IMPACT OF THE REMOVAL OF THE FUEL SUBSIDIES ON THE MANUFACTURING INDUSTRY IN JORDAN

FINAL REPORT

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FINAL REPORT

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AUTHOR: TO EXCEL CONSULTING ASSOCIATES –
NISREEN BARAKAT

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EXECUTIVE SUMMARY

The objective of this rapid impact assessment is to analyze the impact of the removal of fuel subsidy on the competitiveness of the manufacturing sector in Jordan.

The study's main message is that an impact, whether direct or indirect, will be realized albeit it differs from one manufacturing activity to another. An indirect impact in the form of an increase in costs of transportation and intermediate goods should not be understated. Furthermore, indirect impact can result from the loss of competitiveness of the manufacturing activity in the light of its ability to compete in the local and export markets. Through selecting eight manufacturing activities as case studies, it is realized that the direct costs are bearable. However, once adding the impact of the rise in transportation and intermediate goods, these costs rise. With respect to the *Manufacture of Structural Non-Refractory Clay and Ceramic Production,* it is the most affected manufacturing activity among the selected activities although it uses heavy fuel which already has been liberalized. This impact is further exacerbated by fierce local competition from Egypt and competition in exporting markets by Turkey. The *Manufacture of Bakery Products* will be affected by the lifting of the wheat subsidy as well as the removal of fuel subsidy. Despite the fact that this activity enjoyed subsidized energy cost and wheat but the competitiveness position in international markets is low and did not improve over time. Concerning the *Manufacture of Casting of Iron and Steel*, the direct impact is less than expected since it depends on heavy fuel which was liberalized. For the *Manufacture of Wearing Apparel except Fur App.,* the competitive position of this activity is deteriorating in the US market because of imports from China. In addition, this activity adds low value since raw materials are imported and production processes entail simple procedures. This renders this activity sensitive to any change in costs that would ultimately add to this activity's recent loss of competitiveness in the international market. Moreover, as international oil prices increase, exports will be negatively affected through the increase in transportation costs because of distance to export markets. With respect to the *Manufacture of Soap, Detergents, Cleaning and Polishing Preparations, Perfumes and Toilet Preparation,* exports are concentrated in one market namely Iraq, and therefore growth rates of exports fluctuate based on the demand from Iraq. This activity faces fierce competition in the domestic market from Egypt and Saudi Arabia. Jordan enjoys a comparative advantage in producing the Dead Sea cosmetics which are highly demanded around the world. However, it seems that this activity did not exploit and develop the comparative advantage which enhances the value added. The *Manufacture of Pharmaceuticals Medicinal Chemical and Botanical products* is one of the most developed and diversified industries with a large share in the total exports of Jordan. Since this industry is efficient, any small increases in cost may hinder further developments. Saudi Arabian and Egyptian industries are increasingly becoming stronger competitors in the regional markets. For the *Manufacture of Basic Iron and Steel,* in light of the growth in the construction sector that Jordan has witnessed in the past several years, this activity possesses great potential. Hence, the competitiveness of this activity in the international and domestic markets is well developed. Concerning the *Manufacture of Vegetable and Animal Oils and Fats*, the competitive position of this activity is low since exports are directed towards solely towards one market (Iraq). Thus the industry faces low potentials unless it improves its production process and marketing strategy in diversifying exports market.

The impact study concludes that mitigation measures are available, but their rapid implementation is necessary. The most important recommendation realized is the upgrading of the already existing Industrial Policy to be revamped in a way that would lift the industrial sector in the long run to be more able to face internal and external challenges.

Another conclusion that is reached in the study is that this increase in energy costs can actually benefit the manufacturing industry if the latter is willing to sustain short term pain for long term gain. This long term gain can be realized if the industry, driven by higher energy prices, works extensively on improving its productivity, production capacity and energy efficient methods which would all in the long term enhances its competitiveness.

Furthermore, the study highlights the importance of the ongoing national debate on the need and importance for Jordan to become more energy efficient, not only to face the higher international oil prices after the removal of the fuel subsidy, but also to pave the way for the start of Jordan's reliance on local sources of energy. This is vital as the dependence on traditional conventional sources is proving to be not only expensive but, also environmentally and economically unsustainable.

It is hoped that although the current situation faced by the manufacturing sector is grave, this is the start of the sector to better realize its potential and be more competitive as it faces the inevitable choice of adopting energy efficient mechanisms. It is hoped that such mechanisms are seen as a tool to increase their production capacity, quality and hence competitiveness of the Jordanian manufacturing industry in the domestic and international markets.

I. OBJECTIVE

This study comes in light of the request by the Ministry of Industry and Trade, and later an approved TOR, to conduct such a study on the impact of the removal of fuel subsidy by selecting three sub-sectors that belong to heavy, medium and low energy intensity manufacturing industries in an attempt to get a general idea on the impact for each group.

Objective of this rapid assessment is to study:

- Impact of rising fuel prices on local production.
- Assessment of competitiveness position of manufacture sector in domestic and international markets.
- Mitigation measures to ensure competitiveness of local industrial sector focusing on several manufacturing sub-sectors that can be adopted by the government and the industry.

Alternatively, it is crucial to assess the new cost burdens, direct and indirect, due to the expected oil prices increases. *However, the direct cost will be assessed quantitatively while the indirect cost is assessed indicatively*.

The importance of this study stems from the ongoing debate in Jordan on the impact of the wave of price increases in almost all commodities, ranging from foodstuff to transport to products, as a result of the removal of fuel subsidy. It is feared that such wave of price hikes would impact standards of living that have already been affected by local and regional circumstances. This year rising inflation has been at the forefront of economic challenges in Jordan as to its impact on eroding purchasing power. One attempt to curb the impact of rising inflation, the government has resorted to fix salaries with an increase that reflects the rising cost of living. The above challenge would certainly be exacerbated by the removal of fuel subsidy.

II. INTRODUCTION

A. GENERAL OVERVIEW

As the Jordanian government took the decision to remove the fuel subsidy by the end of January, 2008, oil prices will increase directly. This may lead to significant slowdown in economic growth caused by expected declines in the industrial activities growth, for various reasons. Direct and indirect cost pressures will be added to production process, which may lead to a decline in the competitiveness of the industrial sector. Empirical studies show that the statistical correlation between oil-price spikes and economic downturns is very strong; in particular to those industries using energy intensively as an input in the production process. Furthermore, subsidies removal will lead to indirect impacts in the form of increases in the costs of transportation and intermediate inputs that depend on energy which will lead to increases in total production costs. The impacts vary relatively from one industrial activity to another based on the use of energy and the indirect impact on the intermediate inputs used in the production process.

The key element is that oil price changes due to the removal of the fuel subsidy will affect the market in both supply and demand. Increase in oil prices affects the supply side through making it more costly for firms to produce goods. The demand side will be affected through wealth and will induce uncertainty about the future. Thus, output growth will be affected negatively.

In addition, the removal of the fuel subsidy leads to resources reallocation at the level of the firm, industry and economy. Some sectors use energy more intensively than others. For example, the transportation sector uses energy intensively compared with the trade sector. When the price of oil rises, the transportation sector is affected relatively more, leading to flows of capital and labour out of the sector and into other sectors of the economy. This labour and capital reallocation has a short-term negative effect on output as unemployed and underemployed resources seek new opportunities. The imminent decision of removing the fuel subsidy is exacerbated by the prevailing situation of rising international oil prices.

B. OVERVIEW OF THE INDUSTRIAL SECTOR

Jordan is a small country, with limited natural resources, situated in the heart of the Middle East. Debt, poverty, and unemployment are fundamental challenges for Jordan.

Average economic growth during the period of 2000 to 2006 was 5.9 per cent with the lowest rate of 4.2 per cent registered in the year 2000 and the highest of 8.4 per cent in 2004[1].

Industry in Jordan is divided into ***manufacturing sector*** (Leather and footwear manufacturing, chemical industry, Plastic industry, IT industry, Furniture industry, Food

[1] Department of Statistics Press Release.

industry, Packaging industry, Engineering products manufacturing sector,…etc) and ***mining sector***. The main indicators of the Industrial sector for the period 2003-2006 are displayed below.

Table 1: Main indicators of the Industrial Sector 2003-2006

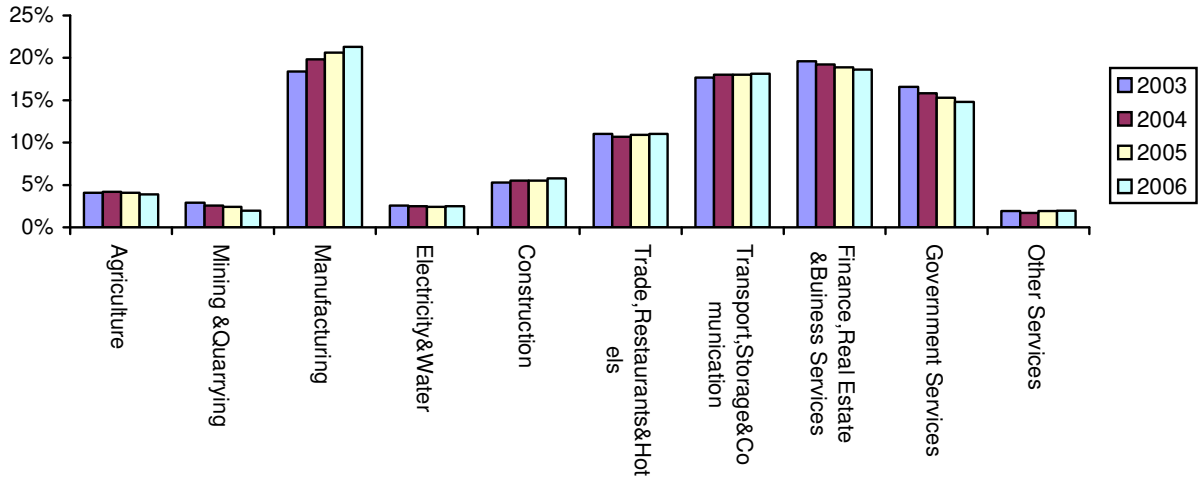
Main indicators of the Industrial Sector 2003-2006	**2003**	**2004**	**2005**	**2006**
Value added at current prices (JD million)	1274.7	1544.0	1790.7	2045.3
Growth rate at constant prices (%)	2.1	14.2	9.7	8.6
Deflator of the industrial sector (1994=100)	109.2	115.8	122.4	128.7
Industrial exports (JD million) Domestic exports excluding agricultural exports	1518.4	2105.7	2295.2	2606.7
Mining &Quarrying &manufacturing industrial production quantity index	116.2	130.1	143.5	151.0
Number of registered industrial companies	704	981	1125	1425
Capital of registered industrial companies(JD million)	20.9	111	87.9	176.4
Outstanding credit facilities extended by licensed banks (JD million)	879.4	973	1038.1	1135.9
Outstanding credit facilities extended by the IDB (JD million)	76.7	62.2	80.6	108.2

Source: CBJ Annual Report 2006

The ***importance of the manufacturing*** sector to GDP at constant basic prices relative to other sectors over the period of 2003-2006 has been increasing as displayed below from 18.4% in 2003 to 21.3% in 2006.[2]

[2] CBJ Annual Report, preliminary estimates for 2004, 2005 and 2006.

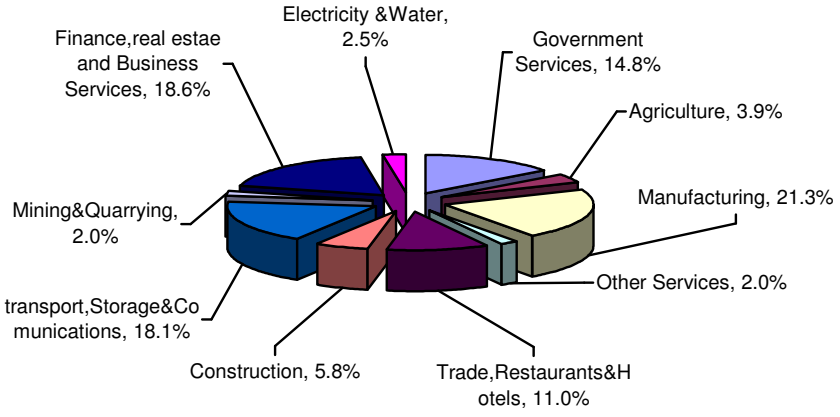
Figure 1: Relative importance of Economic Sectors to GDP at Constant Basic Prices, 2003-2006



S*ource: CBJ Annual Report 2006*

According to the Annual Report from the Central Bank of Jordan, 2006, the manufacturing sector has continued to grow contributing 21.3 % of GDP at constant basic prices.

Figure 2: Relative importance of Economic Sectors to GDP at Constant Basic Prices, 2006



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S*ource: CBJ Annual Report 2006*

According to the most recent figures on the contribution of the Industrial Sector to GDP, the manufacturing sector has continued to grow, up until the first quarter of 2007 where it dropped to 17.4% of GDP relative to 18% in the first quarter of 20063. The slight change in sector

In 2006, the manufacturing sector, for the third consecutive year, topped the list of economic sectors in terms of contribution to the GDP growth rate at constant basic prices

[3] Department of Statistics, 2007.

