UNIVERSITY OF INDONESIA

DETERMINANTS OF EXPORT SUPPLY OF THE INDONESIAN TEXTILES INDUSTRY, 1975-2006

THESIS

KRISNA ARIZA
0706180520

FACULTY OF ECONOMICS
MASTER OF PLANNING AND PUBLIC POLICY
DEPOK, 2009

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Submitted in partial fulfillment of the requirements for the Degree of Master of Economics

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Name	:	Krisna Ariza
Student Register Number	:	0706180520
Document	:	Thesis
Title of Thesis	:	Determinants of Export Supply of the Indonesian Textiles Industry, 1975-2006
Date	:	January 2009
Supervisor	:	Dr. Komara Djaja

Depok, January 2009

Krisna Ariza

PAGE OF ENDORSEMENT

This thesis is proposed by	:	
Name	:	Krisna Ariza
Student Register Number	:	0706180520
Program	:	Master of Planning and Public Policy
Title of Thesis	:	Determinants of Export Supply of the Indonesian Textiles Industry, 1975-2006

It has been defended to board of examiners and submitted in partial fulfillment of the requirements for the degree of Master of Economics in Master of Planning and Public Policy, Faculty of Economy, University of Indonesia.

BOARD EXAMINERS

Supervisor	: Dr. Komara Djaja	(……..)
Examiner	: Dr. Andi Fahmi L	(……..)
Examiner	: Dr. Muliadi Widjaja	(……..)

Stipulated in :

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ABSTRACT

Name : Krisna Ariza
Study Program : Master of Planning and Public Policy
Title : Determinants of Export Supply of the Indonesian Textiles Industry, 1975-2006.

The main objective of this study is to know the determinant factors that affect on export supply of Indonesian textiles over 1975-2006. In specifically, this study also finds the role of investment either domestic investment or foreign direct investment more affect on export supply performance of Indonesian textiles. The methodology for research in this study is multiple regression analysis by using the time series data and ordinary least square method. As a result of estimation, it is found that export supply of Indonesia's textile was affected significantly by domestic investment, domestic demand, relative price and exchange rate. However, wages and foreign direct investment in Indonesia's textile industry over 1975-2006 had not been statistically significant. This implies that there is a potential for improving the export supply performance of Indonesia textile by more attention in domestic investment.

Keywords: *export supply, textiles, Indonesia*.

ABSTRAK

Nama : Krisna Ariza
Program Studi : Magister Perencanaan dan Kebijakan Publik

Judul : Faktor-faktor yang menentukan penawaran ekspor tekstil Indonesia di tahun 1975-2006

Tujuan utama dari penulisan ini adalah untuk mengetahui faktor-faktor yang mempengaruhi penawaran ekspor tekstil Indonesia di tahun 1975-2006. Secara khusus, penelitian ini juga melihat peran investasi dalam industri tekstil apakah penanaman modal dalam negeri atau penanaman modal asing yang lebih memberikan pengaruh terhadap kinerja ekspor tekstil di Indonesia. Metode penelitian dalam penulisan ini adalah analisis *multiple regression* melalui penggunaan data runtun waktu dan metode *Ordinary Least Square*. Hasil dari pengujian yang dilakukan bahwa penawaran ekspor tekstil Indonesia secara signifikan dipengaruhi oleh penanaman modal dalam negeri, permintaan tekstil dalam negeri, rasio harga tekstil dunia dengan harga perdagangan Indonesia dan juga nilai tukar. Namun, untuk variabel upah dan penanaman modal asing di industri tekstil secara statistik tidak mempunyai hubungan yang signifikan terhadap penawaran ekspor tekstil Indonesia selama tahun 1975-2006. Berdasarkan hal tersebut, bahwa ada suatu peluang potensial untuk memberikan perhatian yang lebih kepada penanaman modal dalam negeri untuk memperbaiki kinerja ekspor di industri tekstil.

Kata kunci: penawaran ekspor, tekstil, Indonesia.

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INTRODUCTION

1.1. Background of the Study

In recent world trade, exports of textile and clothing have an important role in the economic development of the country especially in developing countries as a strategic for growth in manufacturing sector. They have gained from trade in textile and clothing because of abundant in factor of production such as lower labor cost and natural resources to produce textile and clothing products. Adopt an idea from Saha and Jaseem (Saha, 1994) that the textile and clothing industry is an industry often encouraged by governments and one with substantial contribution to manufacturing output, employment, and foreign exchange in developing countries.

Trade of textiles in the world market increase around three times from US $ 40 billion in 1980 to US $ 143 billion in 2006, as well as, trade of clothing sector also increase around five times from US $ 55 billion to US $ 291 billion in the same period. In 2006, the major of share exports in the world market are China and Hong Kong, US, EU, India, Turkey, South Korea, Mexico, Indonesia, and rest of the world. The performance exports of textile and clothing from developing countries engaged with global environment especially regarding to agreement in the World Trade Organization (WTO). The termination of Multi Fiber Arrangement (MFA)[1] on January 1, 2005, which had limited textile and clothing trade for decades, has launched a new era of textile and clothing trade.

Indonesia as the developing country has taken advantage from trade in the world market of textile and clothing. The ranked of Indonesia in the world exporter of textile and clothing is eleventh (11^{th}) and ninth (9^{th}) respectively. The main markets for Indonesian textile and clothing are the United States, with 41.3 percent of exports, the European Union (EU) with

[1] Network of bilateral agreements imposing restrictions on exports of textile and clothing from developing to developed countries. In paper from Afia Malik (2004).

16.5 percent, and Japan with 3.7 percent[2]. In addition to the United States, the EU, and Japan markets, the ranked of Indonesia is the fourth (4th), tenth (10th), and third (3rd) respectively. In addition to fulfill of international market, textile and clothing industry should also complete in domestic market. Increasing of world consumption and domestic market is caused by increasing amount of population. According to Textiles Intelligence and compiled by Indonesian Textile Association (2007), world consumption will be increase to be 64.3 million ton in 2009 with assumption the number of population is 7.4 billion people, so that consumption per capita in world market is 8.7 kg. In domestic market, total population will get in prediction to be 232 million people, and domestic consumption will be 1.16 million ton, so consumption per capita is 5 kg.

Table 1.1
Textile and Clothing Exports and Growth Rates Compared with Non-Oil Exports, 1996-2006

Year	Exports (US$ billion)	Growth from previous year	Non-Oil Sector (US$ billion)	The Share in Non-Oil Sector
1996	6.57	-	38.09	17.2
1997	7.44	13.24	41.82	17.8
1998	7.43	(-0.13)	40.97	18.1
1999	7.28	(-2.01)	38.87	18.7
2000	8.28	15.11	47.75	17.3
2001	7.68	(-8.35)	43.68	17.6
2002	6.89	(-10.28)	45.05	15.3
2003	7.03	2.03	47.41	14.8
2004	7.75	10.24	55.94	13.8
2005	8.59	10.83	66.43	12.9
2006	9.45	10.01	79.59	11.8

Source: Ministry of Trade, Ministry of Industry, BPS, and Author calculated

But, the problems of Indonesia to compete with other countries that major exports of textile and clothing in the international market that is the acceleration exports of this sector was not quite confident in the past few

[2] See on *Precision Indonesian Textile and Clothing Performance between Potentially and Opportunity* by Ermina Miranti. Economic Review No. 209, September 2007.

years. The growth rates of exports had decreased from 13.24 percent in 1997 to 10.01 percent in 2006. Moreover, the condition exports of textile and clothing was followed with the contribution this exports to non-oil sector that tended to decrease significantly since in year of 1999 to 2006. In 1999, the share of exports of textile and clothing to exports non-oil sector accounted an 18.7 percent, but in 2006, this share had decreased to be 11.8 percent. Facing for this problem, textile and clothing industries are being given development priority by the government.[3] There are strong reasons why textile and clothing industry is the most important role in Indonesia. Firstly, this industry is the major foreign exchange earner in non-oil sector. Secondly, it is the largest net export contributor and also one of the major contributors to Gross Domestic Product (GDP) of Indonesia. And thirdly, it is the largest absorber of labor force.

Indonesia has been deregulation and liberalization of trade and investment policy, so that this policy had changed from an import substitution towards an export promotion since 1982. The import substitution was characterized by capital intensive manufacturing in upstream and resource based industries whilst the export promotion focused on labor intensive export oriented industries. In respond to change, foreign direct investment inflows contributed significantly to the increase in exports diversification specifically in the manufacturing sector such as textile and textile products, processed woods, and electronics (Kuncoro and Resosudarmo, 2002).

In the empirical evidence, Indonesia attracted huge inflows of foreign direct investment as well as domestic investment in textile industry, from the liberalization in trade and investment in 1985 up to the beginning of economic crisis in 1997. These inflows of foreign direct investment and domestic investment happened in the textile and clothing industries. This industry received a huge amount of export-oriented foreign direct investment and domestic investment between 1988 and 1990. As a result of this, the

[3] As detailed in Government Regulation No. 7 in 2005.

exports of textile and textile products increased dramatically in the 1988/1989 to 1992/1993 (Thee, 2006).

Nevertheless, the Indonesian textile industry did not maintain performance of foreign direct investment and domestic investment in this sector in seriousness, it seemed that during the past few years, total investment in Indonesian textile and clothing sector was relatively stagnant. In 1992, foreign direct investment in Indonesian textile industry received a large amount that around seven percent of total inflows of approval foreign direct investment in Indonesia, but in 2006, the Indonesian textile industry only received two percent from total inflows of approval foreign direct investment in Indonesia. On the other hand, in 1993, domestic investment in textile industry received around eight percent from total approval domestic investment, but in 2006, it was dropped dramatically to be around 0.8 percent from total approval of domestic investment in Indonesia. This condition connected to contribution of textile and clothing industry performance, consequently, export performance in this sector is not prospecting.

Regardless of the slowdown exports performance of Indonesian textile and clothing industry and also performance of investment in textiles industry, it may be due to supply side analysis of export. Textile industry is the part of composition exports of textile and clothing. Thus, it is interesting enough to find the determinants factors that affect on export supply of Indonesian textiles industry.

1.2. Objectives of the Study

The main objective of this study is to find the determinant factors that affect on export supply of Indonesian textiles industry in period of 1975-2006. Specifically, this objective also finds the role of investment either domestic investment or foreign direct investment in Indonesian textiles industry. To meet the objectives of the study, there are following research question, as follows:

1. What are the determinant factors that affect on export supply in Indonesian textiles industry?

2. Has domestic investment or foreign direct investment played role in Indonesian textiles industry?

1.3. Research Coverage

This study covers textiles industry in Indonesia. In purposely, the data of export textiles is based on Standard International Trade Classification (SITC) 651-659. Import cottons as the raw material for textiles industry is not included in the model. The data were collected by using secondary data from the documents of the Ministry of Trade, Ministry of Industry, Indonesian Central Bureau of Statistics (BPS), Indonesia Coordinating Board for Investment (BKPM), Ministry of Industry, Indonesian Textile Association, United Nations Industrial Development Organization (UNIDO), United Nations Conference on Trade and Development (UNCTAD) and IMF-International Financial Statistics. The period covered in this study is 1975 to 2006.

1.4. Structure of the Thesis

This thesis is divided into six chapters. In specification of each chapter is as follows:

CHAPTER I : INTRODUCTION

This chapter explains of the background of the study, objectives of the study, research coverage, and structure of the thesis.

CHAPTER II : INDONESIAN TEXTILE AND CLOTHING ECONOMY

In this chapter, the Indonesian textile and clothing economy will be briefly summarized.

CHAPTER III : LITERATURE OF THE STUDY

This chapter will explain the literature of the study that related on the topic and also the previous studies that concentrate on the topic.

CHAPTER IV : RESEARCH METHODOLOGY

This chapter will present information of the model specification used in this study and it will be discussed research methodology such as the characteristic of the data and the source of the data.

CHAPTER V : RESULT AND ANALYSIS

This chapter will explain an ordinary least square estimation and the analysis of estimation result will be present.

CHAPTER VI : CONCLUSION AND RECOMMENDATION

In the last chapter, it will present conclusions, policy implications and the recommendations for further study.

CHAPTER II
INDONESIAN TEXTILE AND CLOTHING ECONOMY

2.1. General Condition

Indonesian textile and clothing industry has been the center of national economy development in manufacturing sector as well as contribution into non-oil sector. It has played an important role in the process of industrialization. This industry has been the channel of transformation from an agrarian structure of the economy into an industrial structure of economic system. The textile and clothing industry in Indonesia, as is the case in many developing countries, has already a long standing tradition and is among the pioneering sector in industrial manufacturing. It consists of sub sectors like fiber industry, yarn industry, weaving and knitting industry, garment industry, and others textiles industry. It has a completed cycle of production process. Indonesian textile and clothing industry is vertically integrated and involved in almost every sector of the textile supply chain from the production of man-made fibers, particularly polyester, nylon and rayon; man-made and cotton yarn spinning; and weaving and knitting; to dyeing, printing and finishing; and apparel manufacturing. The successful of industrial development in Indonesia is surely supported by textile industry. In 1987, there were around 2,000 textile companies with employing 300,000 workers. But, in 2006, there were more than 2,600 textile companies has been installed and over 1,2 million Indonesian are now employed in the textile industry, with the total export reaching around US $ 9.4 billion.

