CHAPTER - 6

DETERMINANTS

OF

PROFITABILITY

After the international depression, the economy of Jordan passed through a stage of adjustment and evaluation which influenced Jordan in the beginning of the eightees. The economy of Jordan was influenced by the low exchange rate of dollar, the decrease in the oil return, the Iraq-Iran war, the Civil War in Lebanon, the Palestinian crisis with all its complication and negative effects, etc. All these had a negative effect of the financial aid given to Jordan and the remittances of expatriates.

A free economy like Jordan where the cooperation of private and public sectors is evident in the process of development, in the encouragement given to individual and private sectors, in providing suitable climate for encouragement of investment to the Jordanians, Arabs and non-Arabs evident in the encouragement of the investment law of 1980 and its amendments etc. Through planning, this helped to achieve to some extent, the industrial sector in the country.

The policy of the governement of Jordan continues to be based on the concept of a free enterprise system which values private initiative within the framework of the public interest. The cooperation between the public and private sectors in establishing the socio-economic Projects and by providing an appropriate investment climate and incentives, it encouraged the private sector to contribute to the economic development of the country. The public sector participation in economic projects particularly the larger ones, aims to support and ensure their proper financing. The public sector extends the opportunity to the private sector to contribute a large share of the capital and

management of these projects for the purpose of the development of the industrialisation in the country. The public sector in Jordan acts as a catalyst for the mobilisation of savings towards the sound investment in the economy. The government encourages researchs and developments in the private and public sectors and utilizes science and technology with the view to reduce the cost of production on the one hand, and on the other hand to improve the quality of production. Incentives are given to the private sector (through the tax policy) to adopt new production patterns which lead to saving in production inputs and power consumption.

The size of investment during the First Five Year Plan (1976-1980) amounted to JD 1222 million at current prices. The capital expenditure of the plan in the private sector including share in projects financed jointly by the public and private sector amounted to 59% of the total investment and 41% for the public sector. The volume of the fixed investment during the Second Five Year Plan (1981-1985) amounted JD to 598.4 million. The investment in public sector amounted to JD 58.4 million whereas private and mixed sector investments totalled JD to 540 million at current prices. We can conclude that the amount of investment in public sector decreased in percentage in the Second Five Year Plan as compared to the First Five Year Plan, on the other hand the percentage of investment in private and mixed sector has increased in the Second Five Year Plan as against the First Five Year Plan.

The contribution of the private sector in Jordan has played a significant role in the economic and social development of the

country. H.K Paranjape says "It was laid down that private sector undertakings have necessarily to fit the framework of the social and economic policy of the state and therefore were to be subject to controls and regulations as required. In other words, the idea was to encourage and assist the private sector but at the same time to control its working in the public interest"[1].

A. GENERAL FACTORS

Different factors have affected the profitability of industrail companies in Jordan which led to reduction or increase in the profitability of the said industrial companies. These factors work as determinants for the profitability of the industrail companies undertaken for this study. In this section of our study we analyse the different factors which have negatively affected the profitability of the studied companies.

1. Pricing Policy :

The profitability of any company is directly linked with the price policy. If the prices of the product increase the profitability will be higher and if the prices decrease, the profitability will decrease with the assumption that other factors remain constant. If we want to maintain a fixed percentage of profit return, we should increase or decrease the prices of the product in the same percentage of increase or decrease in the cost of the products. Pricing of a product is a

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1. Paranjape H.K., Industrial Growth with Justice, India's Strategy, in "Some Problems of India's Economic Policy 1977, P.333

very difficult job because a particular price at which the product is sold reflects the volume of production and sales of the company. The pricing policy of any company is determined by the prices of products of other Jordanian and foreign comapnies in Jordan. For example, if the Jordan Pipes Manufacturing Co. sells its products at a price higher than the imported products, the result will be that the demand for Jordan Pipes Manufacturing Co. will decrease and the demand for other products will increase. The prices of the product affets profit margin due to its effect on both the total revenues and total costs. The total revenues or total sales are equal to the price per unit multiplied by the quantity sold and the number of units sold. The amount of profit determined by the price policy and the total costs depend on the volume of output. Thus, pricing policy plays as important role in the profitability of the company. The management of the company should find out the best combination between the price, sale and cost which can prove to be the most advantageous. If the price is et too high, the seller may not find enough consumers to buy his product which results into great losses If the prices is set too low, the seller may not be able to cover his costs. Moreover, the price which is acceptable today may not be suitable tomorrow. The fixation of the prices need to be reviewed from time to time. The law of the demand and supply also determines the price and then the profitability of the products. The greater the demand and/or smaller the supply, the greater will be the price and profitability will also be more, when other factors remain constant. The government exercises its

