................. 15

2.2.2 Heckscher-Ohlin Theory .......................................................................................................... 16

2.2.3 New Trade Theory ................................................................................................................... 18

2.3 Intra Industry Trade (IIT) ............................................................................................................ 19

2.3.1 Measurement of IIT ................................................................................................................. 21

2.4 Findings of Past Studies on Intra Industry Trade ......................................................................... 22

2.5 Summary ....................................................................................................................................... 27
Chapter 3: METHODOLOGY

3.1 Introduction ........................................................................................................ 31
3.2 Conceptual framework ...................................................................................... 32
3.3 Research Design ............................................................................................... 34
  3.3.1 Grubel-Lloyd Index ................................................................................. 34
  3.3.2 Data Sources ............................................................................................ 35
  3.3.3 Data Customization and Categorization ............................................... 36
3.4 Summary ............................................................................................................. 37

Chapter 4: EMPIRICAL RESULTS AND DISCUSSION

4.1 Introduction ........................................................................................................ 39
4.2 Commodity by trade flow ................................................................................ 39
  4.2.1 Intra Industry Trade (IIT) ....................................................................... 40
  4.2.2 Vertical IIT versus Horizontal IIT .............................................................. 53

Chapter 5: CONCLUSION AND RECOMMENDATION

5.1 Conclusion .......................................................................................................... 62
5.2 Policy Recommendation .................................................................................... 64
5.3 Limitation of study ............................................................................................. 65

REFERENCES.........................................................................................................66
LIST OF TABLE

Table 1.1 Top U.S Trade Partners Ranked by U.S Total Imports Value for Goods (Billion USD) ........................................................................................................... 3

Table 1.2 Top U.S trade partners Ranked by U.S total Export value for Goods (Billion, USD) ......................................................................................................... 3

Table 1.3 Trade Imbalances between United States and China Year 2009 (Billion, USD) ........................................................................................................... 4

Table 1.4 Trade balance between United States and China in 2009(Billion USD).8

Table 2.1 Summary of Past Studies...................................................................... 28

Table 4.1 Total Shares of IIT and One Way Trade ............................................... 40

Table 4.2 Total Shares by Commodity in Two Way Trade (percentage).............. 44

Table 4.3 Total Shares between IIT ranges (percentage) ...................................... 46

Table 4.4 Trade Compositions according to IIT Index group ............................... 56

Table 4.5 Low-IIT Commodity in VIIT ................................................................. 58

Table 4.6 Low-IIT Commodity in HIIT ................................................................. 60
LIST OF FIGURE

Figure 1.1 Top U.S Imports from China in 2009 .................................................... 6
Figure 1.2 Top U.S Exports to China in 2009 ......................................................... 6
Figure 3.1 Conceptual framework .......................................................................... 32
Figure 4.1 Trend of IIT .......................................................................................... 41
Figure 4.2 Total Shares of One Way Export (1WX) ............................................. 48
Figure 4.3 Total Shares of One Way Import (1WM) ............................................ 51
Figure 4.4 Trends of VIIT and HIIT ..................................................................... 53
Chapter 1: INTRODUCTION

1.1 Background of study

China’s transformation into a private-sector led economy and its accession into the World Trade Organization (WTO) is one the most dramatic economic developments of recent decades. It has contributed to sustain growth in international trade. China exports and imports have grown at an average rate of 15 percent each year since 1979, besides its overall share of exports to industrial economies has also increased (see Prasad 2004). Both imports and exports have grown faster than world trade for more than twenty years. According to Rambaugh and Blancher (2004) China has increased its accession into advanced country markets, and has become a more important export destination, especially for regional economies.

Over the past several years, U.S- China economic ties have expanded substantially (see Morrison, 2005). The bilateral trading and economic relationship between these countries have been greatly strengthened since the year 2000. This trading partnership is increasingly significant. According to Lv, Jie, Shi and Qiang (2010) the trading volume between these two countries in 2006 have reached USD 262.68 billion, which accounted for 14.9 percent of all Chinese trade. Besides that, China is U.S second largest trading partner, and in 2006 trading volume between two countries amounted to USD 343 billion, which amounted to 11.9 percent of all U.S trade.
According to International Trade Administration (ITA), China had ranked number one for the most top importers by United States. Table 1.1 illustrates that in 2009, the value of imports for United States from China had decrease by the change of 12.26 percent. Even though it has decreased, China is still the largest exporters for the United States, accounted for USD 296.37 billion. Second largest goes to Canada and followed by Mexico, Japan and Germany.