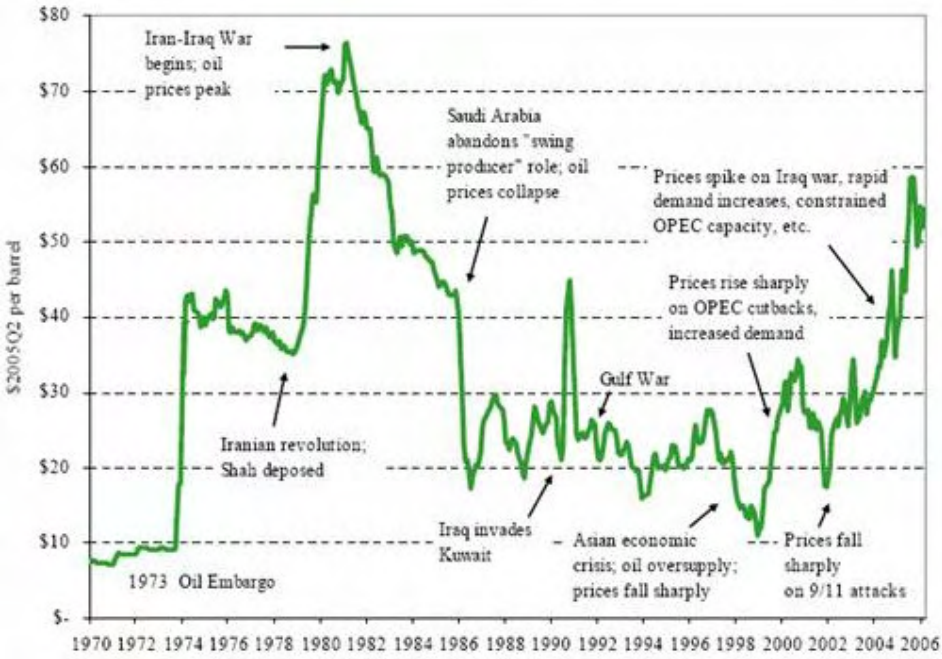
contribution from 2006 to 2007 can be attributed to the slowdown contribution of major sectors; wearing apparel and textiles and food manufacturing.

C. OVERVIEW OF THE FUEL SUBSIDY IN JORDAN

Since reaching a 28-year low in late 2001, international oil prices have climbed by over 200 percent in constant U. S. dollars through November 2005. While such an increase is substantial, it is important to place it in historical context. Over the past 35 years, oil prices have fluctuated widely. Using real import prices for the United States as an illustration (Figure 1), prices initially jumped in 1973, with the Arab oil embargo. They jumped in the late 1970s and early 1980s, after the Iranian revolution, reaching a peak of almost $76 a barrel (2005 prices) in February of 1981.

Prices fell steadily through the mid-1980s and, until recently, fluctuated primarily between $20 and $30 a barrel. Despite the huge recent increases, real oil prices have not yet reached the highs of the early 1980s.

Figure 3: Major Events and Real Price of U. S. Oil Imports, 1970-2006



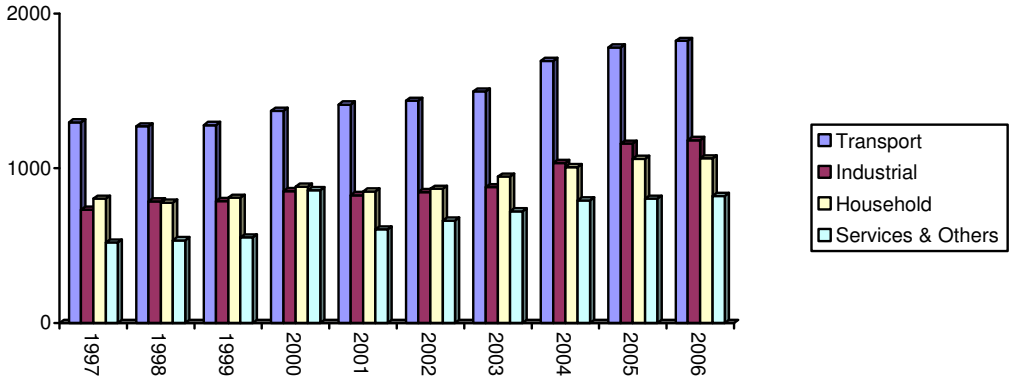
Source: "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali and Sri Lanka", David Coady, Moataz El Said, Robert Gillingham, Kangni Kpodar, Paulo Medas and David new House, IMF Working Paper,2006

However in Jordan, until early 2005, Jordan had a tradition of buying crude oil at concessional prices from neighboring countries (originally Iraq, more recently Saudi Arabia).

This oil is refined by the Jordan Petroleum Refinery Company into petroleum products, which are sold on the domestic market at controlled prices. By 2004, receipt of crude oil on concessional terms was expected to end, and fuel subsidies were rising. In early 2004, the government announced intentions to gradually eliminate subsidy over a four-year period and in line with a pricing formula that would include taxes.[4] Accordingly, around two years ago some petroleum products were liberalized such as heavy fuel, among others.

However, the recent sharp increase in international oil prices has put a huge strain on fiscal positions in Jordan. The government budget is facing an unmanageable position and is threatening the fiscal stability and hence the government's capability in sustaining the subsidized local oil prices policy. In light of the above, came the decision to remove the fuel subsidy.

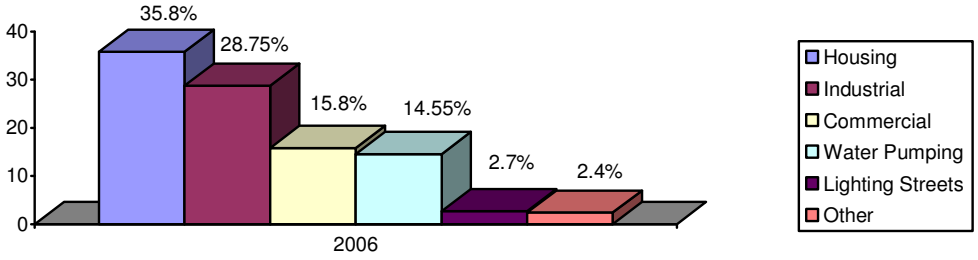
Figure 4: Final Energy Consumption(000 TOE), 1997-2006



Source: Ministry of Energy and Mineral Resources

In terms of electricity consumption, the housing sector is at the top of the list of electricity consumers.

Figure 5:Electricity Consumption (GWh),1997-2006

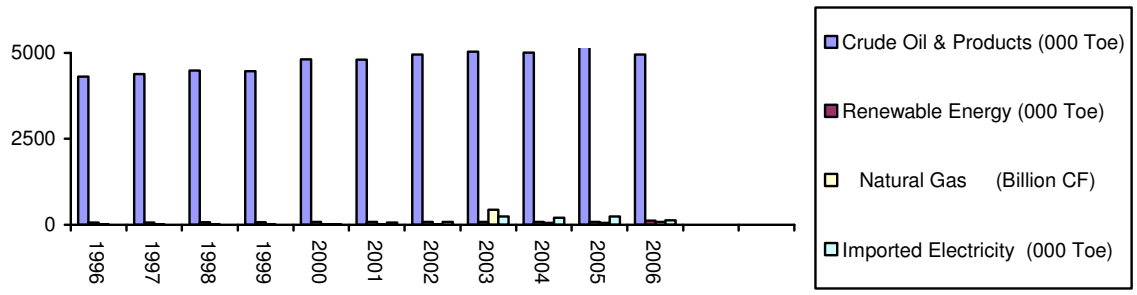


Source: Ministry of Energy and Mineral Resources

[4] "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali and Sri Lanka", David Coady, Moataz El Said, Robert Gillingham, Kangni Kpodar, Paulo Medas and David new House, IMF Working Paper,2006.

In terms of Jordan's primary energy consumption for the period 1996 to 2006, crude oil and products has toped the list.

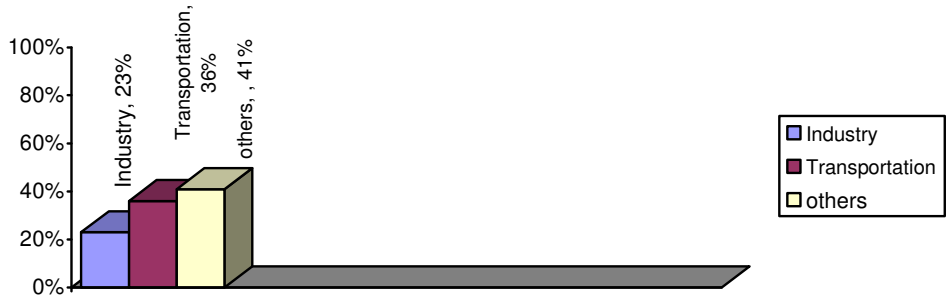
Figure 6: Primary Energy Consumption,1996-2006



Source: Ministry of Energy and Mineral Resources

The Government of Jordan announced that the policy of subsidizing energy costs JD 500[5] million in 2007[6]. The industrial sector consumed 23 % (JD115 million) of total final energy during the year 2007. Hence, 115 million JD of the total subsidized amount was spent on the industrial sector.

Figure 7: Industry's Share of Fuel Subsidy



Source: Ministry of Finance

As the Government of Jordan has made the decision to remove fuel subsidies, oil price are expected to increase directly. Already, the Producer Price Index (PPI) has being increasing over time on a monthly basis during 2006 and 2007, indicating cost pressures on the producers in the industrial sector. Increase in the price of some petroleum products in Jordan during the last two years hence seems to; among other reasons contribute to the increasing costs of production. The costs increased as a result of the direct impact of increases in the prices of petroleum products and the indirect impact that takes time to justify.

[5] International oil prices varied between US$60-89 during 2007, however, the burden on the government was on average JD500 million.

[6] Ministry of Finance.

The above is compounded by the fact that new forecasts suggest that international oil prices will keep varying in the international market till mid 2008. These expectations are built based on US$ exchange rate stability and various other reasons that concern the USA economy, such as wars in Iraq and Afghanistan. Nonetheless, the international oil prices varied around US$90 during December 2007 reaching a high of US $100 with the beginning of the New Year.

So far in order to offset the consequences of lifting subsidies this year the government has resorted to the following:[7]

- Allocating around JD300 million to raise salaries and introducing a social safety net.
- Assisting the underprivileged families through the National Development Fund and the Development and Employment Fund.
- Providing a sufficient supply of essential commodities at fixed prices in the different branches of the Civil Service Consumer Corporation.
- Lately, exempting 13 basic commodities from customs duties and sales tax. So far, the exemption decision includes milk, cheese, chick peas, vermicelli, lentils, coffee, tea, wheat, yellow corn, rice, corn flour, palm oil and sugar.

[7] http://www.jordantimes.com/?news=4938.

III. METHODOLOGY

In the event that the total cost of production increases in the manufacturing sector due to increases in oil prices in the domestic market, the following questions arise:

- What are the available options for the firm in the industry to do? And ,
- What are the options for government to minimize such an impact?

To answer these questions, it is crucial to assess the new cost burdens (direct and indirect) due to the expected oil prices increases. In doing so, options that can alleviate the shock are analysed.

In order to conduct the above, assessment of the impact of the removal of the fuel subsidy was carried out in the following manner:

A. DESK PHASE

This phase involved data collection and documentary analysis of all related data and studies. During this phase a list of all the manufacturing activities in the industrial sector was prepared based on data gathered form the Industrial Survey 2005[8], Ministry of Energy and Mineral Resources, Ministry of Finance, and the National Electric Power Company. Also, at this stage three different groups in the industrial sector were identified as per the Minister's request to select three sub-sectors that belong to heavy, medium and low energy intensity industries in an attempt to get a general idea on the impact for each group*:*

- **Group 1**: Industrial activities where total energy costs (fuel and electricity) constitute more than 50% of total input costs.
- **Group 2:** Industrial activities where total energy costs (fuel and electricity) constitute between 50-20% of total inputs costs.
- **Group 3:** Industrial activities where total energy costs (fuel and electricity) constitute less than 20% of total input costs.

The industrial sector includes mining and quarrying and manufacturing activities. Only manufacturing activities were covered in this study. Energy use covered both fuel and electricity with fuel encompassing all heavy fuel, and all other petroleum products.

B. ANALYSIS PHASE

This phase involved statistical and descriptive analysis, activity analysis using ISIC 3.1, overall assessment, conclusions and recommendations.

In the analysis part, the following statistical techniques were used:

[8] Industrial Survey 2005, of the Department of Statistics (DOS), was used since it is the most recent survey available. That is why impacts before 2006 and post 2006 were divided.

- Assessing the correlation coefficient,
- Regression analysis,
- Simple statistical tools (growth rates, ratios, etc)
- Simulation of energy liberalization (direct impact).

The analysis of the competitiveness of the manufacturing sector in light of the removal of the fuel subsidy covered the following:

- *Domestic market*: Impact on the competitiveness of Jordanian manufacturing products in the local market was assessed using indicators such as market share, value added, Producer Price Index (PPI)[9], and indirect taxes[10].
- *International market*: Impact on the competitiveness of Jordanian manufacturing products in the international market was assessed through studying for each activity the following: imports, exports, trade balance, growth rates and ratios of imports and exports. Also covered was the geographic distribution of imports and exports and international oil prices.