influence on the price through taxes, subsidies and direct price control. Direct price control by the government takes the form of fixation of high or low price for the product which results in the increase or decrease in the profitability. For example, the Arab Pharmaceutical Manufacturing Co. Ltd., the Ministry of Health in Jordan controls the pricing fixation of the company's products. In spite of the continuous increase in the cost of raw materials, packing expenses, wages and salaries etc., the Ministry of Health did not alow the increase in the prices of the products of the company. The prices of the Pharmaceutical Products remained fixed in 1966 as decided by the Ministry of Health. The Jordan Petroleum Refinery Co. Ltd. shows a continous incarease in the cost of crude petroleum without a corresponding increase in the selling price.

Table 6.1

The continuous increase in the cost of crude petroleum.

Date	Increase in the cost of crudes in $
30.5.1979	13.20
31.5.1979	15.00
30.6.1979	18.65
1.11.1979	24.45
1.1.1980	26.45
1.4.1980	28.24
1.8.1980	30.44
1.11.1980	32.44

Sources : The annual reports of the Jordan Petroleum Refinery Co. Ltd.

Inspite of the increaes in the cost of production, the government did not allow the increae in the selling price of Petrol. The argument given by the government is that the increasing cost of crude is not as important as the other objective like the welfare of people and society. The government did not increase the selling price at the same proportion as the increase in the cost of production, which finally resulted in the reduction in the profitability of the company.

The price and the profitability are affected by the demand and supply in the international market.

table 6.2

The price of Potash per ton in the internatinal Market :

Years	Price per ton
1981	110-115 Dollar
1982	95-82 Dollar
1983	71 Dollar

Sources : Annual reports of the Arab Potash Co. Limited.

The decrease in the prices of Potash in the international market resulted in the heavy losses for the Arab Potash Co. Ltd. The prices of Potash have been affected in the international market in 1983 to 1985 due to :

a) increase in the supply over demand in the U.S.A. 'Market' because of the reduction in the prices of agricultural products in the market. The farmers did not have sufficient return to buy fertilizers which resulted

in the decrease in the demand for potash.

b) the decrease in the demand for Potash in China is considered because it is the biggest consumer of potash.

c) an increase in the prduction capacity of potash in the Canadian market accompanied by the reduction in the prices for Potash in Canada as reflected in the internation market.

2. Availability of Raw Material :

The production of any idnustrial product depends mainly on the availability of good quality of raw material. The inferior quality of raw material leads to bad quality of the finished goods and finally the company will not be able to complete with other products of superior quality. The inability of the company to sale adequate units of goods will lead ultimately to reduction in the profitability of the company The continuous dependence of some industrial companies some imported intermediate and raw materials, some of which are subject to higher customs duty than those levied on finished imported goods will result in the inability of these companies to stand in competition against the imported goods and will thus lead to low profitability. The Industrial, Commercial and Agricultural Co. Ltd. faced difficulty of getting the raw materaial when the company is largely dependent on the imported raw materials from lebanon. After the civil war in Lebanon, the company could not import the required raw materials from Lebanon and was forced to search for new market in other countries at higher cost and the lower quality which resulted in the increase of the cost of sales and reduction

in the profitability of the company. The cost of raw materials bought by the Jordan Pipes Manufacturing Co. Ltd. showed an increaeing trend in the cost over a period of study and the taxes imposed on the imported raw materials increased at the very high rate resulting in the increase in the cost of raw materials bought by the company and thus affecting the sales due to availability of other imported pipes at a better quality and at lower price the result was low profitability generated by the company. The greater the availability of adequate quality of raw materials, the higher will be the generation of profitability by the company and vice-versa.