2.2. Development of the Indonesian Textile and Clothing Industry

The Indonesian textile and clothing industry plays a strategic role in absorbing a large number of labors and in increasing foreign exchange reserves. The contribution of textile and clothing industry to GDP in 2006 reached 20 percent from the manufacturing sector and 3 percent of total earnings. For the past 10 years, it could absorb more than 2 million workers;

and contributed US $ 6.93 billion in foreign exchange annually, and also making Indonesia became one of the world major textile and clothing exporting countries in the world, with a market share of 3.8 percent. Indonesian textile and clothing industry has improved by the number of companies in this sector. The number of companies of medium and large scale in textile and clothing industries is 2384 unit in 1995 increase to 2699 unit in 2006. As the largest employer in Indonesia's industrial and manufacturing sector, the textile and clothing industry in 2005 employed about 1.8 million workers in directly related large-medium scale and small-scale operations (direct employment) and 3.7 million in indirectly related operations (indirect employment). Total direct employment in large-medium scale of textile and clothing industry (1,176,183 workers) represented around 15 percent of the total employment in Indonesia's manufacturing industry and around 1.9 percent of the Indonesian total workforce of 94.95 millions.

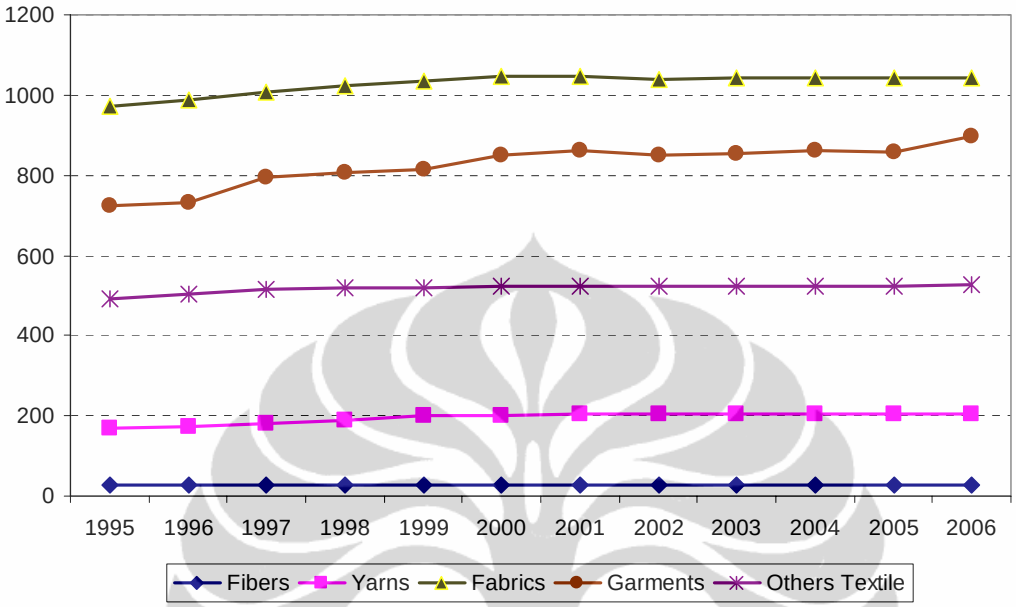
Table 2.1
Development of the Indonesian textile and clothing industry (large and medium scale companies), 2002-2006

Description	2002	2003	2004	2005	2006
No. of companies	2,646	2,654	2,661	2,656	2,699
Number of people employed	1,182,212	1,182,871	1,184,079	1,176,183	1,190,736
Export value (US$ million)	6,888	7,033	7,647	8,603	9,457
Import value (US$ million)	1,824	1,673	1,720	1,606	1,585
Net export value (US$ million)	5,064	5,360	5,929	6,997	7,872

Source: Indonesian Statistical Bureau and Ministry of Industry; compiled by the Indonesian Textile Association

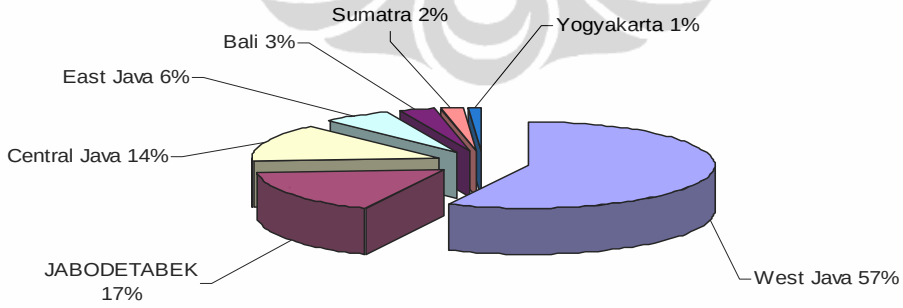
The companies of textile and clothing industry were dominated by fabrics industry, the second largest was dominated by garments industry. In 2006, distribution of textile and clothing industry by region in Indonesia that a majority of those companies are 57 percent were located in the region of

West Java, followed by jabodetabek (Jakarta, Bogor, Depok, Tangerang, and Bekasi) 17 percent; Central Java, 14 percent; and East Java, 6 percent. And the rest were in Bali, 3 percent, Sumatra 2 percent and Yogyakarta 1 percent.



Source: Ministry of Industry, Ministry of Trade, BPS, and API compiled

Figure 2.1 Companies in Textile and Clothing Industry (unit), 1995-2006



Source: Ministry of Industry, Ministry of Trade, BPS, and API compiled

Figure 2.2 Distributions of Textile and Clothing Industry by Region, 2006

Ownership of companies in Indonesian textiles industry is predominance of two broad categories: the first group is domestic

investment, and the second group is foreign direct investment. Domestic and foreign investments have to require prior approval from the Indonesian for Investment Coordinating Board (BKPM). However, not all approved investments are being realized. During the 1998-2006 period, domestic investment approvals in the textile industry show a declining trend, and foreign direct investment approvals show an increasing trend. Approved domestic investment was US$ 2,336 million in 1997, but it decreased sharply to US$ 139 million in 2006. On the other hand, approved foreign direct investment amounted to US$ 333 million in 1997 increased to US$ 418 million in 2006. But the lowest level was reached in 2002, when foreign investments fell sharply to US$ 89 million and domestic investments to only US$ 47 million.

Table 2.2
Approved Domestic and Foreign Direct Investment in Textiles Industry, 1997-2006

Year	US$ million	
	Foreign Direct Investment	Domestic Investment
1997	333	2336
1998	217	113
1999	240	321
2000	400	283
2001	330	216
2002	89	47
2003	123	246
2004	165	165
2005	408	73
2006	418	139

Source: BKPM

Based on data of investment, there is a tendency that the investment on textile industry is increasing. Table 2.3 shows the development of investment in textile industry. In 2001, it reached 130 trillion rupiah and increase to 135 trillion rupiah in 2006. It seems that the characteristic of textiles industry is capital intensity than garments industry with low capital.

Table 2.3
Investment in Textile and Clothing Industry, 2001-2006
(in Trillion Rupiah)

Sub Sectors	2001	2002	2003	2004	2005	2006
Fibers	11,640	11,929	11,929	11,929	11,929	12,306
Yarns	24,777	25,040	25,040	25,040	25,040	25,558
Fabrics	30,811	31,428	31,636	31,567	31,567	32,330
Garment	2,808	2,913	2,958	2,975	2,957	3,318
Others Textile	60,786	60,790	60,790	60,790	60,790	62,135
Total	130,822	132,100	132,353	132,442	132,301	135,647

Source: BKPM

Based on data of table 2.4, there is a tendency that the capacity of production, real production and utilization on textile industry is decreasing in fibers, yarns, fabrics, and garments industries. In the fiber industries, the production decreased from 777,000 tons in 2002 to 752,000 tons in 2005, whereas capacity of production increased from 1,049,000 tons to 1,077,000 tons. However, the value of export in this commodity had increased from US $ 182 million in 2002 to US $ 244 million in 2005. Fiber industry is more concentrate in domestic market oriented because of it is a raw material for yarn industry. Indonesia is one of producer's fibers in the world market with a huge amount especially in polyester and rayon. The characteristic of this industry is capital-intensive, consequently, the competitiveness was depend on cost of energy to produce fibers. In this sub sector, foreign firms from Japan, India, and Austria have been domination particularly in polyester and rayon.

Table 2.4
The Utilization of Installed Capacity and
Real Production of Indonesia Textile and Clothing Industry, 2002-2005

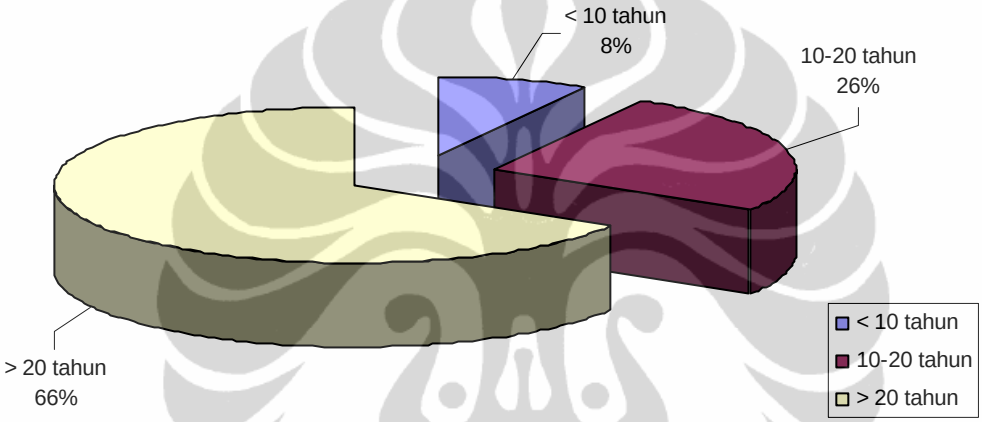
No.	Commodity			2002	2003	2004	2005
1.	Fibers	A	ton	1049	1049	1077	1077
		B	ton	777	776	796	752
		C	%	74	74	74	70
2.	Yarns	A	ton	2337	2335	2397	2397
		B	ton	1649	1646	1692	1623
		C	%	71	70	71	68
3.	Fabrics	A	ton	2011	1724	1777	1777
		B	ton	1275	1273	1312	963
		C	%	63	73	74	54
4.	Garments	A	ton	591	590	666	678
		B	ton	462	461	517	383
		C	%	78	78	78	57

Note: A: Capacity (in ton 000') B: Real Production (in ton 000') C: Utilization (%)

Source: BKPM, Ministry of Industry, Ministry of Trade, API processed

In others sub sector, yarn production was also quite similar with fibers commodity, the production decreased from 1,649,000 tons to 1,623,000 tons in 2002-2005 whereas the capacity of production 2,337,000 tons increased to 2,397,000 tons. But, the export value of yarns increased from US $ 1,229 million to US $ 1,621 million. This industry concentrates to fulfill domestic market, and also more or less 50 % from production going to export in the foreign market. Indonesia is the famous of yarn producer in a large amount. The composition of raw material to produce its based on 45 % cotton, 35 % polyester, 10 % rayon, and 5 % other fiber (such as nylon, acrylic, wool, silk). For the fiber as raw material is supplied from domestic, but for cotton is imported. The character of yarn industry is also capital-intensive because of depends on technology and supply from sector of energy. Investment in this sub sector was dominated from Japan, but in staple, it dominated by domestic firms and foreign firms from India.

In fabrics commodity, the production also decreased from 1,275,000 tons in 2002 to 963,000 tons in 2005, and also the capacity of production decreased from 2,011,000 tons to 1,777,000 tons. Although the export value of fabrics increased from US $ 1,404 million to US $ 1,537 million. This sub sector contributes to supply for domestic market, despite of 35 % from production has exported to foreign market. Fabrics industry also depends on supply from sub sector of yarn to get the output of production, but the problem was the condition of machinery to produce its whereas the machine was out of date.



Source: Ministry of Industry

Figure 2.3 The Age of Machinery in 2005

Because of the production in fiber, yarn, and fabric decreased, it correlated with garment industry whereas this industry also decreased in production that was 462,000 tons in 2002 decrease to 383,000 tons in 2005 whereas the capacity of production increased from 591,000 tons to 678,000 tons. However, the export value of garment increased from US $ 3,805 million to US $ 4,899 million. Indonesia garment industry is export oriented because 75 % of production going to export in the foreign market especially for US and EU market. The competitiveness of this sub sector depends on skill of labor so the character for garment industry was labor-intensive.

2.3. Indonesian Domestic Textile Consumption

The share of household textiles consumption into total domestic textile consumption has decreased from 3.6 percent in 2002 to 2.70 percent in 2005. In completely, household textile consumption in Indonesia is decreasing, at least in volume terms from 888,000 tons in 2002 to be 838,000 ton in 2005.

Table 2.5
Indonesian Domestic Textile Consumption, 2001-2005

Description	Year				
	2001	2002	2003	2004	2005
Total Domestic Textile consumption (US$ billion)	101.28	136.50	160.08	171.52	179.56
Domestic textile consumption (US$ billion)	3.65	3.96	4.32	4.63	4.85
Share of textile consumption (%)	3.60	2.90	2.70	2.70	2.70
Domestic textile consumption (thousand tons)	888	839	820	882	838

Source: Indonesian Textile Association

According to Indonesian Textile Association, while domestic sales dropped dramatically, illegal imported products acquired a market share of more than 55 %.

Consistent with Indonesian Textile Association, over the period 2001-2006, illegally imported Chinese textile have flooded the domestic market (as far as garment, the increase estimated at 380 %). Indonesian consumers prefer to Chinese textile products because of their cheap prices. As a result, hundred of Indonesian companies have shut down or closed and more workers become unemployment.