Meanwhile in terms of exports, China is ranked number three by the United States. As shown in Table 1.2. China had becoming the third largest country for United States exports. United States exports to China had decrease from $69.73 million in 2008 to $69.50 in 2009. Total exports had decrease by a change of 0.33 percent. According to ITA, through July 2010, the total exports to China were USD 48.56 billion increase from USD 35.64 billion in July 2009. The impressive trade growth between two countries is accompanied by the trend that structure change in the nature of Sino-US trade with an increase in the two way trade in spite of inter-industry trade still prevails.
Table 1.1 Top U.S Trade Partners Ranked by U.S Total Imports Value for Goods (Billion USD)

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2009</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>337.77</td>
<td>296.37</td>
<td>-12.26%</td>
</tr>
<tr>
<td>Canada</td>
<td>339.50</td>
<td>226.25</td>
<td>-33.36%</td>
</tr>
<tr>
<td>Mexico</td>
<td>215.50</td>
<td>176.65</td>
<td>-18.03%</td>
</tr>
<tr>
<td>Japan</td>
<td>139.26</td>
<td>95.80</td>
<td>-31.20%</td>
</tr>
<tr>
<td>Germany</td>
<td>97.50</td>
<td>71.50</td>
<td>-26.67%</td>
</tr>
</tbody>
</table>

Source: International Trade Administration, 2010

Table 1.2 Top U.S trade partners Ranked by U.S total Export value for Good (Billion, USD)

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2009</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>261.15</td>
<td>204.66</td>
<td>-21.63%</td>
</tr>
<tr>
<td>Mexico</td>
<td>151.22</td>
<td>128.90</td>
<td>-14.76%</td>
</tr>
<tr>
<td>China</td>
<td>69.73</td>
<td>69.50</td>
<td>-0.33%</td>
</tr>
<tr>
<td>Japan</td>
<td>65.14</td>
<td>51.13</td>
<td>-21.51%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>53.60</td>
<td>45.70</td>
<td>-14.74%</td>
</tr>
</tbody>
</table>

Source: International Trade Administration, 2010

The increase of total exports from China and followed by the increase of total imports from China had lead to trade imbalance. As we can see from the Table 1.3, total imports from China had increased every year which is from 2001 until 2008, but then there is a slightly declined in the year 2009. Meanwhile in terms of exports, total exports to China have also increased each year from year 2001 and also slightly decrease in 2009. An
increase in exports followed by an increase in imports has lead to a trade imbalance between those countries.

Table 1.3 Trade Imbalances between United States and China Year 2009

<table>
<thead>
<tr>
<th>Years</th>
<th>Exports</th>
<th>Imports</th>
<th>Trade Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>19.18</td>
<td>102.29</td>
<td>-83.11</td>
</tr>
<tr>
<td>2002</td>
<td>22.12</td>
<td>125.19</td>
<td>-103.07</td>
</tr>
<tr>
<td>2003</td>
<td>28.37</td>
<td>152.44</td>
<td>-124.07</td>
</tr>
<tr>
<td>2004</td>
<td>34.43</td>
<td>196.68</td>
<td>-162.25</td>
</tr>
<tr>
<td>2005</td>
<td>41.19</td>
<td>243.47</td>
<td>-202.28</td>
</tr>
<tr>
<td>2006</td>
<td>53.67</td>
<td>287.77</td>
<td>-234.10</td>
</tr>
<tr>
<td>2007</td>
<td>62.94</td>
<td>321.44</td>
<td>-285.50</td>
</tr>
<tr>
<td>2008</td>
<td>69.73</td>
<td>337.77</td>
<td>-268.04</td>
</tr>
<tr>
<td>2009</td>
<td>69.50</td>
<td>296.37</td>
<td>-226.88</td>
</tr>
</tbody>
</table>

Source: International Trade Administration, 2010

In the early 1990s, light manufacturing accounted for more than 40 percent of China exports. These light manufacturing products largely consisted of footwear, clothing, toys and other miscellaneous manufactured articles. Meanwhile, the remaining export was accounted for manufacturing products (mostly textiles) and machinery and transport (small electronics). Besides, China has also made substantial gains in other exports categories including more sophisticated electronics (office machines and automated data processing equipment, telecommunications and sound equipment and electrical machinery), furniture and industrial supplies.
As shown in Figure 1.1, in the year 2009, top five U.S imports from China are computer and electronic products, agricultural products, chemicals, transportation equipment and waste and scrap. Computers and electronic products accounted for the most higher total imports from China which is 35 percent. This is followed by agricultural product which account for 11 percent of total imports from China. Chemicals are the third highest import which consist 9 percent of total imports. This is followed by transportation equipment and waste and scrap which accounted for 7 percent and 6 percent of total imports from China respectively. Meanwhile all other products such as machinery, food products, paper, electrical equipment; appliances and components, miscellaneous manufactured commodities, minerals and ores and so on.