3. Foreign Competition :

A developing country like Jordan which is considered to be in its initial stage of industrialisation will not be able to stand in competition against the imported foreign goods which are of better quality and have had vast experience in production. The imported goods are considered to be of better quality than the local goods due to their experience and long history of production in the foreign countries. The other reason is that, due to large volume of production in foreign countries, the cost of the production is usually low and less than the cost of production in the developing countries like Jordan. The imported goods from foreign countries are better in quality and lower in price. Since the consumers search for goods which are cheap and of good quality, the imported products are in great demand and are consumed more and faster than the local products. When the sale of local product is reduced, the profitability of such a

company will be minimised. The presence of competition from the foreign countires in developing countries like Jordan, will certainly reduce the profitability of the local companies which may finally lead to the closing down of the local industrial companies. The Jordan Phosphate Mines Co. Lld. faced very sevre competition from the imported American fertilizers which were available easily in the Jordanian market at cheaper rate and of better quality than the company's product. The imported goods became more bought after than the products manufactured by the newly established company. The availability of imported fertilizer in Jordanian market led to difficulties in increasing the sales volume and reduction in the profitability for some years. The Industrial Commercial and Agricultural Company Limited faced severe competition from similar imported products when the government of Jordan reduced the custom duty on the imported products from 70% to 25% The sales volume of the company's products reduced in 1978 as compared to 1977, reduced again in 1983 as against 1982 and reduced in 1985 as compared to 1984. The profitability of the Industrial Commercial and Agricultural Co. Ltd. reduced due to the reduction in the volume of slaes. The Jordan Pipes Manufacturing Company faced difficulties in competing with the Pipes which are imported from India, Korea and other countries. The company started its production in 1978 and had no experience in production before this, so the quality of the company's pipes were not competable with imported pipes. The sale price of the company's products was higher than that of the imported pipes, The production of Jordan Pipes Manufacturing Company was in a small quantity, the cost of production is to be

distributed among the small number of units resulting in high cost for one unit which ultimately led to fixing the price at a very high rate to cover the cost. The higher price of the local pipes made the imported pipes more acceptable in the market, the sales volumes could not increase at a higher rate which resulted in losses for some years and low profitability in the rest. Because of the non-availability of import protection policy on similar imported products for the Jordan Spinning and Weaving Company Limited, the company bought raw materials at higher rate than that of the imported finished goods available in the market. The imported goods were sold at a very low price which led to the decrease in sales and profitability.

4. Government Policy :

In different countries, different policies are adopted for the purposes of the development of the country. The government may adopt some measures to control and regulate the private sector and on the other hand to encourage the public sector. The government may adopt a policy of encouragement towards certain industries by the increasing credit facilities, providing advance technical assistance, subsidies, import protection, protection against foreign competition etc. This policy is called positive control policy. On the other hand, the government may adopt a policy to limit the production capacity, to prevent the growth of the industry, to prevent investment and regulate the price etc. This policy is called negative control policy.

If the government adopts a positive control policy toward an industry, the profitability of such industry will be improved and

if the government adopted a negative control policy toward another industry, the profitability will be negatively affected.

The commercial banks expanded credit facilities to the industrial sector from JD 73 million in the First Five Year Plan to JD 189.20 million in the Second Five Year Plan. The credit facilities extended by the commercial bank to industrial sector ranged from 12.9% in the First Five Year Plan to 14.9% in the Second Five Year Plan. The balance of loans by the Industrial Development Bank increased from JD 18.1 million in 1980 to JD 41.6 million in 1985. The Ministry of Industry and Trade has continued to update the regulations governing industrial licensing procedures. The Regulation No.3 of 1966 was amended in 1984 to simplify the industrial licensing procedures and do away with the harmful practice of dual licensing. The Jordan Institute of Administration and the Institute of Public Administration continued to run training programs in the industrial management, cost auditing and professional upgrading of industrial staff. By September 1985, the Jordan Institute aof Administration had organised 138 training programs for 2269 trainees, while the Institute of Public Administration had organised 192 training programs attended by 4825 trainees. Moreover, the vocational Training Corporation extended its service which are offered through 18 training centers and during the period of Second Five Year Plan 16912 individuals were trained in these centers. The Ministry of Energy and Mineral Resources is giving special attention to energy conservation programs in industry aimed at reducing production cost. A study has been made to introduce

computer services into the chamber's activities to increase the efficiency in the industrial companies. These activities by the government are positive control policy and will lead to increase in the profitability of the industrial companies. On the other hand, the negative control policy which was adopted by the government such as custom tariffs, was not providing protection to a number of demostic industries. However, some industries continued to face stiff competition from imported foreign products The negative control policy led to a decrease in sales and reduction in the profitability.