2.4. Indonesia's Foreign Trade in Textile and Clothing

In the past four years, Indonesian textile and clothing exports have recorded an average growth rate of 8.4 percent. In 2006, it was estimated that the country's total textile and clothing exports amounted to US $ 9.4 billion, an increase of 10 per cent compared with the previous year. Trends in textile export growth are influenced by external factors such as changing market structure in the United States and the European Union, as the major

markets for Indonesian textile and clothing exports. From mid-2005 and in 2006, the United States and the European Union imposed safeguard quotas on several textile and clothing products from China. Indonesia has used of this opportunity to increase its exports and succeeded in becoming one of the major suppliers to the United States. In the case of the European Union, Indonesian textile and clothing exports had been declining due to the inability to compete with Chinese products. However, following the imposition of safeguard quotas against China in early 2006, Indonesia has been able increase textile and clothing exports to the European Union by 3 percent. Market competition in the European Union is stronger as Indonesia has to compete against that region's neighboring countries as well as African countries that have introduced preference tariffs.

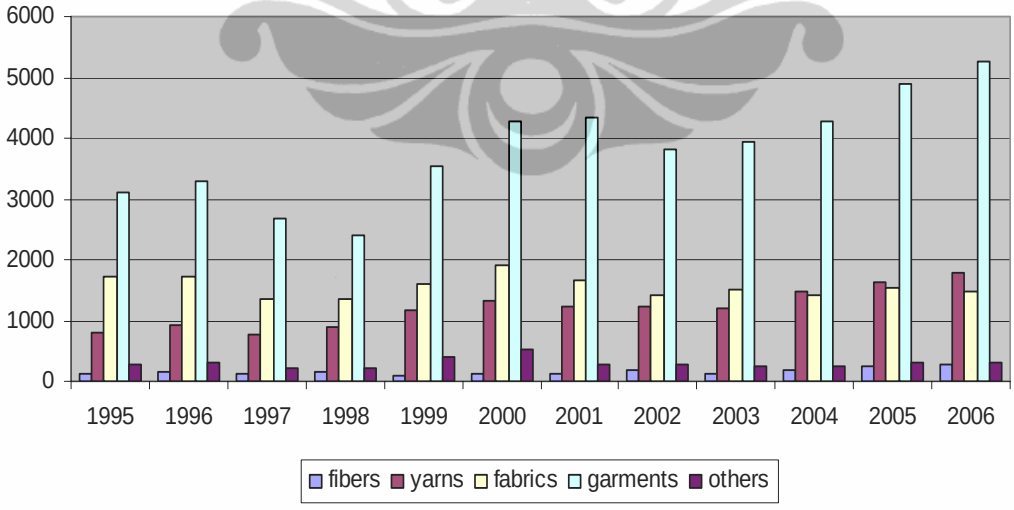
The exports orientation policy in Indonesia brought large changes to its textile and clothing industry. Moreover, various export promotion policies also helped to expand this industry's exports. As a result, the Indonesian firms have been able to gain a substantial market share in the world's textile trade. In 1980, this industry exported US $ 146.9 million. In 1985, Indonesia's export of textile and clothing increased to be US $ 541.4 million. Furthermore, in 1990, this industry was incredible exports that the value of exports increased five times from 1985. The value of exports was US $ 2.9 billion. This condition was followed in 1995, but the acceleration of exports only three times increase compared with 1990. The exports value in 1995 was US $ 6.06 billion. After that, in 2000, the acceleration of exports was decrease to be US $ 8.2 billion, and the acceleration backed to increase to be US $ 8.6 billion in 2005. Indonesia's export of textile ranked number eleventh in the world after position of Japan in 2005. On the other hand, Indonesia's export of clothing ranked number seventh in the world after position of Mexico. Overall, the position of Indonesia's export of textile and clothing was tenth.

Table 2.6
Indonesia's Textile and Clothing Exports in the World

Year	World Exports (Billion US$)	Indonesia's Exports (Billion US$)	Indonesia's Shares (%)
1980	95.5	0.15	0.16
1985	103.2	0.54	0.52
1990	218.9	2.9	1.32
1995	307.7	6.06	1.97
2000	356.4	8.2	2.3
2005	502	8.6	1.7

Source: Zhongguo Fang Zhi Gong Ye Nian Jian, 2002/03 and COMTRADE, author compiled

Based on the export statistics of the textile and clothing industry from 1995 to 2006, exports characteristics of Indonesia textile and clothing, as shown in figure 2.4, the garment industry had dominated the exports of Indonesia textile and clothing. The contribution of garment industry into Indonesia's exports had contributed above US $ 2.6 billion since 1995. This condition indicates of Indonesia's garment exports more competitive than other sub sectors in Indonesia's textile and clothing.



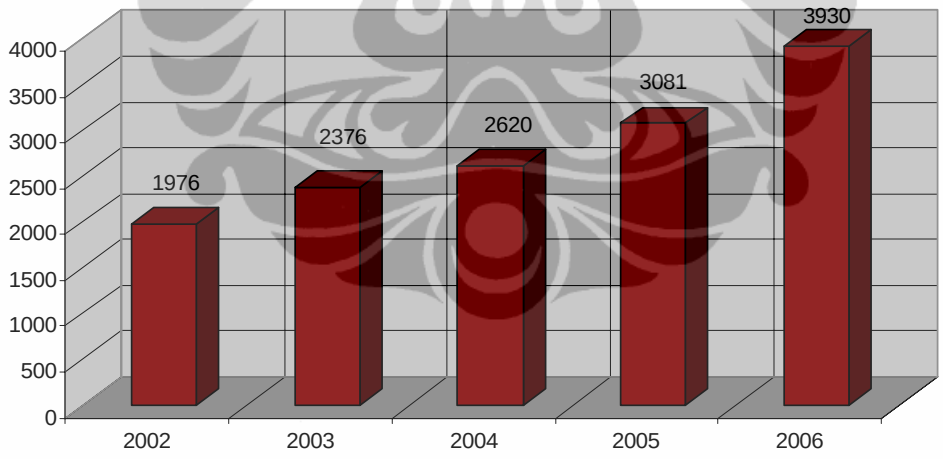
Source: BPS, Ministry of Trade, Ministry of Industry, and API processed

Figure 2.4 Composition of Indonesia's Textile and Clothing Exports (in US$ million)

The major Indonesia's textile and clothing export markets concentrate on a few countries which are the United States, the European Union, and Japan. In 2006, the share of export markets is 41.3 percent, 16.5 percent, and 3.7 percent in respectively.

In 2006, the main suppliers of textile and clothing to the United States market were China with US $ 27.07 billion, Mexico with US$ 6.4 billion and India with US $ 5.03 billion. The share of Indonesia's export in United States markets was in fourth position with 4.18 % or US $ 3.9 billion. The position of trade between Indonesia and United States in textile and clothing sector took a favorable. As shown in figure 2.5, from 2002 until 2006, the share Indonesia's exports to US markets increased significantly.

Indonesian exporters like to say that they are not interested in the low end of the US market, which is dominated by China, and that their real competitors in the US market are Pakistan for yarn; Thailand and Brazil for fabrics; India, Vietnam and Bangladesh for clothing.

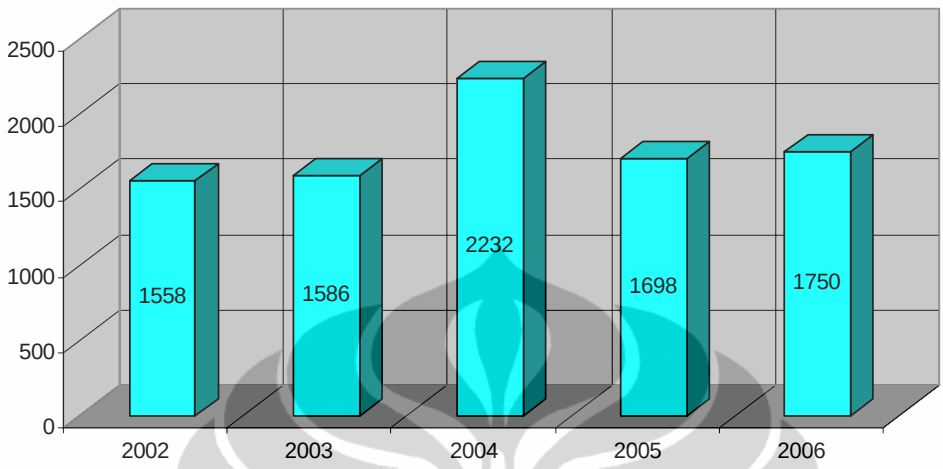


Source: BPS, Ministry of Trade, Ministry of Industry, and API processed

Figure 2.5 Indonesia's Textile and Clothing Exports to the United States, 2002-2006 (in US$ million)

In 2006, the main suppliers of textile and clothing to the European Union (EU 25) market were China with 19.8 billion Euro, Turkey with 9.5 billion Euro and India 5.1 billion Euro. The share of Indonesia's export in

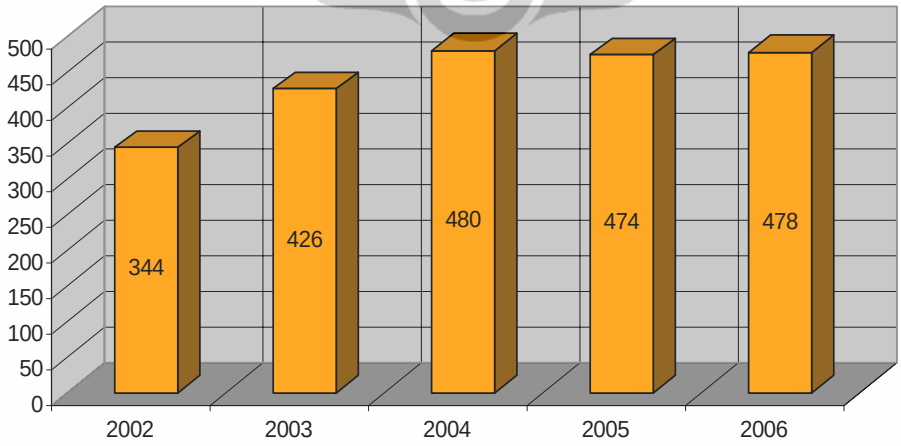
European Union markets was in tenth position with 1.21 % or 1.6 billion Euro. As shown in figure 2.6, the share of Indonesia's export to EU-25 was only increase in 2004, and got dropped in 2005.



Source: BPS, Ministry of Trade, Ministry of Industry, and API processed

Figure 2.6 Indonesia's Textile and Clothing Exports to the European Union, 2002-2006 (in US$ million)

In 2006, the main suppliers of textile and clothing to Japan markets were China with US$ 3.07 trillion, European Union (EU-25) with US$ 721 billion and Indonesia with US$ 349 billion. As shown in figure 2.7, in 2002 to 2005, the share of Indonesia's exports to Japan market was relatively stagnant.



Source: BPS, Ministry of Trade, Ministry of Industry, and API processed

Figure 2.7 Indonesia's Textile and Clothing Exports to Japan, 2002-2006 (in US$ million)

2.5. Prospects and Challenges of Indonesia's Textile and Clothing

Indonesia is the dominant textile in Southeast Asia. In 2006, Indonesia was the number three exporter clothing to the US, after China and Mexico. In the EU import market, Indonesia's position is less remarkable (position tenth, as well as for textiles). According to Jozef De Coster (2007), the international competitiveness of the Indonesian textile and clothing industry is mainly based on the following factors:

- A strong well-integrated materials and accessories base (especially in man-made fibre items), which is considered as the strongest, after China;
- A large installed production capacity;
- Lower labor cost, joined with a long and refined textile tradition (e.g. in batik techniques and embroidery) and relatively low turn-over rates in most factories; and
- The presence of a number of strong, globally-oriented textile and garment group, which enjoy international buyer confidence.
- The out of date state of the textile machinery parc, resulting in quality problems and low productivity, is undoubtedly the textile sector's main weakness.
- The economic crisis of 1998 had a destructive effect on the worth of the Indonesian Rupiah and hence on investments in machinery. Forced to buy raw materials in US dollars at exchange rates up to IDR 18,000 per dollar, many Indonesian textile companies were no longer financially able to buy new machinery. Debt financing was no alternative, as the interest rate was very high and the Indonesian bank sector was reluctant to grant credits to a sector that was known for a high degree of non-performing loan risk and was considered to be a "*sunset industry*". As a result, since 2002, total investment value tended to stagnate.