The following assumptions were used in the analysis:

- Action taken by the government to remove fuel subsidy was taken during 2006 and 2007. Since the analysis is taking the time series of 2003-2005 as per the Industrial Survey 2005, the analysis will incorporate the impact of liberalising some oil products during the period of 2006-2007 together with the direct impact of removal of fuel subsidy.
- Market agents (producer, consumer, and labour) will be rational in dealing with the domestic oil shock,
- Government will react through macroeconomic policies and through initiating support programs and other procedures to mitigate and alleviate the new cost burdens on the industrial sector.

[9] Producer Price Index (PPI) includes direct and indirect impacts; the indirect involves impacts on transportation, intermediate and others before taxes. PPI is calculated by the Department of Statistics in basic prices.

[10] Indirect taxes includes: fees on vehicles', other fees, licences, fees on imported inputs and intermediate goods, labour licenses, among others.

IV. ASSESSMENT

A. DESK PHASE

The objective of this phase was to assess cost of energy (fuel, electricity) of total input costs for the manufacturing industry over the past three years. As a result, this phase would identify those activities that are relevant to this study.

A list of all activities in the industrial sector in Jordan is provided in **Annex 1**. For each activity, the following inputs into the production process are displayed for the years 2003 to 2005:

- Raw material, Water, Electricity, Fuel, Other(such as oil), Spare parts, Packaging material, Stationary, Consumption material and Others

A.1 Criteria for selecting manufacturing activities

The following calculations were conducted to identify those activities in the industrial sector in each of the identified three groups:

A. Calculate ratios of input costing from the total cost of production process.
B. Calculate total and ratios of energy consumption (Fuel and Electricity) as a percentage from total inputs cost used for each activity. This total gave us an indication of energy costing as a percentage from total cost of inputs. Subsequently, this number would identify those industries that are energy intensified (Fuel and Electricity). To get this total:

    - Calculate percentage of electricity as an input from total inputs cost used in production process.
    - Calculate percentage of fuel as an input from total inputs cost used in production process.
    - Calculate aggregate energy use as percentage of total inputs cost used in production process.

Hence, Total Energy use is the first criteria and benchmark for dividing the list of activities into three groups.

A.2 Three groups of Industrial activities

I. **Group 1: Industries where energy (fuel and electricity) cost constitutes more than 50% of total inputs costs.** The three industries are;

Table 2: Group 1 Manufacturing Activities

2005 Total Energy as % of total inputs	Manufacturing Activity	ISIC
53.4%	استخراج المعادن الكيميائية والأسمدة Mining of Chemicals and Fertilizer Minerals	1421
68.5%	صنع الاسمنت والجير والجض Manufacture of Cement, Lime and Plaster	2694
95.2%	إنتاج وجمع وتوزيع الكهرباء Production and Distribution of Electricity	4010

Source: Department of Statistics

The above activities include those for mining and quarrying industries and /or cement, and hence it was decided beforehand that such industries are out of scope of this assessment. Therefore, industrial activities that use *more than 50%* of their inputs in the form of energy belong to mining and quarrying industries, cement, and the production and distribution of electricity. It is worth noting that the production and distribution of electricity is the most energy intensive manufacturing activity in Jordan (95% of total inputs is fuel in 2006).

For this group the use of fuel is more than electricity in the total energy mix. The analysis included mining and quarrying activities because the direct impact on these activities will affect the cost of the manufacturing sector. Since the output of these activities is used as intermediates inputs to the manufacturing sector and hence imply indirect cost. However, it is also worth noting that after 2006, Jordan has embarked on projects where electricity would be generated through natural gas as opposed to fuel.

Hence for Group 1, ***none of the manufacturing activities are considered for this study as they fall beyond the scope*** of activities to be covered

II. Group 2: Industries where energy cost (fuel and electricity) constitutes between 20-50% of total cost of inputs. Five industries were identified;

Table 3: Group 2 Manufacturing Activities

2005 Total Energy as % of total inputs	Manufacturing Activity	ISIC
27.5%	استخراج النفط الخام والغاز الطبيعي Extraction of Crude Petroleum and Natural Gas	1110
44.5%	استغلال المحاجر لاستخراج الأحجار والرمال والطفل	1410

	Mining of Gypsum, Anhydrite	
23.5%	صنع المنتجات الخزفية غير الإنشائية غير الحرارية Manufacture of non-Structural non-refractory Ceramic ware(pottery, china & earthenware)	2691
30.4%	صنع المنتجات الطفلية الإنشائية غير الحرارية Manufacture of Structural non-refractory clay & Ceramic	2693
19.1%	صنع المنتجات المعدنية اللافلزية الأخرى غير المصنفة في موضع آخر Manufacture of other non-metallic mineral products n.e.c.[11]	2699

Source: Department of Statistics

The first two activities (ISIC 1110 and 1410) belong to the mining and quarrying industries and hence, as above, are beyond the scope of this assessment. For the manufacturing activities (ISIC 2691, 2693, and 2699), the following is realised:

- For this group the use of fuel is more than electricity in the total energy mix.
- Manufacturing activity with ***ISIC 2693*** has the highest energy use and value added among this group.

Hence for Group 2, ***manufacturing activity with ISIC 2693*** is chosen to be further studied in terms of impact of removal of fuel subsidy on its competitiveness

Table 4: Group 2 Manufacturing Activities: Value Added

2005 Value added/Total Added Value for Group 2 [12]	2005 Value Added	Manufacturing Activity	ISIC
7.25	2638.9	صنع المنتجات الخزفية غير الإنشائية غير الحرارية Manufacture of non-Structural non-refractory Ceramic ware(pottery, china & earthenware)	2691
29.17	10606.9	صنع المنتجات الطفلية الإنشائية غير الحرارية Manufacture of Structural non-refractory clay & Ceramic	2693
6.65	2420.5	صنع المنتجات المعدنية اللافلزية الأخرى غير المصنفة في موضع آخر	2699

[11] Also includes manufacture of asbestosts paper, ashphalet products, friction a materials, mineral insulating materials, grindstones, abrasive products, articles of mica, graphite or other mineral substances n.e.c.

[12] These percentages were calculated for 2005, by dividing the value added of each activity by total value added for the whole Group 2(Table 2).

		Manufacture of other non-metallic mineral products n.e.c.[13]	

Source: Department of Statistics

III. Group 3: Industries that energy cost (fuel and electricity) constitutes less than 20% of total inputs cost used in the production process. For this Group of manufacturing activities, the following is realised:

- This Group contains the largest number of manufacturing activities.
- Exports of this Group surpassed those of both Groups 1 and 2.
- Exports of this Group represented, in 2005, 85.54% of total exports in the industrial sector followed by the share of Group 1, 14.1%, and Group 2, 0.31%, respectively.
- The use of electricity is relatively more than fuel in the total energy mix. It is again worth noting that in early 2006, electricity generating switched from being produced by fuel to natural gas by 30% and 70% respectively.[14]
    - Since, natural gas in Jordan is imported from Egypt and local resources, which is relatively cheaper than oil and the gas is not subsidised, that makes only 30% of electricity generating by fuel affected by subsidies removal decision in 2008. It should be noted that although electricity is generated through heavy fuel which was liberalised in Jordan since around two years ago, it seems from the National Electric Power Company(NEPC) data that prices of heavy fuel given to NEPC are different from those passed to industry. It seems that somehow heavy fuel to Electricity Company is still subsidized as it is lower than that given to industry.
    - Furthermore, in the revised government strategy for energy sector, strategy aims at reducing electricity produced through the use of fuel (30%) to zero by using oil shale and natural gas.

- Hence, the majority of manufacturing activities are the lowest consumers of fuel compared to mining and quarrying sector in the industrial sector and relying more on electricity.
    - This indicates that only a small portion of direct impact will go to manufacturing,
    - However, it should be noted that the majority of impact will be passed through the indirect impact that comes from increases in costs of transportation and intermediate goods, which is quite high.
    - Hence, cost of manufacturing activities that uses intermediate goods produced with fuel will increase more than other manufacture activities whose intermediate goods do not consume as much fuel.
    - 93% of the manufacturing activities in Group 3 have energy cost of total input cost less than 10%, 60% of which are less than 5%.

In Group 3 out of the 73 manufacturing activities where energy costs of total input cost is:

- **Between 0-5%** amount to 44 activities **(60%),**
- **Greater than 5 to 10%** amount to 24 activities **(33%)**
- **Greater than 10 to 20**%, 5 activities **(7%).**

[13] Also includes manufacture of asbestosts paper, ashphalet products, friction amterials, mineral insulating materials, grindstones, abrasive products, articales of mica, graphite or other mineral substances n.e.c.

[14] Revisited Energy Strategy for Jordan , December, 2007.

In Group 3, the two industries with the highest energy cost as a total of input cost among the list are identified as:

Table 5: Group 3 Manufacturing Activities

2005 Total Energy as % of total inputs	Manufacturing Activity	ISIC
11.1%	صنع منتجات المخابز Manufacture of Bakery Products	1541
15.1%	سبك الحديد والصلب Casting of Iron &Steel	2731

Source: Department of Statistics

Since there are 73 activities in this Group, further criteria besides energy input as a percentage of total input, is used. Further criteria are used to enlarge the pool of activities to be further investigated from this Group. Hence, to select activities that would further be investigated in terms of the impact of removal of fuel subsidy on their competitiveness, the following additional criteria was used: Value Added and Exports. After filtering through further criteria, 7 additional activities with very high value added and exports but relatively low total energy inputs cost were identified[15].

Table 6: Group 3 Manufacturing Activities: Main Indicators

2005-2006 Exports (JD)	2005-2006 Imports (JD)	2005 Labour	2005 Value Added/ (Value Added/Total Value Added of Group 3)	2005 Total Energy as % of total inputs	Production (000)	Manufacturing Activity	ISIC
2005 634285637	2005 105475747	18427	168372.5 (10.79%)	2.3%	310620.4	(*)صنع الملابس باستثناء الملابس الفرائية Manufacture of Wearing Apparel Except Fur App.	1810
2006 716137886.1	2006 154521427						
2005 39679001	2005 51307898	3334	29860.1 (1.91%)	2.6%	101040.8	صنع الصابون والمطهرات ومستحضرات التنظيف والتلميع والعطور ومستحضرات التجميل Manufacture of	2424

[15] Two activities were exempted from this group; Tobacco production ISIC 1600 and Alcohol Beverages ISIC 1551.

2006 42104469.22	2006 61207815					Soap and Detergents, Cleaning and Polishing preparations, Perfumes & toilet preparation	
2005 198511296	2005 190341543	5603	114798.8 (7.35%)	2.4%	258866.9	صنع المستحضرات الصيدلانية والكيماويات الدوائية والمنتجات Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod النباتية	2423
2006 190897837.6	2006 190748030						
2005 24939499	2005 314396093	2389	97120.2 (6.22%)	5.0%	292601.3	صناعة الحديد والصلب الأساسية Manufacture of Basic Iron & Steel	2710
2006 24963061.6	2006 268508084						
2005 80467791	2005 135477477	1280	38087.4 (2.44%)	2.1%	88659.7	صنع الزيوت والدهون النباتية والحيوانية Manufacture of Vegetable & Animal Oils & Fats	1514
2006 56408834.53	2006 115568097						

Source: Department of Statistics

Although the above manufacturing activities relatively have low energy use as a total of their inputs, their exports volume is high and hence considering them will allow further investigation as to impact of the removal of fuel subsidies on competitiveness.

Hence for Group 3 , a total of ***8 manufacturing activities are*** chosen to be further studied in terms of impact of removal of fuel subsidy on its competitiveness

To sum up the following 8 manufacturing activities from Group 3 will be further analysed:

Table 7: Selected Manufacturing Activities

Manufacturing Activity	ISIC
صنع المنتجات الطفلية الإنشائية غير الحرارية Manufacture of Structural Non-Refractory Clay and Ceramic Production	2693
صنع منتجات المخابز Manufacture of Bakery Products[16]	1541
سبك الحديد والصلب	2731

[16] Also includes Manufacture of Bread, Pastry, etc.