5. Technical Manpower :

Manpower palys a very important role in determining the productivity of a company. The profitability of a company affected by the quality of workers. The productivity of skilled and semi-skilled labourers is more than the productivity of untrained workers. The higher the productivity of the company the greater is its profitability.

One of the important features of the Jordanian Labour Force is their very low participation rate. The participation rate has remained almost constant at 20%. The reasons for this low rate are the large proportion of people under fifteen years of age, low rate of female participation and early retirement by a large number of workers. The most important factor for low particiapation is the continued outflow of manpower especially, the younger generation to Arab countries. In the First Five Year Plan, not only has unemployement been eliminated, but shortages in manpower has also arisen with regards to certain skills which

forced the importation of manpower from other countries. The outflow of Jordanian workers to other countries has continued at an average rate of 8-10 thousand workers a year, while increased domestic demand for labour has led to the importation of manpower from other Arab and non-Arab countries. In 1980 the number of foreign workers was estimated at 70,000 or about 15% of the total labour force in Jordan. The migration of skilled, semi-skilled and trained labourers from the Jordan Petroleum Refinery Company Limited to the neighbouring Arab countries and other joint refienry companies in Saudia Arabia, Kuwait and otehr Gulf Countries is because they get very high salaries and wages plus other facilities which they do not get from the Jordan Refinery. The Jordan Petroleum Refinery is forced to give its employees very high salaries plus other facilities to stop their migration and send others to foreign countries for training to replace the migrated labourers which proved financially bad for the company and resulting in an increase in the cost of production and this has led to the reduction in the profitability of the company. We may summarise the problems of manpower and labour which affect the profitability of the industrial companies as follows :

a) the shortage in qualitative and quantitative of the Jordanian skilled and semi-skilled workers in most of the basic industries.

b) the importation of non-Jordanian workers due to the shortages caused by the migration of the Jordanian trained manpower taking up work abroad.

c) lack of wages and allowance incentives for specialists in remote areas

d) the productivity per labour is very low and its slow rate of increase.

e) the workers who drop-out from higher education school and join the labour forces without prior training.

f) low participation rate by females in the labour market and the prevelance of traditions and other obstacles hindering such participation.

g) low growth in some economic activities which adversely affect the manpower and shifted from full employment situation in the First Five Year Plan to the existence of unemployment in the labour market in the Second Five Year Plan.

The insufficiency of technical manpower and weaknesses of the domestic capabilities and expertise in the areas of marketiang and scientifically based management of some industrial companies led to low generation of profitability by some industrial companies in some of the period under study.

6. Techniques of Production

The existing techniques of production determine the quality and the productivity produced by the company. The productivity and the profitability generated by the new techniques of production will be more than that produced by the old techniques of production.

The technological infrastructure was significantly developed in Jordan and the public sector accorded special importance to

services and activities related to technology. The activities of the Royal Scientific Society were expanded and led to the establishment of Industrial Chemistry Department, building Research Center, Electronic Services and Training Center, Computer Training Collelge and a Solar Energy Section. All these development in scientific and technological field were to serve and develop the industrial companies in Jordan. A lot of importance was also given to the private sector as there was an increase in the number of consultancy and engineering firms and upgrading of the capabilities of the industrial companies. There was also an increasing interest in developing the laboratory facilities and specialized vacational training programs. A National Planning Council Survey showed that the number of persons engaged in science and technology activities increased from about 1400 in 1976 to 2800 in 1980, about 44% of whom were employed by the public sector, 12% by the private sector and the rest by the universities.

In spite of the above mentioned developments in the field of science and technology. the following are some in Jordan in this field :

a) insufficiency of scientific and technological infrastructure with regards to the availability of equipment or qualified manpower required for training and development.

b) lack of national capability with regards to the performance of studies, chiooe, transfer and adoption of appropriate technology in Jordan.

c) lack of cooperation among the institutions of science and technology.

d) lack of coordination between the Jordanian national centers and the Arab World and other developed countries in the world.

Science and technology play an important role and is a major factor in accelerating the industrial development and growth through an increase in the productive capacity. Science and technology countribute to knowledge which enhances man's understanding of himself, his industry and environment. Technology utilizes knowledge for the purposes of technical progress and industria growth and development. Technology and science are considered to be agents besides capital, land and labour for the development of the society. Historically, science and technology have played a key role in the development of nations with their effect and impact on productive capacity and on the production efficiency. The greater the use of science and technology in the company, the higher will be the productivity and the profitability of that company.