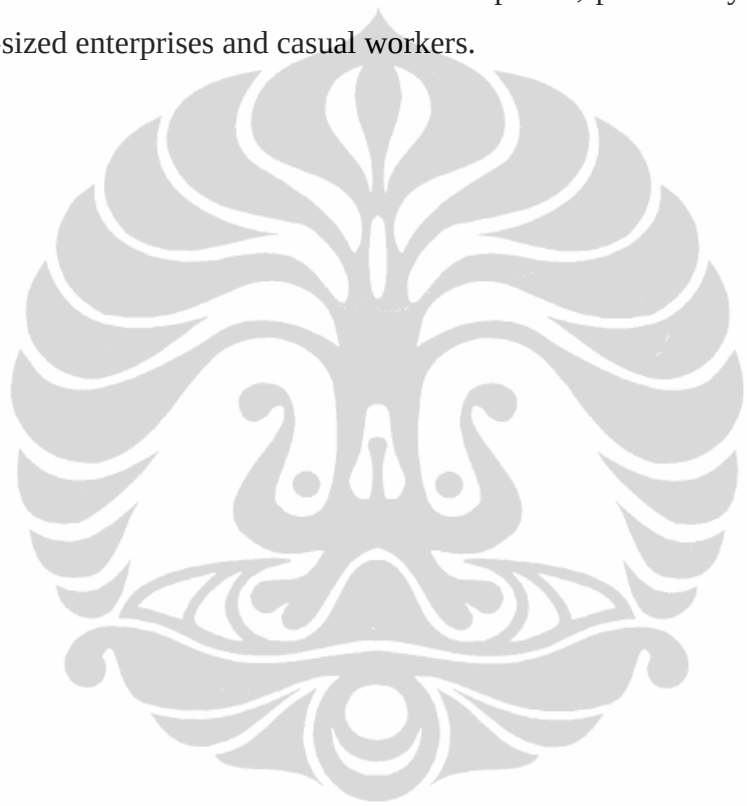
In addition, Jozef De Coster (2007) gives details the development of the Indonesian textile and clothing sector that hampered by several other challenges:

- The general business climate in Indonesia (bureaucracy, taxes, corruption, lack of coordination among different government departments) is not enterprise friendly. Besides, private and public stakeholders (industry, labor unions, banks, customs, and taxation) do not cooperate together well.
- The contribution to the economy of a significant share of the population is not optimal due to gender inequality, some forms of discrimination (against those of the population with Chinese origins) and insufficient government attention to poorer regions. In November 2006, several months after the Central Java earthquakes of May and July, more than 30,000 small firms engaged in batik dyeing and apparel manufacturing in Klaten were still waiting for rehabilitation funds.
- The banking sector is reluctant to grant credits to textile and garment companies because of negative experiences with Indonesian textile debtors in the past.
- Especially for upstream sub-sectors, energy costs are high. The cost of electricity for the industrial sector is now about 9 cent/kWh, thus higher than the world price of 7 cent/kWh. Power blackouts reportedly are becoming more frequent and disruptive.

Like other textile exporting countries, Indonesia also gets profit from rising world consumption and the limitation of Chinese exports by EU quotas (until the end of 2007) and US (until the end of 2008), Indonesian exporters enjoy lower duty access to the EU (since 2006) under a special treatment (since 1 July 2005) because of the 2004 tsunami. In 2007, Indonesia had duty free access to the ASEAN countries, as well as to Japan, for all textile and clothing items (De Coster, 2007).

The illegal import of textile goods is the main problem for the Indonesian textile and clothing industry, especially for the small-scale companies that provide solely to the domestic market. Jozef De Coster (2007) also explained that the price of illegal clothing which is no duty or no correct duty is paid is reported on average to be 30 percent lower than that of

locally made garments. According to Indonesian Textile Association, in 2005 the situation of those Indonesian companies whose main focus is on domestic sales of garments or other textile products has dramatically worsened. In that year, the sum of domestic sales 212,000 ton and legal imports 76,000 ton was only 288,000 ton or 34 percent of Indonesian textile consumption. In according to Ministry of Industry, the smuggling in textile and clothing has increased by 187 percent in 2006 compared with the year 2005, which has resulted in the decrease in the number of companies, particularly small and medium-sized enterprises and casual workers.



CHAPTER III
LITERATURE OF THE STUDY

3.1. Theory of Supply

Prices are the guide in related to the demand function, the production function, the cost function and the supply function. This section reviews the supply function which is related to this study. According to McConnell and Brue (2002), supply is a schedule or curve showing the amounts of a product that producers are willing and able to make available for sale at each of a series of possible prices during a specific period.[4] The supply function describes the relation between the amount of product sellers are willing and able to offer for sale and a set of variables that determine it (Truett and Truett, 1987). In the multi factor and multi product case, the supply schedule of a commodity is derived from the firm's profit function subject to its implicit production function. In this case, firms attempt to maximize their profit by equating marginal cost and marginal revenue in choosing their level of output (Nicholson, 2005). Therefore, the production level of a certain goods will depend on the price of the goods mentioned, the price of the goods has competition for the same inputs and the price of inputs. After definition of supply is clear, the behavior of firms or producers will tend to sells their goods in domestic market or foreign market. In the foreign market, their activities defined as exporting.

3.2. Export Literature

Export is an important term has to define. According to Wheelen and Hunger (2000) defined exporting is shipping goods produced in the company's home country to other countries for marketing. This definition is same meaning with Lee and Brashch (1978) that they defined exporting as the process of marketing to foreign countries other than the home country.

[4] This definition is worded to apply to product markets. To adjust it to apply to resource market, substitute "resource" for product and owners "producers". (McConnell and Brue, 2002).

They mentioned that export distribution can be carried out by three methods, as follows:

1. through an export representative (such as combined export management firm) or other types of agent to which the firm in question delegates foreign sales responsibility;
2. by dealing directly with customers in a foreign country;
3. by selling through a merchant middleman who buys for his own account and exports at least a part of his purchases.

Hill (2002) gave definition that exporting is sale of produced in one country to residents of another country. And Czinkota et al. (1998) defined exporting as the sale and delivery of tangible goods to another country. An easy definition of exports came from Aaby et al. (1989) that offered a simple conceptual definition that "Export is selling to foreign markets." Thus, the term of export can be defined that the process of sales activity of goods produced in home country to another country. By all means, export has related to activities of international trade.

3.3. International Trade Review

The theoretical foundations of determinants export performance based on the conventional trade theory from Heckscher-Ohlin (H-O). H-O model was developed by two economists, Eli Heckscher and Bertil Ohlin. Heckscher was a Swedish economist that developed the essentials of the factor endowment theory of international trade. As Heckscher's student, Ohlin developed and elaborated the factor endowment theory. The theory built on Ricardo's theory of comparative advantage and predicts patterns of trade and production based on the factor endowments of a trading region.

According to the H-O theory, factor endowments determine comparative advantages in production and export. A country or an industry tends to specialize in the production and export of those products that use intensively its relatively abundant factors. For instance, capital rich countries will have a comparative advantage in capital-intensive goods, while labor-

abundant countries will hold a comparative advantage in labor-intensive goods. Trading countries will export products that utilize their abundant factors of production and import products that utilize the countries' scarce factors (Leamer, 1995; Ohlin, 1933). As the theorem said:

"A nation will export the commodity whose production requires the intensive use of the nation's relative abundant and cheap factor and import the commodity whose production requires the intensive use of the nation's relatively scarce and expansive factor." (Salvatore, 2004. p.125)

For example, Japan specializes in the manufacture of many high-tech products because it possesses a high-knowledge labor pool and lost of investment capital. Argentina specializes in the production of many agricultural land and lots of low-cost labor.

3.4. Export Supply Illustration in the World Equilibrium

According to Krugman and Obstfeld (2006), they assumed that there are two countries, home country and foreign country, both of which consume and produce textile (for example), which can be costless transported between the countries. In each country, textile is a simple competitive industry in which the supply and demand curves are functions of the market price. Normally home supply and demand will depend on the price in terms of home currency, and foreign supply and demand will depend on the price in terms of foreign currency, however, Krugman and Obstfeld assumed that the exchange rate between the currencies is not affected by whatever trade policy is undertaken in this market. Thus, they quote in both markets in terms of home currency.

Trade will arise in such a market if prices are different in the absence of trade. Suppose that in the absence of trade the price of textile is higher in home than it is in foreign. Now allow foreign trade. Since the price of textile in home exceeds the price in foreign, shippers begin to move textile from

foreign to home. The export of textile raises its price in foreign and lowers its price in home until the difference in prices has been eliminated.[5]

Krugman and Obstfeld illustrated that to determine the world price and the quantity traded, it is helpful to define two new curves that are the home import demand curve and the foreign export supply curve, which are derived from the underlying domestic supply and demand curves. Home import demand is the excess of what home costumers demand over what home producers supply. Foreign export supply is the excess of what foreign producers supply over what foreign consumers demand.

Figure 3.1 shows how home import demand curve is derived. At the price P^1 home consumers demand D^1, while home producers supply only S^1, so home import demand is D^1 - S^1. If we raise the price to P^2, home consumers demand only D^2, while home producers raise the amount they supply to S^2, so import demand falls to D^2 – S^2. These price quantity combinations are designed as point 1 and 2. The import demand curve MD is downward sloping because as prices increases, the quantity of imports demanded declines. At P_A, home supply and demand are equal in the absence of trade, so the home import demand curve intercepts the price axis at P_A (import demand = zero at P_A).[6]

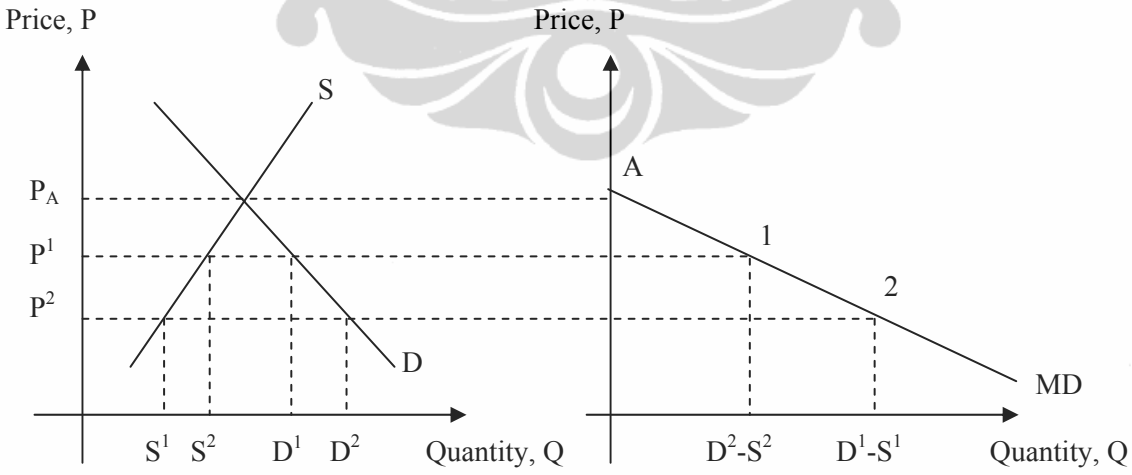


Figure 3.1 Deriving Home's Import Demand Curve

[5] Krugman and Obstfeld. International Economics: *Theory and Policy*. 2006. p.177
[6] *Ibid*. p.177

In figure 3.2 shows how the foreign export supply curve XS is derived. At P^1 foreign producers supply S^{*1}, while foreign consumers demand only D^{*1}, so the amount of the total supply available for export is $S^{*1} - D^{*1}$. At P^2 foreign producers raise the quantity they supply available to S^{*2} and foreign consumers lower amount they demand to D^{*2}, so the quantity of the total supply available to export rises to $S^{*2} - D^{*2}$. Because the supply of goods available for export rises as the price rises, the foreign export supply curve is upward sloping. At P^*_A, supply and demand would be equal in the absence of trade, so the foreign export supply curve intersects the price axis at P^*_A (export supply = zero at P^*_A).[7]

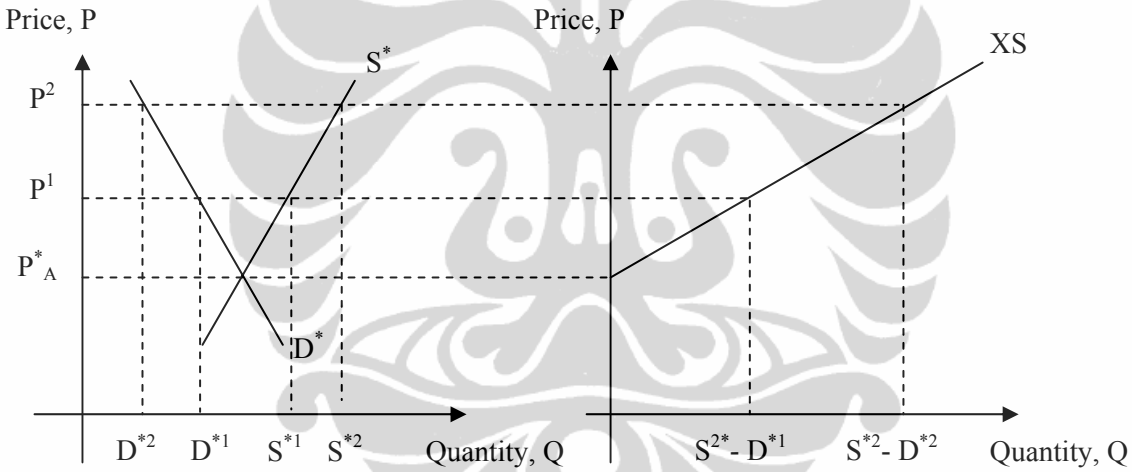


Figure 3.2 Deriving Foreign's Export Supply

World equilibrium (figure 3.3) occurs when home import demand equals foreign export supply. At the price P_w, where the two curves cross, world supply equals world demand. At the equilibrium point 1.[8]

[7] *Ibid*. p.177-178.
[8] *Ibid*. p. 179.