Casting of Iron &Steel	
(*)صنع الملابس باستثناء الملابس الفرائية Manufacture of Wearing Apparel Except Fur App.	1810
صنع الصابون والمطهرات ومستحضرات التنظيف والتلميع والعطور ومستحضرات التجميل Manufacture of Soap and Detergents, Cleaning and Polishing preparations, Perfumes & toilet preparation[17]	2424
صنع المستحضرات الصيدلانية والكيماويات الدوائية والمنتجات النباتية Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod.[18]	2423
صناعة الحديد والصلب الأساسية Manufacture of Basic Iron & Steel[19]	2710
صنع الزيوت والدهون النباتية والحيوانية Manufacture of Vegetable & Animal Oils & Fats	1514

B. ANALYSIS PHASE

B.1 Direct impact of the removal of fuel subsidy

To simulate the direct impact of the removal of the fuel subsidy on energy cost as a percentage of total inputs the following was carried out:

1. For each activity, the *shares of the fuel and electricity mix were identified*.
2. For each energy mix (fuel and electricity) the following was calculated to come up with the increase in total energy cost for each activity:
   - *For the fuel component*: the cost of this component would increase in the same proportion as the increase in oil prices. Hence, given that at the subsidized price, fuel costs where at $60 /per barrel and with an expectation that the price hike would land at $93/per barrel, this rise represents a 55% price increase. Hence, *the fuel component, in the energy mix, would rise by 55%.*
   - *For the electricity component*: as was mentioned earlier, 70% of electricity after 2006 has been produced by natural gas. The remaining 30% is still being produced by Fuel. Hence, only 30% of electricity share will be subject to the new higher prices. *Therefore, 30% of the electricity component of the energy mix will rise by 55%*.
   - *Heavy fuel around two years ago was liberalised for all industrial activities except for generation of electricity*. As was mentioned earlier, this implies that subsidies for generating electricity appear to still be there by where removed from those industries that use heavy fuel such as cement and steel

[17] Also includes Manufacture of polishes for furniture, metal, etc, waxes, deodorizing preparations.

[18] Also includes Manufacture of Drags and Medicine, and Manufacture of surgical, medical dressings, sutures, bandages, cements used in dentistry.

[19] Also includes Manufacture of primary iron and steel products (excluding) forging and casting operations and the Manufacture of pipe fittings or iron and steel.

manufacturing (**Annex II, Data from the National Electric Power Company**).

3. Each of the selected manufacturing activities was subjected to the simulation of direct impact considering the above mentioned criteria (Table 8).

Table 8: Direct Costs of Fuel Subsidy Removal-Selected Manufacturing Activities

Indirect taxes to total Input Cost	The ratio of total direct impact (1-2)	(2) 2005 Total energy as % of total inputs after removal of fuel subsidy	(1) 2005 Total Energy as % of total inputs	Manufacturing Activity	ISIC
25.8%	8.5%	38.9%	30.4%	صنع المنتجات الطفلية الإنشائية غير الحرارية Manufacture of Structural Non-Refractory Clay and Ceramic Production	2693
3%	5.3%	18.6%	13.3%	صنع منتجات المخابز Manufacture of Bakery Products	1541
14%	5.4%	20.5%	15.1%	سبك الحديد والصلب Casting of Iron &Steel	2731
2%	0.7%	3%	2.3%	(*)صنع الملابس باستثناء الملابس الفرائية Manufacture of Wearing Apparel Except Fur App.	1810
11.2%	1%	3.6%	2.6%	صنع الصابون والمطهرات ومستحضرات التنظيف والتلميع والعطور ومستحضرات التجميل Manufacture of Soap and Detergents, Cleaning and Polishing preparations, Perfumes & toilet preparation	2424
2.8%	0.7%	3.1%	2.4%	صنع المستحضرات الصيدلانية والكيماويات الدوائية والمنتجات النباتية Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod	2423
16.9%	1.7%	6.7%	5%	صناعة الحديد والصلب الأساسية Manufacture of Basic Iron & Steel	2710
2.2%	0.8%	2.9%	2.1%	صنع الزيوت والدهون النباتية والحيوانية Manufacture of Vegetable & Animal Oils & Fats	1514

Source: Industrial survey 2005, DOS

The following can be realised from the simulation results tabulated above:

- The Manufacture of Structural Non-Refractory Clay and Ceramic Production will be affected the most among the list. The direct impact ratio would be 8.5% increase in total cost of energy after removal of fuel subsidy. This activity already has the highest percentage of indirect taxes as percent of total inputs cost (25.8%). This would compound impact.
- The Manufacture of Bakery Products and Casting of Iron and Steel are second on the list with impact of removal of fuel subsidy resulting in 5.3% and 5.4% increases in total energy cost respectively.
- The direct impact of removal of fuel subsidy on remaining activities ranges from a 0.7 % increases in total cost to 1.7%.
- The above simulation does not consider indirect costs that can result from an increase in transportation costs and/or cost of intermediate goods used in the production of these manufacturing activities.
- As was mentioned earlier, transportation is the most fuel consuming activity in Jordan. Hence, these manufacturing activities are sure to incorporate such a cost.

B.2 Indirect cost of the removal of fuel subsidy AND COMPETITIVENESS

One of the most important objectives of this study is to identify the competitiveness position of the manufacturing sector and make expectations for its future in light of the removal of fuel subsidy. Therefore, the main aim of this analysis is to identify the competitiveness trend direction and change in response to international oil price changes.

To conduct the above analysis on competitiveness, the following will be assessed for each of the selected 8 activities:

- ***International Market***. For each activity, the volume of exports and imports will be used to assess growth trends for the activity. Also this would give insight into the trade balance for each activity. Afterwards, the export markets for each activity are presented. This would allow the analysis on the competitiveness of each activity in the exporting country in light of the increase in production costs associated with the removal of fuel subsidy.
- ***Statistical Analysis***. Associated with the international market analysis, the statistical analysis will be conducted to reflect the strength of the relationship between the rise in international oil prices and volume of exports for each activity. Two statistical tests will be employed to measure the strength of this relationship:
    - *Correlation coefficient* which measures the strength of the relationship or degree of linear association between two variables. It is assumed that a relationship above 50% statistically reflects a strong relationship between two variables.
    - *Simple linear regression* analysis which is trying to estimate or predict the average value of one variable (dependent variable) on the basis of the fixed values of other variables (independent variables). The regression analysis is employed by attempting to predict changes in each activity's exports on basis of changes in international oil prices over a specified period of time. This analysis is employed to avoid some statistical problems associated with data that could not be isolated through correlation coefficient. The regression analysis is more sophisticated compared to the correlation coefficient in terms of exploring the explanatory power of one variable over other, which is

not implied by correlation coefficient test. Furthermore, other statistical problems such as data including irrelevant time trend was not considered in the correlation coefficient calculation, thus results of correlation coefficient may show misleading results. Therefore, the regression analysis is employed to giver better results.

  - Correlation between PPI and energy costs where possible.

- ***Domestic Market***. For each activity, its market share, added value as a percentage of production, indirect taxes as a cost of total production cost PPI and the increase in the average transportation cost for this activity (2003-2005) will be presented to assess impact of the removal of fuel subsidy on competitiveness for each activity in the local market. Market share reflects the share of the production of an activity found in the local market. Added value as a percentage of production is used to reflect any enhancement in the manufacturing activity's production over the years. Indirect taxes reflect yet another cost that each manufacturing activity faces besides production costs. The PPI involves the direct and indirect impacts on production costs. The increase in the average transportation cost for this activity (2003-2005) is an indicator that reflects part of the indirect cost of the removal of fuel subsidy.

ISIC 2693: Manufacture of Structural Non-Refractory Clay and Ceramic Production

International Market

As shown in the table below, the growth rate of imports for this activity has tremendously increased over the period 2002-2006 whereas exports decreased except for the year 2005. Consequently, the trade balance for this activity has deteriorated.

Table 9: Major Trade Indicators- Manufacture of Structural Non-Refractory Clay and Ceramic Production

Year	2000	2001	2002	2003	2004	2005	2006
Imports %	6451100	3999064 (-38)	4104132 (3)	15859659 (286)	22009424 (39)	32549937 (48)	41928889 (29)
Exports %	760408	4120227 (442)	3426257 (-17)	2699432 (-21)	1198262 (-56)	1390663 (16)	703956.09 (-49)
Exp/Imp	11.78726	103.0298	83.48311	17.02074	5.444313	4.272398	1.678929
Trade Balance	-5690692	121163	-677875	-13160227	-20811162	-31159274	-41224933

Source: DOS

This manufacturing activity is one of the largest manufacturing activities among all three Groups in terms of its reliance on energy reaching 30.4% in 2005 as a percentage of total input cost (fuel 23%, electricity 7%). Thus, additional increase in cost due to liberalization of energy sector in Jordan will affect negatively the production, exports and competitiveness of this activity.

Table 10: Geographical Distribution of Imports and Exports- Manufacture of Structural Non-Refractory Clay and Ceramic Production

2006 Countries/ISIC 2693	Import		Export		Jordan's competing countries in export markets
	China	19%	Iraq	58%	Turkey, and China
	Egypt	30%	Syria	33%	China, Italy, Portugal and Oman
	Italy	9%			
	Spain	21%			
	Syria	4%			
	U.A.E	10%			
Total		93%		91%	
	Other	7%		9%	

Source: ITC International Trade Center

As is shown above, Jordan's main export markets *for the most exported products in this activity (*Tiles, cubes and sim nes, glazed ceramics and Tiles, cubes and sim <7 cm rect or not etc, glazed ceramics) are Iraq and Syria respectively.

In Jordan's main exporting country, Iraq:

- For product, Tiles, cubes and sim nes, glazed ceramics, the main competitors are Turkey with a share of 71%, and China 22%. Jordan follows with a share of 5%.
- For product, Tiles, cubes and sim <7 cm rect or not etc, glazed ceramics Jordan supplies the Iraqi market with 68% followed by Turkey 32%.
- For product, Tiles, cubes and sim <7 cm rect or not etc, unglazed ceramics, Jordan is the main source for Iraq.

For the manufacture of Structural Non-Refractory Clay and Ceramic Production, ***Turkey, China, and Italy*** appears to be the main competitors in Jordan's export markets for this activity.

In Jordan's other main exporting country, Syria:

- For product, Tiles, cubes and sim nes, glazed ceramics, the main competitors are China (49%) and Italy (31%) followed by Jordan at 15%.
- For product, Tiles, cubes and sim <7 cm rect or not etc, glazed ceramics, and Product, 690710 Tiles, cubes and sim <7 cm rect or not etc, unglazed ceramics, Jordan is the main source for Syria.

The exports of this activity are hence concentrated in two main markets Iraq and Syria which translates into high risk, and limited competitiveness power. Also, since this activity is an intensive user of energy this would translate into higher competition internationally once further fuel subsidy is removed (since heavy fuel is already liberalised).

Statistical Analysis

The correlation coefficient between international oil prices and the exports of this activity showed a negative strong association at (-75%), this implies:

- Heavy fuel is used extensively in this activity, and since it was liberalized around two years ago, the cost of production associated negatively with international oil prices.
- As international oil prices increases, the cost on this activity also increases, reducing exports.
- *This reflects the downward sloping trend in exports indicating decreasing in its competitive position in international markets.*
- This manufacturing activity has not been exploiting the difference in energy cost between local and international markets during 2000-2006. Therefore, liberalizing energy sector in Jordan will add further costs to this activity and will lead for further deterioration in its competitiveness.

The simple linear regression analysis, using ordinary least square technique, shows that one US$ increase in international oil prices generates 1.9 US$ decreases in exports for this activity, with a goodness of fit equal 90%. This implies that 90% of the variations in exports are explained by variation in international oil prices, other variables constant.

Domestic Market

The table below shows an increase in added value as a percentage of production from 46% in 2003 to 49% in 2004 and to 50% of total output. This improvement indicates enhancement in the production process and cost reductions. Despite of that, the market share fluctuated over time decreasing in 2005, while production growth was not able to meet aggregate demand growth rates. Notably, this activity pays high rates of indirect taxes as percentage of total inputs costs (25.8% in 2005).

Table 11: Domestic Market Indicators- Manufacture of Structural Non-Refractory Clay and Ceramic Production

2003	2004	2005	
15008900	19730700	21167900	**Production (JD)**
15859659	22009424	32549937	Imports(JD)
2699432	1198262	1390663	Exports(JD)
28169127	40541862	52327174	Domestic Demand(JD)
44%	**46%**	**38%**	**Market Share**
6882200	**9570000**	**10606900**	**Added Value**
46%	**49%**	**50%**	***% of Production***
20.5	**23.2**	**25.8**	**% Indirect Taxes / Total Production Cost**

Source: DOS

In the local market, Jordan competes with Egypt 30%, Spain 21%, China 19% and the UAE 10%. Hence, the main competitor in the Jordanian market is mainly Egypt where fuel, up until recently, was subsidized[20], and product's quality is higher, since Egypt exports to Japan, USA and the EU. Given that the market share has been decreasing, it is worth

20 Egypt is transitionally removing fuel subsidy (http://www.zawya.com/printstory.cfm?storyid=ZAWYA20070910110144&l=110100070910)

noting that this activity may be losing its competitiveness in the local market to other countries such as Egypt and Spain. *Also since imports of products classified under this activity are diversified this result indicates strong competition in the domestic market.*

In addition, the monthly PPI (January-July) in 2007 for this activity shows a constant trend with no changes indicating no cost pressures on producers during this period. This may be attributed to the productivity enhancement which offset cost increases (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 4.72% (**Annex IV, Transportation Cost**).

ISIC 1541: Manufacture of Bakery Products

International Market

As is shown in the table below, the export of bakery products, during the period 2001-2006, were growing relatively faster than imports with the ratio of exports to imports increasing over the same period. Exports to imports ratio increased from 30.9% in 2002 to 71% in 2006. However, a sharp increase in the ratio was registered in 2004 due to, among other reasons, the Iraq war that allowed exports to Iraq to increase.