7. Availability of Energy

Jordan is still wholly dependent on imported crude oil for electric power and fuel. Consumption of electricity and fuel showed an increasing trend from 1975 to 1985. The transportation sector is the major user for fuel which accounts for the 50% of the total fuel consumption in the country. The importation of petroleum is considered to be an increasing burden on the national economy of the country because of the rising oil prices

and increasing consumtion. The cost of oil imports is estimated at about 12% of GNP in 1980. The industrial companies in Jordan are adversely affected by the electric power tariff rates in Jordan which are at a very high as compared to the neighbouriang countries and this has affected the competitiveness of the industrial goods. Jordan relies entirely on imported oil, whose value constitute one fifth of all imports and represents 80% of the total value of commodity exports.

Several studies and surveys have been conducted for the possible explitation of oil shale and geothermal energy. Various studies have proven the existence of large quantities of oil shale but the studies have concluded that the explitation of oil shale at present is not economically viable. The unavailability of energy and the cost of importation of oil from the neighouring oil rich states has reduced the competitiveness of Jordanian industrial goods and affected the profitability of industrial companies under study.

The profitability of the Jordan Petroleum Refinery Co. Ltd. shows a decreasing trend from 1983 to 1985 due to an increasing trend in the cost of crude oil imported from abroad. The cost of goods sold was 78.69 per cent in 1981, 82.38 per cent in 1982, 95.94 per cent in 1983, 95.66 per cent in 1984 and 95.30 per cent in 1985. This jump in the cost of goods sold led to decrease in the net profit of the Jordan Petroleum Refinery and shows 14.00 per cent in 1982 decreased to 1.20 per cent in 1983, 1.24 per cent in 1984 and 1.42 per cent in 1985.

8. Capacity Utilization

The capacity utlized by a company affects the cost of production and the profitability of the company. The company may work at 100% capacity, 80% capacity, 50% capacity etc when the company is running at the maximum capacity, the fixed costs which are not chargable either by producing one unit or maximum number of units will be distributed by the total number of units produced. If the fixed cost is divided by small number of units, the cost of production will be more and the profitability will be less on the other hand, if the company produced the maximum number of units, the fixed cost will be divided by a large number of units which result into reduction in the cost of production and lead to an increae in the profitability of the company.

When the company workes at the maximum capciaty accompanied with the reduction in the cost of production increase in the sales of the company, on the assumption of the availability of the local and foreign markets for the acceptance of the units produced the profitability of the company will be more due to the reduction in cost and increase in sales.

The domestic market in Jordan is characterised by its narrowness and inability to absorb the Jordanian industrial products. Moreover, the market flooding with competitive import leads to production surpluses and results in the inability of the Jordanian industrial companies to work at its full capacity.

Insufficiency of integration and cooperation at the Arab level resulted in limiting the potential for industrail export. Moreover, inadequate measures and procedures governing export

promotion, insurance, marketing supervision and promotion in external market forced to limit the domestic market and its inability to export to external market.

9. Availability of Substitutes

The profitability of any company can be affected by the availability of substitute products existiang in the market. Acting on the law of demand, the Industrial Commercial and Agricultural Co. Ltd. may lower the prices of its products to boost the sales but the discovery of cheap substitutes may affect the company's efforts and there may not be a demand for more products from the company even if the price falls Availability of substitution shows to what extent one commodity can be substituted for another, without making any change in the total satisfaction derived by the consumer, i.e. one commodity can be substituted for another. When the consumers get substitute products at a cheaper price than the original one, the demand for the original products will be reduced and the profitability of the company manufacturing those products will be minimised. On the other hand, if the company has control over the supply of the products in the market, the profitability of such a company will be high.

10. Conditions Prevailing in the Economy

Jordan adopted an economic system based on free enterprise and private initiatiave. The government has played a pioneering role by associating itself with the private sector in implementating large scale industrail projects and providing incentives for private investement.

The economy of Jordan has been hampered by various difficulties and challenges. Apart from these, Jordan's limited resources and the adverse effects of the War in 1948, thereafter the emigration of the Palestinians in 1948 generated difficulties of emergency relief and provision of employment.

Because of its typical geographical location, Jordan has faced attrition in economic resources on account of the mounting defence burden which has forced the country to be dependent on external financing to meet investment and consumption expenditure.