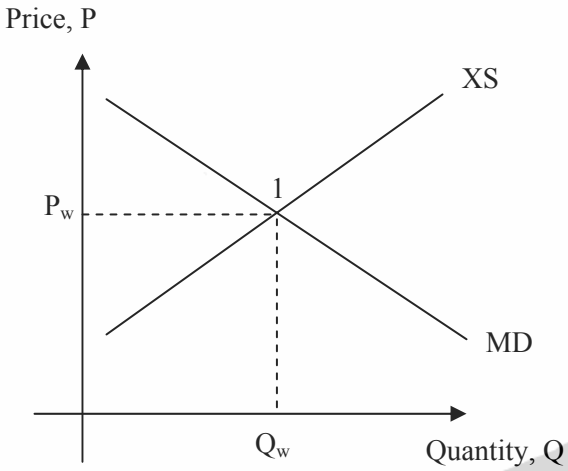


Figure 3.3 World Equilibrium

3.5. Determinant Factors of Export Supply Performance

It is not complicated to understand why export supply studies have not been many studies. The issues of the behavior of exporters are inherently difficult and not yet completely understand. Indeed, as we know that production for export depends on existing productive capacity, so far, we do not have satisfactory measure of capacity.

In supply side theory in economics holds that the higher the price of commodity, the greater its supply. According to Sharma (2000), the foundation of theoretical reasoning one would expect an increase in export supply when the export prices increase relative to domestic prices.

The quantity of supplied of export also depends on domestic demand for its commodity. It means that increase in domestic demand diverts export supply towards domestic consumption, leading to a fall in exports[9]. This led us to believe that there is a negative link between domestic demand and export supply (Joshi and Little, 1994). The empirical evidence for this tendency is also provided by Artus (1973) and Zilberfarb (1980) who have been able to detect a significant negative effect of domestic demand pressure on exports for the United Kingdom, United States, Germany, and Israel.

In other relation on export that is the impact of foreign direct investment on export supply performance based on trade literature but it is

[9] Kishor Sharma. *Export Growth in India: Has FDI Played Role?*. July 2000

not clearly recognized. In the conventional two-country trade models based on the H-O framework, factor mobility across countries may substitute for trade if production functions are identical (Mundell, 1957), but may complement trade if capital flows into foreign industries in which domestic investors have a comparative disadvantage (Kojima, 1975). The empirical studies on the effect of FDI on exports are varied. Some studies indicate that international trade and FDI are substitutes and negatively correlated (Horst, 1972; Jeon, 1992), although a number of others find that they are complementary to each other, and are positively correlated (Ajami and BarNiv, 1984; Grosse and Trevino, 1996). FDI plays an important role in the export performance of host countries as found in Ireland (O'Sullivan, 1993) and the UK (Blake and Pain, 1994).

Beside the foreign direct investment, domestic investment has also influenced on export performance. As found in several studies, domestic investment is a significant factor for export performance for some countries (Coughlin and Fable, 1988; Erickson and Hayward, 1992; Leichenko and Erickson, 1997; and Zhang and Song, 2000). Domestic investment could expand on export performance because it may help improve infrastructure and enhance productivity of industry, consequently, it gives a better chance for industries to promote export.

According to the traditional factor endowment theory, an industry should export goods which are produced using the relatively abundant resources of the country, while import goods which are produced using relatively scarce resources of the home country. Indonesia is well endowed with labor, and the wage rates are lower relative to other countries. Therefore in Indonesia's manufacturing industries have international competitiveness in terms of labor costs. An inverse relationship between exports and labor costs that is the lower the labor costs, the better for export performance, particularly in labor intensive sectors.

Exchange rate is another factor that might have influence on exports. In general, depreciation of a country's currency tends to encourage its

exports. The depreciation of the currency makes its goods cheaper in international markets and thus is more competitive.

3.6. Previous of the Study

a. Havrila and Gunawardana (2006)

This paper analyses the export supply of Australia's textile products. The model to analyse the determinant of export supply of Australia's is specified as follows:

$$XST_t = \alpha_0 + \alpha_1 RPT_t + \alpha_2 CAPTI_t + \alpha_3 ERAT_t + \varepsilon_t$$

Where:

XST : Real exports of textiles in US$ 000's (nominal exports of textiles deflated by export price index)

RPT : Relative price of exports (export price index of textiles divided by domestic price index of textiles)

CAPT : Domestic production capacity of textiles (real value of domestic production of textiles in US$)

ERAT : Effective rate of assistance to textile industries (percentage)

The hypothesized signs of parameter estimates are: $\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 < 0$.

In summary:

- There is positively between relative price elasticity and exports supplied.
- Production capacity has negative sign, it means that not appropriate with their hypothesized sign.
- There is negatively between effective rate of assistance and export supplied.

b. Afia Malik (2004)

In the study from Afia Malik (2004), for export supply performance in Pakistan's textile and clothing was influenced by export price of textile, domestic price of textile, nominal exchange rate and time trend. The equation is in log-log form, as follows:

$$LogX_t^S = \beta_0 + \beta_1 \log PX_t - \beta_2 \log PD_t + \beta_3 \log NER_t + \beta_4 T$$

Where :

X_t^S : export supply in textile (volume)

PX_t : export price of textile

PD_t : domestic price of textile

$NEER_t$: Nominal exchange rate

T : time trend

In summary, export supply of Pakistan's textile only domestic price negatively affects on export supply performance. In other hand, others independent variable i.e. export price, nominal exchange rate and time trend positively affects on export supply performance of Pakistan's textile.

c. Cameron and Zaman (2005)

The objective of Cameron and Zaman was to find the behavior of export supply performance of Pakistan's carpet into the world market from 1970-2003. The specification of their model is as follows:

$$LogX_t = \alpha_0 + \alpha_1 \log Y_t + \alpha_2 \log PR_t + \alpha_3 \log ER_t + \alpha_4 \log EV_t + \mu_t$$

Where:

X_t : export supply (volume)

Y_t : real GDP (as proxy for production) exporter country

PR_t : relative price of exporter country (as from price export divided domestic price)

ER_t : nominal exchange rate

EV_t : volatility of exchange rate

In summary:

Real GDP and volatility of exchange rate has no influence on export supply Pakistan's carpet. Relative price positively significant affects on export supply of Pakistan's carpet. And, nominal exchange rate has significant affects on export supply performance of Pakistan's carpet.

d. Kishor Sharma (2000)

In the study from Kishor Sharma, the export supply function is as follows:

XS= *g* (PX/P, DD, FDI, INF, LXS, t)

Where:

XS : export supply, measured as total export volume index.

PX/P : ratio of world export prices in related to domestic prices, where PX is the world export price, P is the wholesale price index for India.

DD : domestic demand pressure, proxied by the gross fiscal deficit of the Central Government as a percentage of GDP.

FDI : foreign direct investment, measured as the net inflows of FDI in US$.

INF : infrastructure facilities, measured as infrastructure investment percentage of GDP.

LXS : log of lagged export supply.

t : time trend which captures trend movements.

In summary, there is positive price elasticity of export supply implies that a rise in export prices in relation to domestic prices increases export supply. The negative elasticity of export supply with respect to domestic demand indicates that export supply declines as domestic demand increases. Although the coefficient of FDI variable is positive, there is no statistically significant.

e. Weishi Gu, Titus O. Awokuse, and Yan Yuan (2008)

This study examines the impact of FDI on export performance across different sectors in China at disaggregated level using sectoral data. The dataset contains fourteen main exporting manufacturing sectors from 1995 to 2005.

The equation is as follows:

$$\ln EXP_{it} = \beta_0 + \beta_1 \ln FDI_{it} + \beta_2 \ln EXR_{it} + \beta_3 \ln DI_{it} + \beta_4 \ln GSP_{it} + \beta_5 \ln FS_{it} + \beta_6 \ln RD_{it} + \beta_7 \ln Wage_{it} + \beta_8 \ln WD_{it} + \varepsilon_{it}$$

Where:

EXP : real export (volume)

FDI : real foreign direct investment to China.

EXR : real effective exchange rate in Chinese Yuan per basket of China's trade partners' currencies

DI : national domestic investment by applying ratios of each sector's capital expenditure (investments) to its total investment

GSP : China's real Gross Sectoral Product.

FS : firms size (measured by average real output per company)

RD : research and development for innovation (patents granted as proxy)

WAGE: labor cost (average real wage per employee in a year by sector)

WD : world demand, which is the sum of world imports (except China) for each commodity/industry.

Note: subscripts *i* and *t* denote cross-sectional unit and time respectively. ε is disturbance term. The hypothesized are: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, $\beta_5 > 0$, β_6 : ambiguous, $\beta_7 < 0$ and $\beta_8 > 0$.

In summary:

- The empirical results suggest that generally speaking FDI has a statistically significant and positive impact on China's exports.
- Domestic investments should be taken into more consideration for stimulating China's exports. It will be unlikely not to gradually

upgrade China's export structure and enhance competitiveness of domestic companies through this approach.

f. Pravakar Sahoo (2006)

The study is to estimate an export function to examine the impact of FDI on exports. The export function for South Asia is designed as follows:

$$Ex_{it} = a_0 + a_1\ WI_{it} + a_2\ GC_{it} + a_3\ FDI_{it} + a_4\ INFINDEX_{it} + a_5\ RER_{it} + a_6\ GDPGR + u_t,$$

Where, Ex is exports and WI is world income. An increase or decrease in world income influences the exports of an economy accordingly; GC is government final consumption, which is peroxide for domestic demand. The higher the domestic demand or consumption, the less resources or output for exports there is. INFINDEX is an infrastructure index, which facilitates exports; RER is the real exchange rate vs. the US dollar. The major trading of South Asian countries takes place in US dollars. Thus, any change in the value of domestic currencies in US dollars negatively affects exports and vice-versa. GDPGR is GDP growth rate. All variables are taken from World Development Indicators, CD-ROM, 2005. The period of the study is 1975-2003.

The result of this study showed that FDI has a significant positive impact on exports. The coefficient is around 1.4 across specifications, implying that a one percent increase in the ratio of FDI to GDP increases exports by more than 1.4 percent in exports to GDP. The other important factor that contributes to exports is the infrastructure index. The increased availability of infrastructure facilities like proper roads, rail, air, etc., certainly reduces trade costs and improves exports. Domestic demand has the expected negative sign, but it is insignificant. Though world income generally influences exports, it is insignificant for South Asian countries.

g. Goran Vuksic (2006)

In his paper "Impact of Foreign Direct Investment on Croatian Manufacturing Exports", he estimated by the model:

$$\ln EX_{jt} = \alpha + \beta_1 \ln PD_{jt} + \beta_2 \ln ULC_{jt} + \beta_3 \ln REER_t + \beta_4 \ln I_{j(t-1)} + \beta_5 \ln FDI_{j(t-1)}$$

The dependent variable ln*EX* is natural logarithm of real exports. Independent variables in this model are the natural logarithms of productivity index ln*PD*, of unit labour cost index ln*ULC* and of real effective exchange rate ln*REER*. Subscript j = 1, ..., 21 denotes different branches and t sands for different years, ranging from 1996 to 2002. Other variables independent are Domestic Investment (ln*I*) and FDI (ln*FDI*) stock variables. In his case, domestic investment and FDI, using lagged values should help to alleviate a potential simultaneity problem between exports and FDI variables.

Vuksic analyzed the reasons for that phenomenon for the period 1998-2002, when exports by and large stagnated. He came to the conclusion that FDI in Croatia had a positive impact on exports, but not sufficiently so. Panel data for 21 manufacturing industries over the period 1996-2002 yielded positive and significant effects of FDI on exports mainly through productivity increases. The weak export performance had mainly to do with the lack of modern technology in manufacturing, thus with inadequate investments. As another factor, unit labor costs were found to be too high, but not directly linked to the real exchange rate. He found that increasing productivity and thus technological progress is the key, as devaluation may have negative effects. Improving the export performance would need investment and FDI promotion, which is still insufficient and inconsistent in Croatia.

h. Sun (2001)

He was using provincial-level data, investigated the impact of FDI on the export performance of Chinese regions over the period 1984-1997. He estimated exports as functions of domestic investment, FDI, exchange rate, and a time trend. The trend variable is inserted into the equation in order to de-trend the relationship between the dependent and independent variables. The estimation results showed that FDI had a positive and significant impact on the coastal and central regions while it had a negative but statistically insignificant impact on the western region. However, when the Asian financial crisis in 1997 was excluded from the estimation, there appeared a positive and significant relationship between FDI and exports in the western region. Moreover, the estimations suggested that FDI in the coastal region had a stronger effect than in the central and western regions. The estimated export model was expressed as follows:

$$X = \alpha_0 + \alpha_1 DI_{t-1} + \alpha_2 FI_{t-1} + \alpha_3 ER_{t-1} + \alpha_4 T_t + u_t$$

Where ER_{t-1} is the annual percentage change in province-specific trade weighted exchange rates of the Chinese currency in year t-1 and T represents a time trend.

i. Ghars El-Din (1986)

He examined the effect of FDI on the export performance of Egyptian industries over the period 1952-1981. The export supply function is as follows:

$$X_t = \alpha_0 + \alpha_1 FI + \alpha_2 DI + \alpha_3 ER + \alpha_4 CU + u_t$$

In his model, manufacturing exports were determined by FDI stock (FI), domestic investment stock (DI), real exchange rates (ER), and capital utilization (CU) variables. The capital utilization is measured by the ratio between real industrial output and its long-term semi-log trend estimated

by OLS. The exchange rate was used as a measure of relative export prices and obtained by inflating with the US wholesale price index and deflating with the wholesale price index of Egypt. The results of OLS estimates showed that the inclusion of foreign investment stock was not successful in explaining the growth of manufacturing exports over time, even though the model explained 90 per cent of changes in manufacturing exports.

j. Leichenko and Erickson (1997)

They examined the impact of FDI inflows on the export performance of the US manufacturing industries for the period 1980 – 1991. In this study, exports were modelled as functions of FDI and other control variables. FDI and domestic investment variables were also lagged by one-year since the study period was too short (twelve years). The model was estimated by OLS for all manufacturing and for five two-digit manufacturing sectors: food products, chemicals & allied products, primary & fabricated metals, industrial machinery & electronics, and all other manufacturing industries. The regression results for all manufacturing suggested a positive and significant relationship between FDI and exports. Second, the results for individual sectors showed that the impact of FDI was greatest among the durable goods sectors, including metals, machinery & electronics, and other manufacturing. However, the impact of FDI was found statistically insignificant in the non-durable goods sectors, namely food and chemicals.