An interesting note is that in 2005 and 2006, the growth rates of exports of bakery products slowed down to 24.9% and 22.2% respectively, and imports increased from 8.6% to 23.1% respectively, which coincided with, among other reasons, the three times adjustments for local prices of petroleum products. In 2005, energy cost for bakery products as a percentage of total input costs amounted to 13.3%, 11.3% of which is fuel and 2% electricity. Hence, the local adjustment of petroleum prices has impacted the 11.3% of the energy mix for bakery products. The increase in imports signifies new entrants to the market or fiercer local competition.

Table 12: Major Trade Indicators- Manufacture of Bakery Products

Year	2000	2001	2002	2003	2004	2005	2006
Imports(JD)	734942	341071 *(-53.6)*	2872735 *(742.3)*	6725501 *(134.1)*	8166274 *(21.4)*	8868990 *(8.6)*	10915181 *(23.1)*
Exports (JD)	1741181	134912 *(-92.3)*	889095 *(559)*	2151983 *(142)*	5079086 *(136)*	6343535 *(24.9)*	7754732.6 *(22.2)*
Exp/Imp	236.9	39.6	30.9	31	62.2	71.5	71
Trade Balance	1006239	-206159	-1983640	-4573518	-3087188	-2525455	-3160448

Source: DOS

Despite the growth rates of exports of bakery products, a trade deficit still exists. Hence, further cost pressure will widen the deficit in the trade balance.

Table 13: Geographical Distribution of Imports and Exports- Manufacture of Bakery Products

2006 Countries/ISIC 1541	Import		Export		Jordan's competing countries in export markets
	Saudi Arabia	21%	Iraq	11%	
	Syria	10%	Lebanon	14%	UK, Turkey, Belgium, Italy and France, Poland ,Romania and the Netherlands
	Turkey	23%	Palestinian N.A.	16%	Turkey
	U.A.E	6%	Saudi Arabia	6%	
	UK	11%	Syria	4%	Netherlands
			Yemen	41%	Saudi Arabia, Turkey, UAE, Egypt, Malaysia and India
Total		72%		93%	
	Other	28%		7%	

Source: ITC International Trade Center

As is shown above, Jordan's main export markets *for the most exported product in this activity* (sweet biscuits, waffles and wafers) are Yemen, Palestine, Lebanon and Iraq respectively.

In Jordan's main exporting country, Yemen, the main competitors are Saudi Arabia, Turkey, UAE, Egypt, Malaysia, and India respectively. Oman and Syria also compete fiercely with Jordan. Jordan's share in Yemen's market is just 3%, whereas the main two competitors, Saudi Arabia and Turkey, have 46% of the Yemeni market.

For the manufacture of bakery products, *Turkey* mainly appears to be a main competitor to Jordan in Jordan's export markets for this

In Jordan's other exporting markets of Lebanon and Palestine, Turkey stands out as a common competing country to Jordanian exports of bakery products.

- In Lebanon, EU countries (UK, Belgium, Italy, Netherlands, and France) with Romania and Poland supply 73% of Lebanese's demand of bakery product with Turkey supplying 16% and Jordan 2%.
- In Palestine, Turkey supplies the Palestinian market with 62% of bakery products followed by Jordan's 20% share.

In the Syrian Market, the Netherlands is Syria's main source of bakery products with a share of exports to Syria at 50% followed by Jordan at 15%.

Statistical analysis

The statistical correlation coefficient between international oil prices and exports of bakery products reached (84%). This implies:

- Strong positive relationship between international oil prices and exports of bakery products.
- While the policy of subsidizing fuel in Jordan kept energy cost relatively constant relative to international cost, international oil prices hikes contributed to an increase in production costs in other producers in international markets.
- *This made Jordanian production costs fixed and hence appear to be more price competitive leading to an increase in export for this activity.*

The simple linear regression analysis employed by regressing bakery exports on international oil prices over the period 2000-2006, showed that 98% of the variation in exports of bakery products in Jordan is explained by variation in international oil prices.

The statistical analysis through correlation between PPI and energy costs shows that the producers in this activity passed some of the new additional costs (due to increases in oil prices among other reasons) to consumers, and/or relocate resources and/or reduce profit margin. *This implies that the producers in this manufacturing activity are producing in an inefficient manner*, thus there is a room to enhance productivity that may come due to cost pressures.

Despite the fact that this activity enjoyed subsidized energy cost and wheat but the competitiveness position in international markets is low and did not improve over time. This is reflected by the nature of exporting markets. As was shown above, major exports of bakery products are to less competitive markets such as Yemen market (41%), to moderate competitive markets such as Saudi Arabia with a lack of exports to very competitive markets such as USA, and Europe. This market concentration in the Yemeni market increases risk for this manufacturing activity.

Domestic Market

The value added of the bakery products as a percentage to production is stable around 31% despite the fact that bakery products were subsidised in two forms: through energy and wheat, which are the main raw material and intermediate products used in production process. However, late 2007 the government of Jordan liberalized wheat except for bread. Therefore, liberalizing energy will add additional costs and will reduce price competitiveness, and may extend to quality competitiveness for this activity.

Table 14: Domestic Market Indicators- Manufacture of Bakery Products

2003	2004	2005	
110933300	120078900	125779000	**Production(JD)**
6725501	8166274	8868990	Imports(JD)
2151983	5079086	6343535	Exports(JD)
115506818	123166088	128304455	Domestic Demand(JD)
94%	**93%**	**93%**	**Market Share**
34181900	**38309000**	**38415800**	**Added Value**
31	**32**	**31**	***% of Production***

2.6	2.7	3.0	Indirect Taxes / Total Production Cost %

Source: DOS

The domestic market analysis indicates that although the competitiveness power of this activity in the international market is limited, that is not the case on the local front. This analysis is reinforced by the market share development over the years 2003-2005. Market share, fluctuated around 93%. This also implies that 93% of the market demand is supplied through local production. Also, this reflects the fact that this activity is not an export orientated industry.

Although, the market share of local production is high, competition in the local market is fierce dominated by imports of bakery products from Turkey, Saudi Arabia, UK and Syria with 23%, 21%, 11% and 10% shares of total imports respectively in 2006. It is well known that Turkey, UK, and Syria are strong competitors in the international market in Bakery Products, since they have a long history in manufacturing such products and they have good reputations in the regional markets in terms of trademarks, large scale industries and strong marketing skills. Saudi Arabia is a new producer with intensive competitiveness capabilities, where energy is subsidized. Hence, Syria and Saudi Arabia have more advantage in the future over Jordan. It should also be noted that the countries that Jordan imports from (Saudi Arabia and Syria) operate within an environment where fuel is subsidized. Although in Turkey and the UK, energy prices are liberalised, industries has been able to adopt energy efficient processes and hence have passed the period of adapting to changes in oil prices.

The indirect tax burden on the activity is around 3%, of total production cost. Hence, this industry should enhance productivity, and change its marketing strategy toward export orientation. *This industry will get more cost burdens due to liberalizing energy and wheat inputs*. *This will further impact low competitiveness in the international market and open the door for new entrants or fiercer competition in the local market.*

The monthly Producer Price Index (PPI) for Bakery Products for 7 months (January-July) in 2007 shows that there has been a continuous increase in PPI indicating an increase in cost pressures on producers in this activity (**Annex III, PPI Schedule**). The PPI for this activity show increases over time, indicating that the cost burdens were caused by different increases in raw material such as wheat and international transportation cost in international markets. Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 0.11% (**Annex IV, Transportation Cost**). Therefore, additional cost from energy liberalization in Jordan may add up new cost that may harm the domestic competitiveness.

ISIC 2731 Manufacture of Casting iron and Steel

International Market

As is shown in the table below, import growth rates are decreasing over the period 2004-2006, whereas, exports increased during the same period. The extraordinary growth in production and exports generated surplus in the trade balance after 2003.

Table 15: Major Trade Indicators- Manufacture of Casting Iron and Steel

Year	2000	2001	2002	2003	2004	2005	2006
Imports	411456	194383	1088047	2293434	562029	442936	301746
(%)		*(-53)*	*(460)*	*(111)*	*(-75)*	*(-21)*	*(-32)*
Exports	1080080	753529	68 2262	932291	857769	2117186	2314644.93
(%)		*(-30)*	*(-9)*	*(37)*	*(-8)*	*(147)*	*(9)*
Exp/Imp	262.5019	387.6517	62.7052	40.65044	152.6201	477.9891	767.0839
Trade Balance	668624	559146	-405785	-1361143	295740	1674250	2012899

Source: DOS

This activity showed impressive development and expansion due to large investments by investors from Arab oily countries, after the oil prices hits unprecedented prices, generates huge returns, also coupled with an increase in the local and international demand for this activity.

In 2005, this activity's share of total energy as a percentage of total input cost reached 15% with 11.3% of which was fuel and the remaining 3.8% for electricity. This activity showed the highest energy cost among Group 3 manufacturing activities.

Table 16: Geographical Distribution of Imports and Exports - Manufacture of Casting Iron and Steel

2006 Countries/ISIC 2731	Import		Export		Jordan's competing countries in export markets
	Egypt	5%	India	59%	US, UK, and Mauritius
	Germany	84%	Netherlands	25%	
			Pakistan	9%	UAE, South Africa, Italy, Morocco Egypt, and Saudi Arabia.
			U.A.E	7%	South Africa, the Republic of Korea and Germany.
Total		89%		100%	
	Other	11%		0%	

Source: ITC International Trade Center

As is shown above, Jordan's main export markets *for the most exported product in this activity* (casting iron and steel) are India, Netherlands, Pakistan and the UAE respectively.

In Jordan's main exporting country, India, for the product waste and scrap, cast iron, the main competitors are US, Bahrain and Mauritius respectively. The UK and Oman also compete fiercely with Jordan. Jordan's share in India's market is just 5%, whereas the main competitors, US, Bahrain and Mauritius have 77% of the Indian market.

In Jordan's other exporting markets of Pakistan and the UAE, the following comprises competing countries.

- In Pakistan, UAE and South Africa supply 44% of Pakistani's demand of the product waste and scrap, of tinned iron or steel with South Africa supplying 19% and Jordan 5%.
- In the UAE, South Africa supplies the UAE market with 23% of the product waste and scrap, stainless steel followed by Korea (21%), Germany (19%) and Jordan's 16% share.

In Jordan's other exporting market of the Netherlands, Jordan's share of exports is too little compared to other competitors.

Statistical Analysis

The statistical correlation coefficient between international oil prices and the exports of this manufacturing activity registered 17.5%. This implies the following:

- Positive association but weak relationship.
- Calculating the correlation coefficient for this activity did not consider shocks (war on Iraq) that led for profound structural breaks in exports data due to increases in transportation cost caused by rises in insurance cost

For all of these reasons and others, the relationship is assessed using the linear regression analysis, which eliminates the impact of time trend and shock on exports in 2003, to obtain more reliable statistical estimation.

The simple regression analysis shows that the estimated model is significant, different from zero using both goodness of fit and F-test statistic. The results by the estimated model imply that one US$ increase in oil prices will generate around 2.5 US$ increase in exports and 99% of the variation in exports is explained by variation in international oil prices during the period 2000-2006, assuming other variables constant. This is explained through the fact that since Jordan is small country and not a major producer in the international market, Jordan is a price taker, and thus, as the prices of iron and steel increased internationally, with no increase in the cost for the local manufacturing due to subsidized energy, local production and exports increased.

Local prices became more competitive compared to the international price. *The energy subsidy policy helped much the competitiveness of this manufacturing activity.* While international production cost is associated with movement of international oil prices, which is not the case for producers in Jordan due to the energy subsidy policy during the period 2000-2006, that makes the marginal profit higher in Jordan compared to international production.

As such, the competitiveness position of this manufacturing activity improved and benefited positively from energy subsidy policy. Therefore, removal of this subsidy definitely will affect its competitiveness because it is a relatively major consumer of energy (15.1%) in 2005 and its intermediate inputs production depends heavily on energy, beside transportation cost which will affect its final production. It is worth noting that fuel composed 11.3% of total cost of inputs and fuel included heavy fuel which has been liberalized, thus the direct impact may be less than simulated, but it will increase due to the not yet liberalised prices of other petroleum products.

Domestic Market

This activity has relatively high added value as a percentage of production reaching 42% in 2005, from 38% in 2003 and 40% in 2004. This development is also coupled with increases in market share in the local market, up from 74% in 2003 to 92% in 2005. The indirect taxes also declined over time from 19.7% of total input cost in 2003 to 14% in 2005. These indicators show an impressive performance in the domestic market. The activity is an intensive user of energy and in particular heavy fuel and petroleum products besides electricity. Hence, additional cost of liberalization may generate adverse impact on its development and growth. The monthly PPI increases over time in 2007 (January-July), reflects cost pressures on producers in this industry (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 1.36 %(**Annex IV, Transportation Cost**).