Meanwhile, Figure 1.2 illustrates the top five U.S exports to China. They were computers and electronic parts, agricultural products, chemicals, transportation and equipment, and waste and scrap. As you can see from the figure, computer and electronic parts accounted the most exported products to China which consist of 18 percent, followed by agricultural products which consisted of 15 percent. Chemical is the third largest exports to China which consist of 14 percent of total imports. Then followed by transportation equipments and waste and scrap which accounted for 11 percent and 10 percent of total imports respectively. All other factors such as food manufactures, paper, electrical equipment, miscellaneous products, textiles and fabrics and so on accounted for 32 percent of total U.S exports to China in the year 2009.
Figure 1.1 Top U.S Imports from China in 2009

Source: International Trade Administration, 2010

Figure 1.2 Top U.S Exports to China in 2009

Source: International Trade Administration, 2010
1.2 Problem statement

In modern economies, trade by sector generally follows two patterns. The first is based on traditional comparative advantage which to trade activities determine by specialization due to abundance of resources, technological advancements or/and locational advantages. The U.S economy is characterized by high technology, extensive farmland with high agricultural yields, expensive labor, and deep capital. As such, the U.S would be expected to be strong in exports of high technology goods, food and grains, and capital intensive products. The Chinese economy on the other hand is characterized by abundant and cheap labor, low capital intensity, and a mix of low, medium and high technology both in manufacturing and agriculture. Therefore, China would be expected to pose greater comparative advantage as exporters of labor-intensive manufactures, such as textiles and apparel, shoes, toys, and light manufactures.

The second trade pattern is the IIT or trade within industrial sectors which occurs among industrialized countries. The products traded usually carry brand names, are differentiated and may be protected by intellectual property rights. As highlighted in Figure 1.1 and Figure 1.2, U.S major imports and exports from China are of the same item such as computer and electronic products. Besides that, indicated in Table 1.4 the major trade deficit between U.S and China are computer and electronic products which accumulated USD -90.83 billion, followed by miscellaneous manufactured commodities which accumulated USD-32.46 billion, apparel manufacturing products and electrical equipment which accumulated USD -26.14 billion and USD -18.80 billion respectively.
This demonstrates that U.S has imports and exports the same product to China. Hence, we can expect that there exist two way trade or IIT of manufacturing products between U.S and China. Therefore, this also proves that the conventional theory which focused on comparative advantage did not apply in this bilateral trade. This can be support by a study done by Lv, Jie, Shi and Qiang (2009) in which they said that the impressive trade growth between China and U.S is accompanied by the trend that structure change in the nature of Sino-U.S trade with an increase in the two way trade in spite of inter-industry still prevails. Besides that, Hellvin (1996) measured the extent of IIT between China and OECD countries and found that there is increasing IIT each other in manufacturing industry.

**Table 1.4 Trade balance between United States and China in 2009 (Billion USD)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Item</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>335</td>
<td>Electrical Equipment; appliances and components</td>
<td>-18.80</td>
</tr>
<tr>
<td>315</td>
<td>Apparel manufactutring products</td>
<td>-26.14</td>
</tr>
<tr>
<td>339</td>
<td>Miscellaneous manufactured commodities</td>
<td>-32.46</td>
</tr>
<tr>
<td>334</td>
<td>Computer and electronic products</td>
<td>-90.83</td>
</tr>
</tbody>
</table>

Source: International Trade Administration, 2010

Intra-industry trade (IIT) is defined as the simultaneous export and import of products in the same statistical product category. Since 1980s, there have been numerous studies tried to identify the determinants of IIT and it can be divided into two groups which are country-specific studies and industry-specific studies. The country-
specific studies explain IIT through the macroeconomic variables in each country, such as per capita income, country size, distance, and trade orientation meanwhile industry-specific studies explain an industry’s IIT as a function of industry-specific variables, such as scale variables, advertising/sales ratio, product differentiation, industry size, product quality differences and firm concentration ratio. There was also other studies that tried to combine both country and industry variables to identify determinants of IIT.