The following equation was estimated by OLS in a logarithmic form:

$$\ln X_t = \alpha_0 + \alpha_1 \ln DI_{t-1} + \alpha_2 \ln FI_{t-1} + \alpha_3 \ln X_{t-1} + \alpha_4 \ln ER_t + u_t$$

Where ER_t is the multilateral trade-weighted value of the US dollar at time t.

CHAPTER IV
RESEARCH METHODOLOGY

4.1. Model Specification

This study focuses on export supply of Indonesian textiles industry. The quantity supplied of Indonesia's textile came from the domestic production of textile industry. Excess supply occurs when the quantity of supply more than the quantity of domestic demand.

The concept of excess supply in application of Indonesia's textile is as follows:

$$X^S_t = Q^S_t - DD_t \quad [4.1]$$

Where,

X^S_t = the quantity of export supply of Indonesia's textile in year t

Q^S_t = the quantity supplied of Indonesia's textile in year t

DD_t = the quantity of domestic demand of Indonesia's textile in year t

In more explanation, the quantity supplied of Indonesia's textile is based on the quantity of production, so the equation is as follows:

$$Q^S_t = Q^P_t \quad [4.2]$$

Where,

Q^S_t = the quantity supplied of Indonesia's textile in year t

Q^P_t = the quantity domestic production of Indonesia's textile in year t

In other side, the quantity supplied of textile industry was influenced by market structure, which market structure of textile industry is perfect competition because so many firms in this sector, so producers become as price taker. This study assumed that Indonesia's textile is a small price taking country. In order that, Indonesia's textile exporters are mostly price takers in the international market, whereas a country could price taker if a

country cannot influence the world price of the product it exports, its production, consumption and export decisions are based on the world price. Any factors that lead to changes in the domestic production and consumption are also expected to alter the export supply (Gunawardana and Hafrila, 2006).

Indonesia's textile industry has been able to maintain production level. According to production function, the level of output is function of labor and capital. In this study, the quantity domestic production of textile produced was determined by wages (proxy for labor cost) and investment (proxy for capital). The reason why investment is proxy for capital that productivity growth of Indonesia's textile has been affected by technological change which is quite expensive, so textile industries need to afford by investment. The investment divides into two forms of investment that are domestic investment and foreign direct investment. As noted by Gu and Awokuse (2008), domestic investment could also important factor affecting exports because it is one of the main determinant of productivity which could influence supply for exports. They also noted that an increase in productive capacity from domestic investment is likely for the company to extend its market share thus to promote exports. In other form of investment, foreign direct investment also enhances productive capacity because it will increase the capital from foreign country to the host country by relocating firms, as the result it will increase production of host country.

So, the equation of [4.2] changes to be, as follows:

$Q^S_t = f\,(W_t, DI_t, FDI_t)$ …...… ....[4.3]

Where,

Q^S_t = the quantity supplied of Indonesia's textile in year t

W_t = wage in Indonesia's textile industry in year t

DI_t = domestic investment in Indonesia's textile industry in year t

FDI_t = foreign direct investment in Indonesia's textile industry in year t

Thus, we can substitution of equation [4.3] into equation [4.1] that result of equation export supply, is as follows:

$$X^S_t = (f(W_t, DI_t, FDI_t)) - DD_t \quad [4.4]$$

In related to international market, both of variables exchange rate and relative price of exports affected on export supply. These variables related on research from Afia Malik (2004) and Cameron Zaman (2005). In the empirical study from Afia Malik (2004), the export supply function of textile in Pakistan determined by price of textile exports, domestic price of textile exports, nominal exchange rate and time trend. The export supply function from Cameron and Zaman (2005) determined by GDP real from exporter country, relative price of exporter country (price exports divided to domestic price), nominal exchange rate and volatility of exchange rate.
Furthermore the equation [4.4] adds variable of exchange rate and relative price of textile exports. So the equation of export supply is as follows

$$X^S_t = (f(w, DI, FDI)) - DD_t + RP^x_t + ER_t \quad [4.5]$$

If the equation [4.6] is made in linear equation, as follows:

$$X^S_t = \alpha_0 + \alpha_1 W_t + \alpha_2 DI_t + \alpha_3 FDI_t + \alpha_4 DD_t + \alpha_5 RP^x_t + \alpha_6 ER_t + \varepsilon_t \quad [4.6]$$

Where:

X^S_t = the quantity of export supply of Indonesia's textile in year t
W_t = wage in Indonesia's textile industry in year t
DI_t = domestic investment in Indonesia's textile industry in year t
FDI_t = foreign direct investment in Indonesia's textile industry in year t
DD_t = the quantity of domestic demand of Indonesia's textile in year t
RP^x_t = relative price of textile exports in year t (world price exports of textile divided by domestic price of textile)
ER_t = nominal exchange rate of Rp/USD in year t

From equation [4.6], based on goodness of fit, the model transforms into log-log functional form, as well as to directly obtain export elasticities with respect to the independent variables.

The equation to be estimated is as follows:

$$\log X^S_t = \alpha_0 + \alpha_1 \log W_t + \alpha_2 \log DI_t + \alpha_3 \log FDI_t + \alpha_4 \log DD_t + \alpha_5 \log RP^x_t + \alpha_6 \log ER_t + \varepsilon_t \quad [4.7]$$

Where:

$\log X^S_t$ = logarithm of the quantity of export supply of Indonesia's textile in year t (tons)

$\log W_t$ = logarithm of wage in Indonesia's textile industry in year t (wage index)

$\log DI_t$ = logarithm of domestic investment in Indonesia's textile industry in year t (US$ million)

$\log FDI_t$ = logarithm of foreign direct investment in Indonesia's textile industry in year t (US$ million)

$\log DD_t$ = logarithm of the quantity of domestic demand of Indonesia's textile in year t (tons)

$\log RP^x_t$ = logarithm of relative price of textile exports in year t (weighted average of the prices of competing countries (proxy for world price exports of textile) divided by wholesale price index for Indonesia)

$\log ER_t$ = logarithm of nominal exchange rate of Rp/USD in year t

α_1, α_2, α_3, α_4, α_5, α_6 are the parameter that explain each of independent variable, and ε_t is an error term.

4.2. Expected Signs

Table 4.1
Expected Signs

No.	Independent Variable	Rationale	Expected Sign
1.	Wage	Higher wages imply higher cost of production, as the result lower productivity, and thus lower contribution to the quantity supplied of export.	Negative (-)
2.	Domestic Investment	A larger domestic investment can have increase capital in production, through increase production by domestic firm, the quantity of supplied goods rise, and thus the quantity supplied for export increase.	Positive (+)
3.	Foreign Direct Investment	A larger foreign direct investment can have increase the quantity of domestic production by foreign firm, the quantity supplied for export increase.	Positive (+)
4.	Domestic Demand	An increase the quantity domestic demanded of goods, it will reduce the quantity supplied of domestic production and thus a decrease of the quantity supplied of export.	Negative (-)
5.	Relative Price of Export	An increase of relative price of goods, the goods will be more competitive in the world market, and thus an increase the quantity of supplied of export.	Positive (+)
6.	Nominal Exchange Rate	An increase of amount of Rupiah's, it will be depreciation condition for Rupiah's currency, and thus it will increase of the quantity supplied of export.	Positive (+)

4.3. The Characteristics of the Data

4.3.1. Export

In this study, export is a dependent variable that is the volume of exports. industry. The volume of exports will be represented of the quantity supplied of export in textile. The data used is annually in year 1975-2006 denoted in tons that collected from Ministry of Trade and compiled by Indonesian Textile Association.

4.3.2. Wage

Wage is an independent variable. In this study, wage in textile industry is proxy for labor cost. This study will be in wage index, it means that the value of wage in current year minus the value of wage in previous year, then divided by the value of wage in previous year, as a result is wage index. The data collected from United Nations Industrial Development Organization (UNIDO) that denoted in Rupiah per capita per year. It is annually data from 1975 to 2006.

4.3.3. Domestic Investment

The domestic investment in textile industry is an independent variable. In this study, domestic investment in textile industry is denoted in million USD. The data is collected from Indonesia Coordinating Board for Investment (BKPM) for the year 1975 to 2006.

4.3.4. Foreign Direct Investment

The foreign direct investment in textile industry is an independent variable that denoted in million USD. The data is collected from Indonesia Coordinating Board for Investment (BKPM) for the year 1975 to 2006.

4.3.5. Domestic Demand

Domestic demand in textile is an independent variable that denoted in tons. This variable represented the quantity of domestic consumption for textile in domestic market. The data collected from Indonesian Textile Association for the year of 1975 to 2006.

4.3.6. Relative Price of Exports

Relative price of textile exports is an independent variable. The data of relative price of export is from world price of textile divided by domestic price of textile. The data of weighted average of the prices of competing countries is collected from United Nations Conference on Trade and Development (UNCTAD) that denoted in USD/tons. Wholesale price

index for Indonesia is collected from IMF's International Financial Statistics (IFS) that also denoted USD/tons. It is annually data from 1975 to 2006.

4.3.6. Nominal Exchange Rate

Exchange rate is another factor that might have influence on exports. In general, depreciation of a country's currency tends to encourage its exports. The depreciation of the currency makes its goods cheaper in international markets and thus is more competitive. In this research, the hypothesis consistent with the conventional theory that a devaluation of Indonesia currency increases demand for its products and promotes exports. The data is collected from IMF's International Financial Statistics (IFS). The period of the data is in the year 1975-2006.

4.4. Methodology

The aims of this study are to find the determinant factors that affect on export supply in Indonesian textiles industry. The annual time series data from 1975 to 2006 will be used in this research. This study uses multiple regression analysis, as follows:

$$Y = \alpha_0 + \alpha_1 X1 + \alpha_2 X2 + \alpha_3 X3 + \alpha_4 X4 + \alpha_5 X5 + \alpha_6 X6 + \mu_t \quad \text{.....[4.8]}$$

The function of equation [4.8] is estimated by the ordinary least squares method following the logarithmic transformation of all variables. The chosen functional form of the regression model, commonly called log-log model, has a very attractive feature in regard to the regression coefficients that can be interpreted as elasticities. They measure the percentage change in the dependent variable for a given change in the independent variable. It is in particular this feature that has made log-log model so popular in the empirical work. Consequently, the estimated coefficients in our case indicate what the percentage will change in the level of exports, if the level of one of

the independent variables changes for one percent, other variables remaining unchanged (ceteris paribus).

4.4.1. Test of Economic Sign

In this test, the sign and coefficient of regression of all the independent variables have to be appropriate with economics theory. If the result is positive means that if variable X increases one will boost variable Y as big as coefficient of regression variable X. On the other hand, if the result negative means that is *vice versa*.

4.4.2. Test of Statistics

Three test statistics, which are the coefficient of determination (R-squared), t-statistics, and F-statistics will be employed in the model. These three tests are used to investigate of the coefficient of each independent variable, which indicate the effect of the independent variables on the dependent variable and the proportion of the variation of the dependent variable explained by the independent variables. The theoretical framework behind these three tests is described below:

4.4.2.1. Coefficient of Determination (R-squared and adjusted R-squared)

R-squared ranges from zero to one and it indicates the proportion of variation in the independent variable explained by the variation in the independent variables. It is often used as a measure of goodness of fit. However, R-squared increases as more independent variables are added to the model irrespective of whether these variables are significant, so adjusted R-squared gives more credible result.

Adjusted R-squared is a measure of the proportion of variance of the dependent variable explained by the variance of independent variables. The higher the value of adjusted R-squared, the more explainable the model is. For example if R-squared equals to 0.99, that means 99 % of the variation in the dependent variable is due to the independent variables. The

remaining 1 % variation of the dependent variable cannot be explained by the independent variables in the model.

4.4.2.2. F-statistic

The F-statistic is used to test the significance of the R-squared statistics. The null hypothesis is none of the independent variables helps to give details the variations of the dependent variable about its mean. If this null hypothesis is rejected, it means at least one independent variable helps to explain the variation.

Like t-test, whether the null hypothesis is rejected or not depends on the critical value with respect to a given degree of freedom and level of significant. If the calculated F-value is greater than the critical one, the null hypothesis is rejected. It is the additional evidence to show the significance of the results. The probability of F-statistics will be used in this study.

4.4.2.3. t-test and *p*-value

It tests the statistical significance of the effect of the independent variable X_i on the dependent variable Y. The value of t depends on β_i and $S\beta_i$ and $t_i = |\beta_i/S\beta_i|$ where β_i is the beta coefficient and $S\beta_i$ is standard error of coefficient. Hence, the larger the t-value, the more likely that the hypothesis of zero coefficient is rejected; and thus the estimate is more precise. Before doing the test, an accepted confidence interval has to be established first. A 95% confidence level is used in this study. The calculated t-value is then compared with a critical t-value for a given degree of freedom and a given confidence level. If the calculated t-value is higher than the critical t-value for a 5% significance level, then the coefficient β_i is said to be significant at the 95% confidence level.