Table 17: Domestic Market Indicators - Manufacture of Casting Iron and Steel

2003	2004	2005	
7524900	5686400	7218400	**Production(JD)**
2293434	562029	442936	Imports(JD)
932291	857769	2117186	Exports(JD)
8886043	5390660	5544150	Domestic Demand(JD)
74%	**90%**	**92%**	**Market Share**
2884500	**2252400**	**3053400**	**Added Value**
38%	**40%**	**42%**	***% of Production***
19.7	**17.1**	**14.0**	**Indirect Taxes / Total Production Cost %**

Source: DOS

ISIC 1810: Manufacture of Wearing Apparel except Fur App.

International Market

For the manufacture of wearing apparel, growth rates of exports and imports showed high rates over the period 2000-2006 and a positive trade balance. It should be noted that exports of this activity consume the largest share of exports for the Kingdom. It is worth noting that the major part of exports of this activity comes from Qualified Industrial Zones(QIZ) or those

under the FTA with the USA. However, after 2004 export growth rates showed slowdown due to competition from international main producers in Asia mainly China, at the end of the Multi Fiber Agreement, and regional competition from Egypt (as QIZ arrangement, similar to that in Jordan, was agreed with Egypt which has much better conditions of competition in terms of skilled labour and cheaper intermediate goods). The competitive position of this activity is deteriorating in the USA market because of imports from China. In 2005, this activity's energy costs amount to 2.3% of total input costs, 0.9% of which is fuel and 1.4% electricity.

Table 18: Major Trade Indicators - Manufacture of Wearing Apparel except Fur App.

Year	2000	2001	2002	2003	2004	2005	2006
Imports(JD)	42171459	41689018	59589737	68037172	84516928	105475747	154521427
		(-1)	(43)	(14)	(24)	(25)	(46)
Exports (JD)	74850117	202784896	357595446	451547946	619686936	634285637	716137886.1
		(171)	(76)	(26)	(37)	(2)	(13)
Exp/Imp	177.49	486.4228	600.0957	663.6783	733.2104	601.3569	463.4554
Trade Balance	32678658	1.61E+08	2.98E+08	3.84E+08	5.35E+08	5.29E+08	5.62E+08

Source: DOS

As is shown below, Jordan's main export markets *for the most exported products in this activity (*Articles of apparel, accessories, knit or crochet) is the USA market. In the USA market Jordan competes with China, Mexico, Honduras, Honk Kong, Indonesia, Vietnam, Cambodia, Guatemala, India, El Salvador, Pakistan, Thailand and Philippines respectively followed by Jordan. Jordan's share is just 2%.

For the manufacture wearing apparel except fur App, Jordan' has several competitors and is only able to export as a result of its QIZ arrangement with the USA.

Table 19: Geographical Distribution of Imports and Exports - Manufacture of Wearing Apparel except Fur App.

2006 Countries/ISIC 1810	Import		Export		Jordan's competing countries in export markets
	China	44.270%	USA	93.426%	China, Mexico, Honduras, Honk Kong, Indonesia, Vietnam, Cambodia, Guatemala, India, El Salvador, Pakistan, Thailand and Philippines.
	Israel	8.542%			
	Syria	15.591%			
	Turkey	10.448%			
Total		78.851%		93.426%	
	Other	21.149%		6.574%	

Source: ITC International Trade Center

The PPI for this industry during the first seven months increased in small portions, and decreased in the July of 2007, indicating small cost pressures on producers in this industry (**Annex III, PPI Schedule**).

Statistical Analysis

The correlation coefficient between international oil price and exports of this activity registered 58%. This implies:

- A mild positive correlation, meaning as international oil prices increase, exports increase too.
- However, this correlation coefficient does not make sense. The industry uses less fuel (0.9%) in its energy mix then electricity (1.4%) in its production process. However, over the studied period, energy in Jordan was subsidised and hence there was no association between domestic and international oil prices. Therefore, the result of the correlation coefficient is unreliable.
- However, transportation cost is high because the main export market for this activity is the USA and exporters use ports through Jordan and Israel that vary in cost making international transportation cost different. The international transportation cost depends on international oil prices and distance; therefore, the transportation cost will increase as international oil prices increase, and may lead to reduction in exports.
- This type of relationship does not comply with the outcome of the correlation coefficient. Thus, the relationship should be re-examined by using the regression analysis.

The regression analysis results showed a negative association between international oil prices and exports. Indeed, the association may be explained in a different way; the decline in exports of this activity may be related to other reasons such as the status of economic growth rates in the States and the new competitors to Jordan in the USA market. The regression model shows that one US$ increase in international oil prices will generate a 1.8 US$ decrease in exports of this activity. This may result from the notion that as international oil price increases, which is highly associated with US$ exchange rate, the demand in US decreases (if assumed that the weak US$ reflecting weak economic performance, then the US$ became a proxy for demand as well as performance).

In the local market, Jordan competes with China (44%), Syria (15.5%), Turkey (10.4%) and Israel (8.5%). However, it should be noted that Jordanian production from this activity is mainly exported to USA, beside Jordan could not compete with China, Syria and Turkey, because all of these countries are producers of raw materials and have relatively cheap labour (they have a comparative advantage).

As a result of the special case QIZ arrangement, where textile and apparel is a concentrated industry, there is a specifity to this activity as most production is targeted to export markets. Hence, locally, the Jordanian market is full of Chinese, Turkish and Syrian products and hence its competitiveness in the local market is non existent since it is export oriented. However, internationally, this competitiveness is at a risk and has been decreasing in recent years as the advantages of being the first QIZ designated place has passed with Egypt

having signed similar agreement as well as for the end of the Mutli Fiber Agreement. This activity has low value added since raw materials are imported and production processes entail simple procedures. This renders this activity sensitive to any change in costs that would ultimately add to its recent loss of competitiveness in the international market. Furthermore, recently, several issues have surfaced with regards to QIZ; the need to increase minimum wages and violation in labour rights. Hence, the potential for this activity is limited in the international market, and since competition is deteriorating and exports are concentrated in one market that limits options in front of producers.

Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 1.59 %(**Annex IV, Transportation Cost**).

ISIC 2424 Manufacture of Soap and Detergents, Cleaning and Polishing preparations, perfumes &toilet preparation

International Market

The table below shows steady growth rates in imports and fluctuation in exports. Exports fluctuated depending on the demand from Iraq. Hence, the activity's own trade balance is in deficit since 2005. Energy cost as a percentage of total input costs in 2005 was (2.6%), of which fuel (1.5%) and electricity (1.1%).

Table 20: Major Trade Indicators - Manufacture of Soap and Detergents, Cleaning and Polishing preparations, perfumes &toilet preparation

	2000	2001	2002	2003	2004	2005	2006
Imports	20319030	22852710 (12%)	28106423 (23%)	30536225 (9%)	41598486 (36%)	51307898 (23%)	61207815 (19%)
Exports	34624996	32655723 (-6%)	51376008 (57%)	47364255 (-8%)	48884604 (3%)	39679001 (-19%)	42104469 (6%)
Export/Import	170%	143%	183%	155%	118%	77%	69%
Trade Balance	14305966	9803013	23269585	16828030	7286118	-11628897	-19103346

Source: DOS

The competitiveness of this activity seems low, indicated by growth rates of exports and imports, and the geographical distribution of exports and imports. Exports are concentrated in one market (Iraq 81.4%) and growth rates of exports fluctuated based on the demand from Iraq. Also the activity shows no potential for exporting to new markets. In Jordan's main exporting country, Iraq, the main competitors are:

- For Product : 34 Soaps, lubricants, waxes, candles, modelling pastes , Turkey is Jordan's main competitor at a share of 56% followed by Jordan's own share in the Iraqi market at % 35%.
- For Product: 33 Essential oils, perfumes, cosmetics, toileteries, Jordan's main competitors are Turkey, Germany, and Ireland respectively. France and

For the manufacture Soap and Detergents, Cleaning and Polishing preparations, ***Turkey*** appears to be a main competitor to Jordan in Jordan's export markets for this

Netherlands also compete fiercely with Jordan. Jordan's share in Iraqi market is 4%, whereas the main competitors, Turkey, Germany, and Ireland have 87% of the Iraqi market.

Table 21: Geographical Distribution of Imports and Exports - Manufacture of Soap and Detergents, Cleaning and Polishing preparations, perfumes &toilet preparation

2006 Countries/ISIC 2424	Import		Export		Jordan's competing countries in export markets
	China	6.38%	Iraq	81.35%	Turkey, China, Indonesia, Germany, Malaysia ,France and Ireland
	Egypt	12.79%	Saudi Arabia	7%	
	France	8.14%			
	Germany	6.14%			
	Saudi Arabia	27.09%			
Total		60.54%		88.68%	
	Other	39.46%		11.32%	

Source: ITC International Trade Center

The domestic market is very competitive since the geographical distribution of imports is diversified, as shown in the table above. The local market is dominated by products from Saudi Arabia (27.09%) and Egypt (12.79%).

Statistical Analysis

The statistical correlation coefficient between international oil price and exports is almost 3%. This implies:

- This manufacturing activity is not sensitive to changes in international oil prices.
- Indeed this result is not reliable.
- Raw materials are imported from South Asia and the USA; this implies long distance shipping to Jordan in terms of international transportation cost which is positively associated with international oil prices.
- However, the embargo on Iraq is not active anymore, which opened the door for other exporters to compete with Jordan's products.
- Consequently, to investigate the relationship more, the regression analysis is estimated.

The regression analysis results show that there is a significant negative inelastic relationship between international oil prices and exports. The statistical test shows that there is a deterministic trend in data, which is irrelevant and distortion in the data in 2001 may have led to the misleading results of the correlation coefficient. The regression results indicates that one US$ increase in international oil prices leads to 0.75 US$ decrease in exports of this activity.

Domestic Market

The table below shows that the added value as a percentage of production decreased from 34% in 2003 and 2004 to 30% in 2005. Market share stayed around 54% for the period 2003-2005. Indirect taxes as a percentage of total production cost were 10.5% in 2003 increasing to 11.2 in 2005.

Table 22: Domestic Market Indicators - Manufacture of Soap and Detergents, Cleaning and Polishing preparations, perfumes &toilet preparation

2003	2004	2005	
84797700	97525600	101040800	**Production(JD)**
30536225	41598486	51307898	Imports(JD)
47364255	48884604	39679001	Exports(JD)
67969670	90239482	112669697	Domestic Demand(JD)
55%	**54%**	**54%**	**Market Share**
29115900	**33544300**	**29860100**	**Added Value**
34%	**34%**	**30%**	***% of Production***
10.5	**11.8**	**11.2**	**% Indirect Taxes / Total Production Cost**

Source: DOS

This industry can obtain higher productivity and higher value added. Jordan enjoys comparative advantage in producing the Dead Sea cosmetics, which has high demand around the world. However, it seems that this activity did not exploit and develop the comparative advantage which would enhance value added.

The 2007 monthly PPI demonstrates a stable trend over the first seven months of the year, thus there is no cost pressure on the producers in this activity at least during this period (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 1.51 %(**Annex IV, Transportation Cost**).

The most promising products of this activity are the Dead Sea cosmetics since the raw materials are available in Jordan. Hence, enhancing the environment by which these products can prosper may lead to production booming. The government may remove the monopoly agreement with Arab Potash Company (APC) and allow the Dead Sea cosmetics manufactures to extract raw materials without limitations. The APC creates distortion adding extra cost for manufacturers. Furthermore, there is room for government to enhance research and development (R&D) in the area of Dead Sea cosmetics. This lack in R&D contributed to its low competitiveness in the international market.

ISIC 2423: Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod

International Market

As shown in the table below, the growth rate of exports and imports of the manufacture of pharmaceuticals medicinal chemical and botanical products, have registered rates of growth over the period 2000-2006. The exports were growing relatively faster than imports leading to a surplus in the trade balance. The activity is one of the most developed diversified industries with large share in total exports in Jordan.

Table 23: Major Trade Indicators - Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod

Year	2000	2001	2002	2003	2004	2005	2006
Imports(JD)	104537311	119580511	135044575	151242104	170351664	190341543	190748030
		(14)	(13)	(12)	(13)	(12)	(0)
Exports (JD)	110251173	129720621	142860210	130890576	158203335	198511296	190897837.6
		(18)	(10)	(-8)	(21)	(25)	(-4)
Exp/Imp	105.4659	108.4797	105.7874	86.54374	92.86868	104.2922	100.0785
Trade Balance	5713862	10140110	7815635	-2E+07	-1.2E+07	8169753	149807.6

Source: DOS

The energy cost as a percentage of total input cost reached 2.4% in 2005 of which 0.8% is for fuel and 1.6% is for electricity. Since this industry is efficient, any small increases in cost may hinder further developments. Furthermore, it is worth noting that Saudi Arabia and Egyptian industries are becoming more increasingly competitors in the regional markets. At the time being, non-tariff barriers are facing exports of this activity into Egypt as a means of protectionism.

Table 24: Geographical Distribution of Imports and Exports- Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod

2006 Countries/ISIC 2423	Import		Export		Jordan's competing countries in export markets
	France	10%	Algeria	19%	France, Italy , Netherlands and Greece
	Germany	14%	Saudi Arabia	34%	USA, and Switzerland
	Japan	5%	Sudan	8%	Italy , Pakistan and Malaysia
	Switzerland	18%			
	U.K.	11%			
	U.S.A.	6%			

Total		63%		61%	
	Other	37%		39%	

Source: ITC International Trade Center

As is shown above, Jordan's main export markets *for the most exported products in this activity (*Medicaments nes, formulated, in bulk) are Algeria, Saudi Arabia and the Sudan respectively.