According to Tang, Liao, & Lan (2009), China trade pattern has undergone a great change which is developing from inter industry trade to intra industry trade (IIT) especially in manufacturing sectors. According to them, Chinese Manufacturing intra-industry trade is developing with a steady pace, but its type is vertical intra industry trade. This is supported by Hellvin (1996) on China and OECD countries. According to Hellvin (1996) due to the large differences between China and OECD countries in terms of factor endowments theory, IIT are expected to be of vertical nature i.e., two-way trade in varieties of a product characterized by different qualities. China exports lower quality varieties in exchange for higher quality varieties from OECD countries.

Therefore, it is important to distinguish between HIIT and VIIT when investigating issues related to IIT because underlying determinants are likely to differ.
1.3 Objectives of the Study

1.3.1 General Objective

To investigate the determinants of intra industry trade between China and United States in manufactured products.

1.3.2 Specific Objectives

- Investigate bilateral trade pattern between in manufacturing sector between United States and China.

- To establish whether the bilateral trade of manufacturing sectors in China and United States is of vertical industry trade (VIIT) or horizontal intra industry trade (HIIT).

1.4 Significance of study

This study intends to identify the determinants of IIT between China and United States in manufacturing sector. This research contains information about vertical Intra industry trade and horizontal intra industry trade. This study will also identified which determinants have more impacts on trade between China and U.S whether country
specific variables or industry specific variables. Such information is very useful to
further understanding and the nature and pattern of trade between these countries.

This research also aims to fill the gap in economic studies especially in intra
industry trade. There are some researchers in this field including the studies of intra
industry trade between china and U.S but only few concerns with the intra industry trade
in manufacturing sectors. Therefore, by conducting this type of research, the researcher
hopes that it can help the readers to gain some information on the Intra Industry Trade
between United States and China in manufacturing sectors.

This research is also important for China and United States government so that
both countries can gain information in term of doing trade. Both these nations therefore
can strengthen their trade relationship and help to reduce their trade imbalances.

1.5 Scope of Study

As stated earlier, the focus of this study is to investigate the determinants of intra
industry trade in between China and United States in manufacturing sector. Therefore,
the population of this study is China and United States. This is due to the fact that China
is the top 5 trading partners’ exports and imports. This can be referred to International
Trade Administration. Besides that, this study concentrates on identifying whether
bilateral trade of U.S and China is of vertical IIT or horizontal IIT. Apart from that, the
commodities used in this study are commodity that are classified by SITC-6 (manufactured goods classified chiefly by material) and SITC-8 (miscellaneous articles).

1.6 Summary

China’s transformation into a private-sector led economy and its accession into the global economy have been among the most dramatic economic developments of recent decades and it had contributed leads to a sustainable international trade in China. The bilateral trade between China and United States (U.S) and economic relationship between these countries has been greatly strengthened since the year 2000. According to international Trade Administration (ITA) China had ranked number one for the most top importers by United States meanwhile in terms of exports, China has ranked number three by the United States.

The impressive trade growth between two countries is accompanied by the trend that structure change in the nature of Sino-US trade with an increase in the two way trade in spite of inter-industry trade still prevails. U.S had incurred trade deficit with China since the year 2000. In the past decade, the most dramatic increases in U.S imports from China have been not in labor intensive sectors but in some advanced technology sectors such as computer and electronic products. Similarly, major U.S exports to china are also of the same item which is computer and electronic products. Therefore, we expect that there exist two way trade or intra industry trade (IIT) of manufacturing products between U.S and China.
Therefore, the objective of this study is to investigate the bilateral trade pattern between in manufacturing sector between United States and China and we want to establish whether the bilateral trade of manufacturing sectors in China and United States is of vertical industry trade (VIIT) or horizontal intra industry trade (HIIT).
Chapter 2: LITERATURE REVIEW

2.1 Introduction

International trade is thought to consist of each country exporting the goods that suited to its factor endowment, technology, and climate while importing the goods least suited for its national characteristics. This is called inter-industry trade because countries export and import the products of different industries. But nowadays, most exports and imports of most industrial countries are of the same products or known as the intra industry trade (IIT). Therefore, in order to develop understanding of IIT, this chapter will discuss the theories that relate to IIT and will also discuss research that have been done by previous researcher on the existence of IIT. This chapter will begin with a brief summary of Ricardian and factor endowments approaches to trade theory to highlight the contribution of intra industry trade theory. The summary of the finding will be discussed in the last section with also regarding to the Table 2.1.