Probability value (*p*-value) is also used to find out the significant level of the coefficients. It shows the chance that the estimated coefficient is equal to zero. The smaller the *p*-value, the more significant the estimated coefficient is. Given a *p*-value, the estimated coefficient is

significant at the x (x>*p*) level, for this study 5 % level significance. It should be emphasized that the statistical significance shown by t-values or *p*-values is conceptually different from the magnitude of the effect of X_i on Y because the coefficient of X_i can be significant but its effects on Y can be small.

4.4.3. Test of Econometrics

After estimating the coefficients of the production function, the validity of the results has to be tested to ensure any subsequent interpretations made based on the results are reliable. OLS estimation has three major technical problems related to data. They are autocorrelation, multicollinearity and heteroskedasticity. The diagnosis tests aim at identifying these problems. If such problems are found in the OLS estimation model, the model will be corrected with appropriate methods as specified below.

4.4.3.1. Autocorrelation

Autocorrelation arises if error terms of the observations are correlated, i.e. cov (e_i, e_j) ≠ 0 for all i, j and i ≠ j. It occurs most likely in time series data. Positive autocorrelation is exhibited when a positive (negative) disturbance term in one period may be associated with a positive (negative) disturbance term in the next. Negative autocorrelation is exhibited when a positive (negative) disturbance term in one period is associated with a negative (positive) disturbance term in the next. Positive autocorrelation can result in obtaining larger t-value than the actual t-value. Subsequently, the coefficients that are in fact insignificant may be shown to be significant using standard t-test.

First order autocorrelation can be tested using Durbin-Watson test (DW test). The closer the DW value to 2, the less likely that there is first order autocorrelation. Second order autocorrelation can be tested using the Breusch-Godfrey Lagrange multiplier test. To remedy autocorrelation,

autoregressive components acting as regressors can be added to the model and EViews 4.0 has such a built-in function.

4.4.3.2. Heteroskedasticity

Heteroskedasticity occurs when variance of the error terms are not the same, i.e. Var (e_i) ≠ constant. This will make the partial regression coefficients to be either too large or too small, depending on the exact pattern representing the heteroskedasticity. It is because heteroskedasticity conditions mean that some variances are larger than others. If all variances are assumed to be of equal size and equal weight, as they are done in OLS, then the variances will be overweight in their importance. This means although the variance still has a mean of zero and is normally distributed, the OLS estimator is no longer the best estimator.

White Heteroskedasticity Test examines the problem of heteroskedasticity in a model. The multiple of observations and R^2 (Obs* R-squared) will be compared with the critical value of Chi-squared test at a particular degree of freedom and at a particular confidence level. If the Obs*R-squared value does not exceed that critical value, the null hypothesis of no heteroskedasticity is not rejected. To remedy heteroskedasticity, weighted least squares method can be used.

4.4.3.3. Multicollinearity

Multicollinearity was a potential problem in estimating the models. Multicollinearity occurs when two or more independent variables are highly correlated with each other. This will cause the t-values to be underestimated and create difficulties in replicating results with slightly different data sets on the same variables. Multicollinearity can be tested with the examination of correlation matrix. The closer the correlation value between two independent variables to 1, the more likely that these two variables are correlated. The presence of multicollinearity in an equation makes it difficult to cut off the impact of each of the correlated independent variables on the dependent variable because the variance of

the OLS estimates of the parameters on the correlated independent variables is enlarged due to the correlation, making it so the effect of these variables cannot be accurately measured. To remedy multicollinearity, correlated variables are dropped or ridge regression is used. If hypotheses are confirmed irrespective of the underestimated t-values, this problem can be ignored (Gujarati, 2003).

CHAPTER V
RESULTS AND ANALYSIS

5.1. Ordinary Least Square Estimation

The data are regressed by using ordinary least square (OLS) method and a parametric estimation of the model (equation [5.1]), are shown as follows:

$$\log X^S_t = \alpha_0 + \alpha_1 \log W_t + \alpha_2 \log DI_t + \alpha_3 \log FDI_t + \alpha_4 \log DD_t + \alpha_5 \log RP^x_t + \alpha_6 \log ER_t + \varepsilon_t \quad [5.1]$$

Table 5.1
Estimation Results for Export Supply Equation

Dependent Variable: LOG(EXPORT)				
Independent Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(ER)	2.503844	0.207321	12.07711	0.0000 ***
LOG(DD)	-0.832981	0.316353	-2.633078	0.0143 **
LOG(DI)	0.574961	0.129951	4.424445	0.0002 ***
LOG(FDI)	0.081994	0.100019	0.819785	0.4201
LOG(RP)	0.437787	0.211518	2.069742	0.0490 **
LOG(W)	-0.014778	0.109442	-0.135028	0.8937
R-squared	0.9579			
Adjusted R-squared	0.9478			

Note: *** Significant at 1 % level
** Significant at 5 % level

Table 5.1 presents the results of econometric estimation results using Eviews 4.0. Before exploring the results, test for econometrics has to do for looking the reliability of the BLUE (Best Linear Unbiased Estimation) assumption. Firstly, the assumption of no exist the autocorrelation. Secondly, the assumption of no exist heteroskedasticity, and the last assumption is no multicolinearity.

5.1.1. Test for Autocorrelation

This research uses the Breusch-Godfrey Lagrange multiplier test to detect of autocorrelation problem. It was carried out for determining second-order autocorrelation problem in the model and the results are as follows:

Table 5.2
Breusch-Godfrey LM Test

F-statistic	0.892246	Probability	0.423448
Obs*R-squared	2.304011	Probability	0.316002

Since the test value of probability (Obs*R-squared) is 0.31 which exceeds the probability of critical value 0.05 (α=5%), the null hypothesis of no serial correlation is accepted at 95 % confidence level. As a result, there is no autocorrelation.

5.1.2. Test for Heteroskedasticity

White heteroskedasticity test (cross terms) was performed to test the heteroskedasticity of the model.

Table 5.3
White Heteroskedasicity Test (cross terms)

F-statistic	0.688592	Probability	0.755802
Obs*R-squared	26.33427	Probability	0.500114

The probability of Obs*R-squared value is 0.50 which exceeds the probability of critical value 0.05 (α=5%) of Chi-squared test, so the null hypothesis of no heteroskedasticity is not rejected at 95 % confidence level.

5.1.3. Test for Multicollinearity

The correlation matrix (using Pairwise Correlation Matrix) of the model is constructed to investigate the multicollinearity problem. The results are as follows:

Table 5.4
Correlation Matrix of the Independent Variables

	W	DI	FDI	DD	ER	RP
W	1.00	0.03	0.08	0.05	0.00	-0.13
DI	0.03	1.00	0.68	0.35	-0.20	0.23
FDI	0.08	0.68	1.00	0.67	0.33	-0.02
DD	0.05	0.35	0.67	1.00	0.77	-0.22
ER	0.00	-0.20	0.33	0.77	1.00	-0.49
RP	-0.13	0.23	-0.02	-0.22	-0.49	1.00

Based on the rule of thumb, the model has multicollinearity problem if the correlation between each independent variables exceeds 0.8.[10] Thus, the result of correlation is no multicollinearity in this model.

5.2. Analysis of Econometric Results

The econometrics tests showed that the OLS estimation does not suffer from autocorrelation, heteroskedasticity and multicollinearity. So the result has appropriate of rule of goodness of fit. Furthermore, the regression of the results is as follows:

$$X^S_t = -3.2 - 0.01W_t + 0.57DI_t + 0.08FDI_t - 0.83DD_t + 0.43RP^x_t + 2.5\ ER_t + \varepsilon_t$$

The F-statistics in model for export supply of Indonesia's textile is significant at $\rho < 0.05$, indicating a significant relationship between export supply and the set of independent variables. The adjusted coefficient of determination (Adjusted R^2) is about 0.94 which indicates that about 94 % of the variation in exports can be explained by the independent variables (wage, domestic investment, foreign direct investment, domestic demand, relative price of exports, and exchange rate,) in the model, which means this model form is a good fit for the data. On the other hand, the remaining 6 % variation of the dependent variable cannot be explained by the independent variables in the model.

[10] See Gujarati, (2003). *Basic Econometrics*. fourth edition. p. 359

The result of the estimation indicates that independent variables that are domestic investment, domestic demand, relative price of exports and exchange rate statistically significant and also appropriate with expected signs. In other hand, two independent variables are not statistically significant that are labor cost and foreign direct investment. Both of wage and foreign direct investment variables are appropriate with expected signs. It means that variable of wage and foreign direct investment can not be explained in period of the research.

In wage, this condition may be due that Indonesia has already been extremely lower in wage rates in the period of research. This condition related to in terms of labor in textile industry that is unskilled labor. It means that skill level is relatively low and lack of educational or training program to train workers in textiles industry. Thus, labor in textile industry is lower wage rates, and so on Indonesia has competitive in labor cost of textile as the country has abundant in unskilled labor by cheap of labor force so that the result of variable of wage is not statistically significant affect on export supply performance of Indonesian textile industry.

In order to foreign direct investment, foreign direct investment in textile industry is not influence the export supply of Indonesia's textile sector in the period of research. Foreign investors prefer to invest in host country whereas there have good policies. It means that Indonesia had been poor investment climate because of inadequate infrastructure, poor in investment law, and also improper treatment of foreign investors. Thus, foreign investors were over careful to invest in Indonesia's textile industry. As the result foreign direct investment is not statistically significant contribution on export supply of Indonesia's textile.

Domestic investment in textile industry is statistically significant and appropriate with expected sign. The coefficient result for this variable is 0.57 percent means that a one percent increase in domestic investment, ceteris paribus, will increase 0.57 percent of export supply of textile. The positive

relationship between variable of domestic investment and export supply is expected. The elasticity of domestic investment of export supply performance in Indonesian textiles is less than one or inelastic because a one percent increase in domestic investment leads to a 0.57 percent increase in quantity export supplied in Indonesian textiles. The condition of domestic investment was concerned to domestic firms in Indonesian textile industry which is the majority (as shown in appendix) of firms in Indonesian textile industry, as a result it will be related to the quantity of supplied of export textiles. The total approval of domestic investment in textile industry is more than three times compared with total approval of foreign direct investment in 1975-2006. Textile industry in Indonesia has to hold by domestic investment because this investment will be strengthening the national industry. If this sector is dominated by foreign direct investment, the foreign exchange will be lost from this sector means that foreign investors will obtain this advantage (foreign exchange) into their home country, consequently, we have lose from trade in the world market and also the domestic market of textile. However, since 2002 the growth of domestic investment had relatively decreased that caused by the interest rate for working capital so high and also the commercial bank in Indonesia was unwilling to give credits for textiles industry that caused perception in textiles industry was so called "*sunset industry*"[11], while textiles industry is one of the major foreign exchange earners among the non-oil commodities. In 2002, interest rate for working capital was 18.3 % from central bank and decrease to be 15.8 % and 13.4 % respectively in 2003 and 2004. But, in 2005 and 2006, it was increase to be 15.92 % and 15.01 %.[12] If the interest rate in Indonesia compared with Bangladesh, Taiwan, and China that is only around 8 – 10 percent[13], meanwhile Indonesia is more than 15 percent.

[11] In detail explanation from Tulus and Silalahi (1997), "*Performance of Non-oil Exports and Determinant Factors*". LP3ES KADIN Indonesia.

[12] Data interest rate for working capital from Zetha and Tambunan, in Monthly Economic Report March 2007.

[13] See on Astono (1997), *Increasing of value added in the main industry that contributors of non oil exports*. Kompas. 14 January.

The negatively elasticity of export supply with respect to domestic demand indicates that export supply declines as domestic demand increases. The result of elasticity domestic demand for textile is statistically significant and appropriate with expected sign. The coefficient result is 0.83 percent means that a one percent increase in domestic demand for textile, ceteris paribus, will decrease 0.83 percent export supply of textile. The elasticity of domestic demand of export supply performance in Indonesian textiles is less than one or inelastic because a one percent increase in domestic demand leads to a 0.83 percent decrease in quantity export supplied in Indonesian textiles. This result is indicating that export supply and the level of domestic demand substitute for each other. In the year of 1975 to 2006, the average of domestic demand for textile is higher than the average of the quantity export supplied, that indicates production of textile is focused on domestic market whereas it supports of garment production as export oriented industry. Garment industry depends on supply from textile industry, of course, the textile and clothing industry as vertically integrated and involved in almost every sector of the textile supply chain from the production of man-made fibers, particularly polyester, nylon and rayon; man-made and cotton yarn spinning; and weaving and knitting; to dyeing, printing and finishing; and garment manufacturing.

In regard to international market, relative prices of exports textile is factor that influence of export supply performance. This variable is statistically significant and appropriate with expected sign. The coefficient result is 0.43 percent means that a one percent increase of relative price of exports, ceteris paribus, will increase 0.43 percent export supply of textile. The elasticity of relative price of export supply performance in Indonesian textiles is less than one or inelastic because a one percent increase in relative price leads to a 0.43 percent increase in quantity export supplied in Indonesian textiles. Exporter textile from Indonesia tends to sell their products to foreign market if ratio of weighted average of the price textiles of competing countries in terms of wholesale price for Indonesia is positive. The positive relative price elasticity of export supply implies that a rise in

world price exports in related to domestic price, it would be increase of export supplied of Indonesian textiles. The positive of relative price of exports indicated that the value of export price is larger than domestic prices where exports price during the period of research was relatively decreasing that export price of textiles was 11,071 USD/ton in 1980 decrease to 4,674 USD/ton in 2006, on the other hand domestic price was 174 USD/ton in 1980 increase to 2,542 USD/ton in 2006. This result gives evidence that exporters of textiles in consideration increase of export supply is influenced by domestic price. If domestic price relative has advantage, then they will sell textiles in domestic market, though response exporter to domestic price is not as big as the change of export price in international market.