For the manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod *Jordan* is the major exporter in its export markets.

In Jordan's main exporting country, Saudi Arabia, Jordan provides the largest share of this product at 41 % followed by its other competitors of the US(30 %), and Switzerland (20 %) respectively.

In Jordan's next exporting market of Algeria, Jordan's share of exports is 68% followed by France at 20% and Italy at 6%.In Jordan's other major exporting market of the Sudan, Jordan supplies 84% followed by Pakistan (8%), Italy (6%) and Malaysia (2%).Hence, the competitiveness position of this activity is high compared to regional manufacturing.

Statistical Analysis

The statistical correlation coefficient between international oil prices and exports of this activity is positive and high (82%). This implies:

- It should be noted that the impact of the new transportation costs in light of the removal of subsidy would be significant for this market in light of its export markets.
- However, there is a comparative advantage for Jordan in terms of its proximity to its export markets in comparison with competing countries in Jordan's main export markets.
- The efficient production process in this activity enabled the manufacturer to offset the impact of increases in energy costs for a limited extent. Further rise in energy costs may affect the Pharmaceuticals Medicinal Chemical and Botanical products, production and competitiveness.

Also, the results of the linear regression model shows that a 1 US$ increase in international oil prices increase exports by 0.54 US$. This implies a positive ***inelastic***[21] impact due to the difference between international and local prices of energy. Also, this result indicates that the size of impact of rise in international oil prices, indicated by elasticity, is very limited on exports of this activity.

Domestic Market

The table below shows that the value added as a percentage of production has been stable around 45% and high. The activity includes pharmaceutical products which uses international trade marks since most, if not all, products are not innovated domestically; industrial innovation is associated strongly with value added. Therefore, the activities that use others innovation will lose part of the value added. Furthermore, the efficient productive

[21] Elastic = above 1 unity is =1 , inelastic<1,, definition = percentage change in independent variable by 1 will generate change above 1 elastic, below 1 inelastic, =1 unity…

manufacture will depend on demand expansion to increase value added because it is already using resources efficiently and obtained reasonable level of value added.

The market share of this activity is relatively low despite the fact that it has been growing steadily over time, since there is a high diversity in the products of this activity, while limited Jordanian manufactures cannot cover all products. The activity is considered as export orientated, since it relies on exports more than the domestic market. The indirect taxes burden is relatively low, around 2.5%, of total input costs.

Table 25: Domestic Market Indicators- Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod

2003	2004	2005	
168001800	203894100	258866900	**Production (JD)**
151242104	170351664	190341543	Imports(JD)
130890576	158203335	198511296	Exports(JD)
188353328	216042429	250697147	Domestic Demand(JD)
20%	**21%**	**24%**	**Market Share**
75667800	**92309200**	**114798800**	**Added Value**
45%	**45%**	**44%**	***% of Production***
2.4	**5.4**	**2.8**	**% Indirect Taxes / Total Production Cost**

Source: DOS

The PPI for first seven months of 2007 for this activity showed little changes, indicating small new costs on producers under this activity. This is reliable since this activity's use of energy is very limited (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 1.97 %(**Annex IV, Transportation Cost**).

In the local market, Jordan competes with the European markets 53% and Japan 5%. *Together with a low market share, this reflects high competition in the local market.* The products that are produced in Europe and Japan are more developed and embody innovation, high technology and research and development. The case of Jordan in that area differs.

ISIC 2710: Manufacture of Basic Iron &Steel

International Market

The basic iron and steel manufacturing activity exhibited growth in exports and imports in the period 2003-2006. The industry's exports in 2006 slowed down and imports decreased by (-15) due to the increase in local demand that led to turn a major part of the exports to meet domestic demand. Also, this activity relies on iron waste and scrap recycling from Jordan. The growth of exports exceeded the import growth rates, contributing to a positive trade balance.

Table 26: Major Trade Indicators- Manufacture of Basic Iron and Steel

	2000	2001	2002	2003	2004	2005	2006
Imports	42171459	1.48E+08 (49)	1.21E+08 (-19)	1.48E+08 (22)	2.5E+08 (69)	3.14E+08 (26)	2.69E+08 (-15)
Exports	74850117	23475360 (298)	15382570 (-34)	6945019 (-55)	18433518 (165)	24939499 (35)	24963062 (0.1)
Export/Import	177.48	486.42	600.09	663.7	733.2	601.4	463.5
Trade Balance	32678658	161095878	298005709	383510774	535170008	528809890	561616459

Source: DOS

In light of the growth in the construction sector that Jordan has witnessed in the past several years, this activity possesses great potential. This growth in construction sector has been in part fuelled by foreign direct investment from Gulf countries in this sector over time. In 2005, energy cost for this activity was 5% of its total input cost, of which fuel was 2.7% and electricity was 2.2%.

Table 27: Geographical Distribution of Imports and Exports- Manufacture of Basic Iron and Steel

2006 Countries/ISIC 2710	Import		Export		Jordan's competing countries in export market
	R.S.F.R	13.30%	Bangladesh	42.82%	Singapore, USA, and Cameroon
	Saudi Arabia	28.82%	Pakistan	18.59%	Iran, UAE, Saudi Arabia, UK, Afghanistan, Belgium, Kuwait, Italy and the USA .
	Ukraine	36.38%	Saudi Arabia	29.12%	Republic of Korea, Italy and Singapore
Total		78.49%		90.52%	
	Other	21.51%		9.48%	

Source: ITC International Trade Center

As shown above, Jordan's main export markets *for the most exported product in this activity (*ferrous waste and scrap, iron or steel, nes.) are Bangladesh, Saudi Arabia and Pakistan respectively. In Jordan's main exporting country, Bangladesh, the main competitors are Singapore (41%), USA (36%), and Cameroon (4%) respectively followed by Jordan (3%). In Jordan's exporting market of Pakistan, Jordan's share of the

For the manufacture Basic Iron & Steel, Jordan's main competitor is the ***Republic of Korea*** in Flat rolled prod, i/nas, not in coil, cr >/=600mm wide, nes.

above product is very little.

Jordan's other exporting market *for the most exported product in this activity (*flat rolled prod, i/nas, not in coil, cr >/=600mm wide, nes) is Saudi Arabia. Jordan's share of exports is 17% preceded by the Republic of Korea at 73%. *The export markets are not competitive markets, and the exports concentrated in three major markets, which increases risk for this activity.* Since international oil prices increases the cost burdens on international industries, unlike the local subsidized industries, this led to an increase in the activity's prices competitiveness and exports.

Statistical Analysis

The statistical correlation coefficient between international oil prices and exports of this activity amounted to (-0.3%). This implies:

- An unreasonable result.
- The correlation coefficient may give misleading result; however, relationship realized from regression analysis is more plausible.

The regression model results show a positive significant impact of international oil prices on exports of this activity. Also results show that one US$ increase in oil prices led to increase in exports of this activity by 3.7 US$ annually, assuming other factors fixed.

Domestic Market

As shown in the table below the manufacture of basic iron and steel activity generated relatively low value added as a percentage of production but increasing over time from 33% in 2003 to 35% in 2004 and 36% in 2005. Increasing value added translates into increases in competitiveness. Market share for this activity has been stable around 46% implying that almost half of domestic demand is met through local production. Indirect taxes as a percentage of total production cost is relatively higher than other activities considered. Since indirect taxes are mostly fixed and are not a ratio, it will decrease when output and value added increase significantly.

This industry has convenient potentials of development, since most of manufactures are newly established (not more than 5-15 years), with few experience.

Table 28: Domestic Market Indicators- Manufacture of Basic Iron and Steel

2003	2004	2005	
145037000	230465900	292601300	**Production (JD)**
147652363	250115905	314396093	Imports(JD)
6945019	18433518	24939499	Exports(JD)
285744344	462148287	582057894	Domestic Demand(JD)
48%	**46%**	**46%**	**Market Share**
51679900	**81118900**	**97120200**	**Added Value**
33%	**35%**	**36%**	***% of Production***

20.5	20.2	16.9	% Indirect Taxes / Total Production Cost

Source: DOS

It worth noting that the local demand grew faster than the activity's output, despite that production jumped from JD 145 million in 2003 to JD 292 million in 2005. This is a result of the construction boom that Jordan has witnessed in the past several years. *Hence, the competitiveness of this activity in the international market and domestic market seems quite good as reflected by export growth rates.*

The PPI for this industry for the first seven months of 2007, increased over time indicating an increase in cost as a result of changes in costs of raw materials in the international markets (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 0.20% (**Annex IV, Transportation Cost**).

ISIC 1514: Manufacture of Vegetable &Animal Oils &Fats

International Market

As shown in the table below exports and imports for this activity have deteriorated during the last couple of years. This may be caused by decreases in demand from Iraq, Jordan's main export market for this product. This has generated a surplus in production supplied to the local market which ultimately led to a decrease in imports.

Table 29: Major Trade Indicators- Manufacture of Vegetable &Animal Oils &Fats

	2000	2001	2002	2003	2004	2005	2006
Imports	67406768	66707551 (-1%)	81911634 (23%)	1.07E+08 (30%)	1.8E+08 (68%)	1.35E+08 (-25%)	1.16E+08 (-15%)
Exports	43063795	41388795 (-4%)	66178967 (60%)	38718310 (-41%)	1.08E+08 (179%)	80467791 (-25%)	56408835 (-30%)
Export/Import	64%	62%	81%	36%	60%	60%	49%
Trade Balance	-24342973	-25318756	-15732667	-68281690	-72000000	-54532209	-59591165

Source: DOS

The competitive position of this activity seems low since exports are directed towards one market (Iraq 94% of activity exports). Also, in the event that demand in that market has decreased export to other markets did not take place. Energy cost as a percentage of total input costs in 2005 was (2.1%), of which fuel (1.2%) and electricity (0.9%).

Table 30: Geographical Distribution of Imports and Exports- Manufacture of Vegetable &Animal Oils &Fats

2006	Import		Export	
Countries/ISIC 1514	Malaysia	23.09%	Iraq	94%
	U.S.A.	22.32%		
	China	19%		
	U.A.E	12.37%		
	Saudi Arabia	8%		
Total		90.6%		94%
	Other	9.4%		6%

Source: ITC International Trade Center

In the local market, Jordan competes with Malaysia (23.09) %, USA (22.32%) and China (19%). Regionally, Jordan competes with the UAE 12.37% and Saudi Arabia (8%).

Statistical Analysis

The statistical correlation coefficient between international oil prices and exports reached (45%). This implies:

- Lack of a strong relationship.
- To further investigate the relationship, regression analysis is used since it takes into consideration some statistical problems associated with correlation coefficient.

The results of the regression analysis show an insignificant relationship. The result was indicated by different tests those are: t-test, R-Square, F-test and Durbin Watson test. This implies that there is no relationship between international oil prices and exports since Jordan exports mainly to Iraq and quality is of less importance.

The industry has low potentials since its competitiveness is low, unless it improves its production process and marketing strategy in diversifying exports market. Absence of exports to other markets implies low competitiveness.

Domestic Market

As is shown in the table below this industry has low value added as a percentage of production since most of the raw materials are produced in competitive countries such as Malaysia, China and USA, and the activity is just processing raw material to produce the final products. Despite the fact that the industry increased its market share over the period reaching 38% in 2005 from 32% in 2003, it is clear that in the event that demand from Iraq

decreased, exports shift to local market. Historically, this industry was exporting to the Iraqi market based on trade arrangements between Jordan and the Iraqi government. Hence, the industry had secured export traditions with Iraq without much consideration to quality since Iraqi demand was high during the embargo and afterwards.

Table 31: Major Domestic Indicators- Manufacture of Vegetable &Animal Oils &Fats

2003	2004	2005	
88659700.0	139871600.0	162685100.0	**Production(JD)**
106836922.0	179703314.0	135477477.0	Imports(JD)
38718310.0	108004098.0	80467791.0	Exports(JD)
156778312.0	211570816.0	217694786.0	Domestic Demand(JD)
32%	**15%**	**38%**	**Market Share**
21754000	**32455000**	**38087400**	**Added Value**
25%	**23%**	**23%**	***% of Production***
1.8	**2**	**2.2**	**% Indirect Taxes / Total Production Cost**

Source: DOS

The PPI on monthly basis for the first seven months of 2007 increased continuously which translates into cost pressures on producers. This may be related to the costs of raw materials that increased in the international market overtime, while Jordan does not produce any raw material for this activity (**Annex III, PPI Schedule**). Furthermore, increase in the average transportation cost for this activity over the period 2003 to 2005 was 0.87 %(**Annex IV, Transportation Cost**).

V. CONCLUSIONS

General Conclusions

A. The Jordanian manufacturing sector growth is one of the main forces of economic growth. A total of JD 115 million was the allocated sum to industry as a subsidy since the industry consumes 23% of the total energy consumption

B. However, the manufacturing sector is challenged by efficiency and productivity shortages and low competitiveness. Hence, the removal of the fuel subsidy is exacerbated by the situation of the manufacturing industry in Jordan.

a. The removal of the fuel subsidy will exert direct and indirect cost pressures which will be added to the production process.

The direct impact is in relation to the rise of energy prices.

The indirect impact will be the result of the increase in the costs of transportation and intermediate inputs. Hence this may lead to a decline in the industrial sector's competitiveness.

- In terms of *local and international competitiveness of Jordanian manufacturing activities*:
  - With respect to the *competitiveness in the local market*, most manufacturing activities have several challenges to deal with that exacerbate their competitiveness in the light of the removal of the fuel subsidy; low productivity, non-optimal production capacity, lack of energy efficient processes and the reliance on the domestic market.

    1. Competition in the local market by mainly Egypt, and Turkey will put Jordanian manufacturing industries in the local market at a risk.
  - With respect to the *competitiveness in the international market;*

    1. Those industries exporting to Arab countries will be affected as fuel prices are subsidized in those countries.
    2. For those industries exporting to European markets, the removal of the fuel subsidy will compound the challenge to export to the EU especially, in the light of the rising Euro, the rise in international costs of transportation and intermediate goods and stringent quality standards.
    3. For those industries exporting to the USA, the rise in international costs of transportation and the fierce competition in the US market will create pressure on the competitiveness of Jordanian industries(Manufacture of Wearing Apparel Industries) exporting to the US market. Furthermore, the competitiveness of the Jordanian industries is affected due to the concentration of exports in one product (Manufacture of Wearing Apparel). Hence, it is important to take advantage of the US Free Trade Agreements (FTA) that offers preferential treatment (lower tariff rates), in comparison with other countries that such preferential treatment are not extended to. Therefore, efforts would be directed towards guiding investments towards industries with high value added in this activity.

- The impacts relatively vary from an industrial activity to another based on the use of energy and the indirect impact of the other inputs used in the production process.

- Oil price changes due to the removal of the fuel subsidy will affect the market in both supply and demand:
  C. The supply side through an increase in production costs.
  D. The demand side through influencing wealth and inducing uncertainty about the future.
  E. Thus, output growth will be affected negatively.

F. The removal of the fuel subsidy is exacerbated by macroeconomic policies, such as exchange rate and interest rate policies, that impact the industrial sector.

G. The production in the manufacturing sector is more directed at the domestic market than it is export oriented.

Specific Conclusions

- Energy intensive industrial industries are present in the mining and quarrying industries and in the production and distribution of electricity (energy cost more than 50% of total input cost). Hence, the impact of the removal of the fuel subsidy will be greater for this Group (Group 1).
    - The use of fuel is greater than the use of electricity.
    - Heavy fuel in the fuel mix is high for this Group.
    - Heavy fuel has been liberalized for the industry a few years ago, but it is still subsidized for the generation of electricity.
    - None of the activities in this Group were chosen as mining and quarrying activities and the production of electricity are beyond the scope of this paper.

- Group 2 contains industrial activities where energy costs are between 20-50% of total input costs. It also includes mining and quarrying industries and mainly ceramic production. Ceramic production (Manufacture of Structural Non-Refractory Clay and Ceramic Production) is chosen as a case study to be further analysed.

- The majority of manufacturing activities belong to Group 3:

    - 93% of the manufacturing activities in Group 3 have energy costs less than 10%, of total input costs, 60% of which are less than 5% of total input costs.
    - However, the indirect costs of the removal of the fuel subsidy in the form of rising transportation and intermediary costs will raise this percentage to a considerable amount.
    - Moreover, for most of this Group, the use of electricity is greater than the use of fuel in the total energy mix.
    - Exports of this Group surpassed those of both Groups 1 and 2. Exports of this Group represented, in 2005, 85.54% of total exports in the industrial

sector followed by the share of Group 1, 14.1%, and Group 2, 0.31%, respectively.

- Although it was agreed at the outset to include only three manufacturing activities that reflect low, medium and high energy use, 7 activities were chosen from this Group to have a better representation of the case study as this Group covers most manufacturing activities.

Eight manufacturing activities were selected as case studies. The activities are :
Manufacture of Structural Non-Refractory Clay and Ceramic Production
Manufacture of Bakery Products
Manufacture of Casting Iron and Steel
Manufacture of Wearing Apparel except Fur App.
Manufacture of Soap and Detergents, Cleaning and Polishing Preparations Perfumes &Toilet Preparation.
Manufacture of Pharmaceuticals Medicinal Chemical & Botanical Prod
Manufacture of Basic Iron & Steel
Manufacture of Vegetable & Animals Oils &Fats

It is estimated that the direct costs of the removal of the fuel subsidy are bearable. The direct impact ranged from an increase of 0.7 % to 8.5 % in energy costs to total input costs. The Manufacture of Structural Non-Refractory Clay and Ceramic Production registered the highest impact with 8.5% while the Manufacture of Wearing Apparel except Fur App. and Pharmaceuticals Medicinal Chemical & Botanical Prod accounted for the lowest figure with 0.7%.

However, once adding the impact of the rise in the costs of transportation and intermediate goods, these costs rise.

The increase in the average transportation costs for each activity during the period 2003-2005 showed that the highest increase was for the Manufacture of Structural Non-Refractory Clay and Ceramic Production (4.72%) and the lowest for the Manufacture of Bakery Products (0.11%).

Furthermore, PPI (Producer Price Index) for the years 2006 &2007 has been on the rise (**Annex V, PPI Schedule 2006-2007**) by a percentage increase of around 9%. PPI reflects direct and indirect cost to producers. This reflects the continuous pressure on production costs as a result of several factors most important of which are; start of energy liberalising policy through the removal of the fuel subsidy for certain petroleum products several years ago, exchange rate policy that impacts cost of intermediate and capital goods, and the rise in international oil prices. The percentage increase in PPI for the selected manufacturing activities ranged from 1.19% for the manufacture of Soap and Detergents, Cleaning and Polishing Preparations Perfumes &Toilet Preparation to 23% for manufacture of Basic Iron and Steel. However, the Manufacture of Structural Non-Refractory Clay and Ceramic Production witnessed a decrease in PPI for this period by 12.3%.

Moreover an additional *indirect consequence of the removal of the fuel subsidy is the impact on the competitiveness of Jordanian manufacturing activities*.

The competitiveness of the eight manufacturing industries was assessed by looking at international markets and running statistical models to assess the relationship between international oil prices and exports. Consequently, the below comprises the main findings for each activity:

The *Manufacture of Structural Non-Refractory Clay and Ceramic Production* is the most affected manufacturing activity among the selected activities. This activity also has the highest energy cost of total input costs in 2005(30.5%, of which Fuel is 23%). Yet this activity uses heavy fuel which has already been liberalized. This impact is further exacerbated by fierce local competition from Egypt and competition in exporting markets by Turkey. Moreover, China is competing with Jordanian products of this activity both in the domestic and international markets. The main exports of this activity are concentrated in two markets while the competition in the local market is fierce leading to a decreasing market share for this activity locally. As international oil prices increased, exports of this activity decreased.

The *Manufacture of Bakery Products* will be affected by the lifting of the wheat subsidy as well that coincided with the removal of the fuel subsidy. In 2005, this activity consumed a total of 13.3% energy costs of total input costs (11.3% of which was fuel and 2 % was electricity). The main exports of this activity are to Yemen. Turkey is a main competitor in both the domestic and international markets. Syria and Saudi Arabia have more advantage in the local market due to their subsidised energy prices. Despite the fact that this activity enjoyed subsidized energy and wheat, the competitiveness position in international markets is low and did not improve over time. This industry will incur more cost burdens due to the liberalization of energy and wheat inputs. This will further decrease the already low competitiveness in the international market and open the door for new entrants and fiercer competition in the domestic market. Overall, a further increase in energy prices will be passed on to the consumers since the production for this activity is inefficient.

Concerning the *Manufacture of Casting of Iron and Steel*, energy costs in 2005 as a total of input cost amounted to 15% (of which 11.3 % was fuel and 3.8 % was electricity). This activity registered the highest energy cost in Group 3. The direct impact is less than expected since it depends on heavy fuel which was already liberalized few years ago. This activity exhibited impressive performance in the domestic market.

With respect to the *Manufacture of Wearing Apparel except Fur App.,* most production of this activity is directed towards the export market of the USA. In 2005, energy costs as of total input costs reached 2.3%, of which fuel was 0.9% and electricity was 1.4%. After 2004, export growth rates showed a slowdown due to the competition from main international producers in Asia mainly China, at the end of the Multi Fiber Agreement, and regional competition from Egypt (as the QIZ arrangement, similar to that in Jordan, was agreed upon with Egypt which has much better prerequisites for competition in terms of skilled labor and cheaper intermediate goods). The competitive position of this activity is deteriorating in the US market because of imports from China. In addition, this activity adds low value since raw materials are imported and production processes entail simple procedures. This renders this activity particularly sensitive to any changes in costs that would ultimately add to its recent loss of competitiveness in the international market. Moreover, as international oil price increase, exports will be negatively affected through the increase in transportation costs because of the distance to export markets.

For the *Manufacture of Soap, Detergents, Cleaning and Polishing Preparations, Perfumes and Toilet Preparation,* energy costs as a percentage of total input costs in 2005 were (2.6%), of which fuel was 1.5% and electricity was 1.1%. Exports are concentrated in one market, namely, Iraq and growth rates of exports fluctuate based on the demand from

Iraq. Moreover, the activity shows no potential for exporting to new markets. This activity faces fierce competition in the domestic market from Egypt and Saudi Arabia. Jordan enjoys a comparative advantage in producing the Dead Sea cosmetics, which are highly demanded around the world. However, it seems that Jordan did not exploit the comparative advantage of this activity which would enhance the value added.

The *Manufacture of Pharmaceuticals Medicinal Chemical and Botanical products* is one of the most developed and diversified industries with a large share in the total exports of Jordan. The energy cost as a percentage of total input costs reached 2.4% in 2005 of which 0.8% is for fuel and 1.6% is for electricity. Since this industry is efficient, any small increases in cost may hinder further developments. Saudi Arabian and Egyptian industries are increasingly becoming stronger competitors in the regional markets. In the local market, Jordan competes with the European countries and Japan.

Concerning the *Manufacture of Basic Iron and Steel,* in the light of the growth in the construction sector that Jordan has witnessed in the past several years, this activity possesses great potential. In 2005, energy costs for this activity were 5% of its total input costs, of which fuel was 2.7% and electricity was 2.2%. Exports are concentrated in three major markets: Bangladesh, Pakistan and Saudi Arabia. Almost half of the domestic demand is met through local production. As a result of the construction boom, local demand grew faster than the activity's output, despite jumps in production. Hence, the competitiveness of this activity in the international and domestic markets is well developed.

With respect to the *Manufacture of Vegetable and Animal Oils and Fats*, the competitive position of this activity is low since exports are directed solely towards one market (Iraq). Moreover the case that the demand in this market decreases, exports to other markets did not occur. Energy costs as a percentage of total input costs in 2005 were 2.1%, of which fuel was 1.2% and electricity was 0.9%.The industry has a low potential unless it improves its production process and marketing strategy in an attempt to diversify export markets. Absence of exports to other markets implies low competitiveness also, there appears to be no relationship between exports and oil prices. This is clear since the main export market has been Iraq.

Turkey and Egypt are the main competitors in Jordan's export markets.
Around 40% of Jordan's external trade is conduced with Arab Countries. Saudi Arabia is a competitor in the domestic market.

VI. RECOMMENDATIONS

Continue exempting intermediate inputs and capital goods, which allow for the efficient use of energy, from customs and fees which would ultimately lead to a decrease in direct and indirect taxes on manufacturing activities.

Create a fund in partnership with the private sector that offers assistance for those manufacturing industries that are willing to adopt energy efficiency in their production processes through offering financial assistance to purchases the necessary equipment and to conduct studies on the efficient use of energy in industry and on the use of their full capacity in production.

Implement recommendations in the National Energy Strategy22 especially those related to the encouragement of energy efficiency and create an appropriate legislative environment that would support the use of renewable and alternative sources of energy.

Work with the manufacturing industries to increase productivity and to lower average production costs through:

a. Increasing production, encouraging the optimal use of production capacity, increasing productivity and lowering cost of other inputs of production,
b. Adopting rational management processes, and active marketing plans in order to diversify export markets,
c. Using energy more efficiently by taking advantage of already existing programs that assist in this regard such as JE and JUMP.23
d. Improving industrial products to increases its value added through design and research and development (R&D).

22 Ministry of Energy and Mineral Resources.

23 An energy efficient strategy at the national level could decrease the cost by an estimated ratio reach of 20%, based on recent studies. The studies done by independent international and local consulting companies on 20 industry and firms from different economic sectors showed that, a firm in the industrial sector is able to reduce energy cost by 20% if they followed specific procedures and installed new equipment. The costs of the new equipment can be returned within two years at most.

Sustainable Achievement of Business Expansion and Quality (SABEQ)
BearingPoint, Inc.

Salem Center, Sequleyah Street, Al-Rabiyeh
Amman, 11194 Jordan
Phone: + 962-6 550-3050
Web address: http://www.SABEQ-Jordan.org