Other factor in regard to international market is exchange rate. Exporter textile from Indonesia gets advantage when the condition of Indonesia currency is depreciation. Variable of exchange rate is statistically significant and appropriate with expected sign. The coefficient result is 2.5 percent means that a one percent increase of exchange rate (the condition means depreciation), ceteris paribus, will increase 2.5 percent export supply of textile. The elasticity of exchange rate of export supply performance in Indonesian textiles is greater than one or elastic because a one percent increase in exchange rate leads to a 2.5 percent increase in quantity export supplied in Indonesian textiles. It means that exchange rate confirms that a depreciation of the Indonesia currency (Rupiah's) promotes the growth of export supply of Indonesia's textile. As same with the empirical study, Wang et al. (2002) showed that exchange rate is one of the most important factors influencing China's exports with aggregated data for 1983-1999.

CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

The main objective of this study was to find determinant factors that affected on export supply performance of Indonesia's textile. The focused of the study was on the period 1975 to 2006. OLS method was used to test factors that affected on export supply performance Indonesia's textile. The result of this study is as follows:

a. There is a positive relationship between domestic investment and export supply of Indonesia's textile. In statistically, domestic investment is more significant contribution to enhance of export supply performance in textile industry compared with foreign direct investment. The coefficient result for this variable is 0.57 percent means that a one percent increase in domestic investment, ceteris paribus, will increase 0.57 percent of export supply of textile or in other words the elasticity of domestic investment of export supply is inelastic.
b. Domestic demand has negatively affected on export supply performance Indonesia's textile. A higher domestic demand for textile will be reduce the export supply performance Indonesia's textile. The coefficient result is 0.83 percent means that a one percent increase in domestic demand for textile, ceteris paribus, will decrease 0.83 percent export supply of textile. The elasticity of domestic demand of export supply is also inelastic.
c. Relative price has significantly affects on export supply performance of Indonesia's textile. There is positive relation between relative prices of exports because of a higher world export price of textile in related to domestic price, exporters tend to more supply in the world market. The coefficient result is 0.43 percent means that a one percent increase of relative price of exports, ceteris paribus, will increase 0.43 percent export supply of textile or inelastic.

d. Nominal exchange rate affects on export supply performance of Indonesian textiles. The coefficient result is 2.5 percent means that a one percent increase of exchange rate (the condition means depreciation), ceteris paribus, will increase 2.5 percent export supply of textile or elastic. This condition confirms that a depreciation of the Indonesia currency promotes the growth export supply performance of Indonesia's textile.
e. Wage has statistically no significant impact on exports performance Indonesia's textile, although the coefficient of wage variable has a negative sign that appropriate with expected sign.
f. Foreign direct investment has statistically no significant impact on export supply performance Indonesia's textile, although the coefficient of foreign direct investment variable has a positive sign that appropriate with expected sign.

6.2. Recommendations

6.2.1. Policy Implications

a. This study's findings of positive impacts of domestic investment in textile industry on export supply performance of Indonesia's textile suggest that policy makers should pay more attention to domestic investment in textile industry for strengthening domestic industry.
b. The results of domestic demand for textile is negatively affect on export supply performance of Indonesia's textile, thus as export oriented sectors, producers could be more attention to increase production for to fulfill of domestic demand and thus the capacity to export supply can be enhanced especially for capacity of production.

6.2.2 Recommendation on Further Study

Further recommendation research can be undertaken to explain partial equilibrium economics between the quantity supplied and the quantity

demanded of Indonesian textiles. Perhaps, simultaneous equation will be used in order to get this objective.

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Appendix 1

Indonesian Textile Firms (texturisers)
(employing more than 1000 workers)

Companies	Main Product	No. of workers
Panasia Indosyntec	Polyester	5200
Sipatex Puteri Lestari	Polyester fabrics	2855
Daliatex Kusuma	Polyester georgette	2632
Polysindo Eka Perkasa	Polyester	2500
Texmaco Jaya	Fabrics	2000
Delta Merlin Sandang	Textured yarns	2000
Vastex Prima Industries	Polyamide, polyester	1864
Trisulatex	Fabrics, garments	1568
Southern Cross Textile Indonesia	Textured yarns	1560
Tiga Manunggal Synthetic Industries	Fabrics	1500
Bandung Synthetic Sarong Mills	Shirting, suiting, grey fabrics	1421
Sunkyong Keris Indonesia	Polyester	1000

Source: Indonesian Textile Directory, 2005-2007

Indonesian Textile Firms (spinners)
(employing more than 3000 workers)

Companies	Main Product	No. of workers
APAC Inti Corpora	Weaving yarn	12000
Sri Rejeki Isman (Sritex)	Weaving yarn	12000
Tyfountex Indonesia	Weaving yarn	7003
Gabungan Koperasi Batik Indonesia	Cotton yarn	7000
Indorama Synthetics	Polyester yarn	6500
Argo Pantes	Weaving yarn	6258
Panasia Indosyntec	Polyester yarn	5200
Sunsonindo Textile Industry	Yarns	5000
Eratex Djaya	Cotton and synthetic yarn	4800
Industri Sandang Nusantara (Persero)	Cotton, rayon and synthetic yarn	4740
Psimatex Textile Industry	Threads, yarns	4000
Sunson Textile Manufacturer	Cotton and bledded yarn	4000
Kewairan Indonesia	Synthetic yarn	3502
Ade Textile Industries (Adetex)	Cotton yarn	3500
Gistex	Cotton and rayon yarn	3500
Bmi Angkasa Textile Industri	Cotton and rayon yarn	3330
Batamtex Industry	Textile/clothing yarn	3100
Sandratex	Yarn	3022
Lotus Indah Textile Industry	Yarn	3000
Texfibre Indonesia	Weaving yarn	3000

Source: Indonesian Textile Directory, 2005-2007

Indonesian Textile Firms (weaving)
(employing more than 3000 workers)

Companies	Main Product	No. of workers
Sri Rejeki Isman (Sritex)	Voiles, grey fabrics	12000
Tyfountex Indonesia	Fabrics	7003
Gabungan Koperasi Batik Indonesia	Cambrics	7000
Indorama Synthetics	Grey fabrics	6500
Panasia Indosyntec	100% polyester georgette	5200
Sunsonindo	Grey fabrics	5000
Eratex Djaya	Printh cloth, twill/drill, poplin and broad cloth	4800
Industri Sandang Nusantara (Persero)	Grey fabrics; cotton and non-cotton cloth	4740
Pismatex	Georgette, grey fabrics, sarong fabrics	4000
Kewairan Indonesia	Grey fabrics	3502
Adetex	Grey fabrics, georgette	3500
Gistex	Shirtings, georgette	3500
Bumi Angkasa	Woven fabrics	3330
Bintang Agung	Grey fabric, blue denim	3520
Batamtex	Denim	3100
Sandratex	Grey fabrics	3022
Lotus Indah	Non-wovens	3000
Sandang Mutiara Eramulia	Grey fabrics	3000

Source: Indonesian Textile Directory, 2005-2007

Indonesian Textile Firms (knitting)
(employing more than 2000 workers)

Companies	Main Product	No. of workers
Rajabrana	Knit fabrics	5773
Pan Brotherstex	Knitted fabrics	5200
Kewairan Indonesia	Knitting fabrics	3502
Great Golden Star	Knitting fabrics	3500
Lotus Indah Textile Industry	Knitting fabrics	3000
Jabatex	Knit fabrics	2900
Daliatex Kusuma	Knitting fabrics	2632
Danliris	Jersey, knitted fabrics	2500
Langsung Mulus Textile Mills	All kinds of lace	2500
Kahatex	Knit fabrics	2450
Evershine Textile	Knitting fabrics	2200
Sragen Abadi Textile	Knit fabrics	2000

Source: Indonesian Textile Directory, 2005-2007

Appendix 2

Dependent Variable: LOG(EXPORT)
Method: Least Squares
Date: 01/07/09 Time: 10:14
Sample: 1975 2006
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(DD)	-0.832981	0.316353	-2.633078	0.0143
LOG(DI)	0.574961	0.129951	4.424445	0.0002
LOG(FDI)	0.081994	0.100019	0.819785	0.4201
LOG(RP)	0.437787	0.211518	2.069742	0.0490
LOG(W)	-0.014778	0.109442	-0.135028	0.8937
LOG(ER)	2.503844	0.207321	12.07711	0.0000
C	-3.250609	3.374044	-0.963416	0.3446

R-squared	0.957919	Mean dependent var	11.53786
Adjusted R-squared	0.947819	S.D. dependent var	2.504837
S.E. of regression	0.572181	Akaike info criterion	1.911919
Sum squared resid	8.184790	Schwarz criterion	2.232548
Log likelihood	-23.59070	F-statistic	94.84856
Durbin-Watson stat	1.525254	Prob(F-statistic)	0.000000

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.892246	Probability	0.423448
Obs*R-squared	2.304011	Probability	0.316002

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/07/09 Time: 11:02
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(DD)	0.060917	0.320995	0.189776	0.8511
LOG(DI)	-0.033112	0.133083	-0.248808	0.8057
LOG(FDI)	0.004509	0.100992	0.044642	0.9648
LOG(RP)	-0.113011	0.231058	-0.489102	0.6294
LOG(W)	0.010451	0.110199	0.094834	0.9253
LOG(ER)	-0.061296	0.214685	-0.285516	0.7778
C	0.623607	3.441227	0.181217	0.8578
RESID(-1)	0.282994	0.225971	1.252348	0.2230
RESID(-2)	0.071065	0.215627	0.329573	0.7447

R-squared	0.072000	Mean dependent var	3.90E-16
Adjusted R-squared	-0.250782	S.D. dependent var	0.513834
S.E. of regression	0.574664	Akaike info criterion	1.962195
Sum squared resid	7.595482	Schwarz criterion	2.374433
Log likelihood	-22.39512	F-statistic	0.223061
Durbin-Watson stat	1.890818	Prob(F-statistic)	0.982963

White Heteroskedasticity Test:

F-statistic	0.688592	Probability	0.755802
Obs*R-squared	26.33427	Probability	0.500114

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/07/09 Time: 11:02
Sample: 1975 2006
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	81.25807	135.5801	0.599336	0.5812
LOG(DD)	-19.73341	25.47906	-0.774495	0.4819
(LOG(DD))^2	1.294806	1.814225	0.713696	0.5148
(LOG(DD))*(LOG(DI))	-0.278637	0.486370	-0.572890	0.5974
(LOG(DD))*(LOG(FDI))	-0.046689	0.355638	-0.131281	0.9019
(LOG(DD))*(LOG(RP))	-0.588362	1.245868	-0.472251	0.6614
(LOG(DD))*(LOG(W))	0.032033	0.979799	0.032694	0.9755
(LOG(DD))*(LOG(ER))	-1.058689	2.260228	-0.468399	0.6639
LOG(DI)	3.617406	4.879400	0.741363	0.4996
(LOG(DI))^2	-0.011516	0.164906	-0.069834	0.9477
(LOG(DI))*(LOG(FDI))	0.000939	0.204805	0.004585	0.9966
(LOG(DI))*(LOG(RP))	-0.075687	0.635087	-0.119176	0.9109
(LOG(DI))*(LOG(W))	-0.065109	0.219921	-0.296058	0.7819
(LOG(DI))*(LOG(ER))	0.066738	0.542998	0.122907	0.9081
LOG(FDI)	0.270830	6.253955	0.043305	0.9675
(LOG(FDI))^2	-0.004135	0.108361	-0.038155	0.9714
(LOG(FDI))*(LOG(RP))	0.135641	0.219444	0.618111	0.5700
(LOG(FDI))*(LOG(W))	0.136336	0.393457	0.346507	0.7464
(LOG(FDI))*(LOG(ER))	-0.033445	0.176051	-0.189973	0.8586
LOG(RP)	2.526251	10.51653	0.240217	0.8220
(LOG(RP))^2	0.234511	0.233650	1.003684	0.3723
(LOG(RP))*(LOG(W))	0.210733	0.406358	0.518589	0.6314
(LOG(RP))*(LOG(ER))	0.314912	0.757691	0.415620	0.6990
LOG(W)	-1.549302	10.72336	-0.144479	0.8921
(LOG(W))^2	0.037106	0.098996	0.374822	0.7268
(LOG(W))*(LOG(ER))	-0.054401	0.636656	-0.085448	0.9360
LOG(ER)	6.657982	15.46344	0.430563	0.6890
(LOG(ER))^2	0.301708	0.644994	0.467768	0.6643

R-squared	0.822946	Mean dependent var	0.255775
Adjusted R-squared	-0.372169	S.D. dependent var	0.207292
S.E. of regression	0.242821	Akaike info criterion	-0.322424
Sum squared resid	0.235849	Schwarz criterion	0.960095
Log likelihood	33.15879	F-statistic	0.688592
Durbin-Watson stat	2.408941	Prob(F-statistic)	0.755802