The occupation of the West Bank in 1967 had far-reaching effects and resulted in depriving Jordan from important part of its natural and economic resources, thus adversely affecting its development and diverting resources to military expenditure. This led to the migration of the population from West Bank and the Gaza strip to Jordan which had created difficulties of utilisation of land. thus leading to demographic imbalances resulting in unemployment. The War of June 1967 led to increase in the expenditure of the government on defence, security, relief. emergency, education, health and expenditures on development projects.

The period of the First Five Year Plan witnessed a wide economic and social development with the real annual growth rate of GDP of a market price amounting to 13 9% during the period of 1975-1980. This development was as a result of the rise in the remittances by the jordanians working abroad, increase in the Arab official aid and an increase in the domestic exports. The

result of the First Five Year Plan witnessed a rise in the foreign currency reserves which resulted in the ability of the government to meet investment and consumption needs.

The Second Five Year Plan assumed the continuation of the prevailing conditions such as inflow of Arab aid and capital aid and the existiang position of development. But in reality the expected atmosphere of optimism did not exist. The negative trend in the economic situation of the Gulf States was a result of the Iraq-Iran was and led to a decline in the domestic and external demand. Moreover, the Civil War in Lebanon adversely affected the economic development of the country. The Jordan's economy in the Second Five Year Plan was characterised by :

a) a decrease in the amount of transfer to the Central Government from JD 415 million in 1981 to JD 364 million in 1982, JD 289 million in 1983, JD 251 million in 1984 and to JD 290 million in 1985.

b) a reduction in the real annual growth rate of commodity exports to 7.4% as compared to 28%, envisaged by the plan.

c) a continuous fall in the growth rate of remittance from abroad by Jordanian during the first four year of the plan and further fall in 1985 by 15% below 1984.

All these factors resulted in the reduction of the overall profitability of the selected industrail companies in Jordan in the Second Five Year Plan as compared to the First Five Year Plan.

11. Other Factors

Apart from the factors mentioned above, there are certain other factors which also affect the profitability of the industrail companies. The most important factors are :

a) lack of interconnections between the industrail sector and other sectors such as agriculture sector which led to low growth of those companies in need of agriculture products.

b) lack of interconnections between the industrial companies themselves.

c) an increase in the cost of domestic input such as energy, labour, shipping resutlting in high cost of production.

d) inadequacy of existing legistlation such as company law, encouragement of ivnestment law, labour law and absence of an industry law.

e) inadequacy of tax incentives policy such as tax exemptions on profits from exported products, accelerated depreciation on machinery, tax deductions to companies research and tax exemption on profits which are to reinvested in the company.

f) lack of encouragement for the export of the industrial products such as distribution, promotion, packaging and marketing studies.

g) limiting the volume of the participation of Arab and foreign capital in the investment in the industrial companies in Jordan.

B. REGRESSION ANALYSIS

In the first section of this chapter, we discussed the effects of general factors upon the profitability of the selected large scale industries in Jordan. This section of the study provides explaination for the trends of the profitability of the industrial companies in Jordan with the help of regression analysis. It proposes to investigate about the different factors responsible for the variations in the profitability of the selected Jordanian industrial companies from 1975-1985. The analysis of these factors can provide guidelines to the government and policy makers to overcome these barriers and improve the profitability of these companies.

Hypotheses

This section attempts to examine the various hypotheses between the different variables and profitability and their application to the eight selected industrail companies in Jordan over a period undertaken for study. The following are some of the variables :

1. **Turnover Assets Ratio (X1) :**

Assets turnover ratio is used to measure the sales per unit of total assets and the efficiency of the management in the use of assets of the company. It is assumed that greater the turnover asset ratio, the more the profitability will arise and viceversa.

2. **Net Fixed assets as Proportion of Total Net Assets (X2) :**

The profitability of a company is affected by the Net Fixed Assets to Total Assets Ratio. If the proporation of the Fixed

Table : 6.3

Net Fixed Assests as Proportion of Total Net Assets of the studied companies from 1975 to 1985

Sr.No.	Name of the Company	Years										
		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	0.26	0.28	0.25	0.27	0.27	0.27	0.29	0.16	0.25	0.58	0.49
2.	Jordan Petroleum Refinery Co.Ltd.	0.61	0.68	0.64	0.60	0.45	0.39	0.60	0.62	0.52	0.86	0.36
3.	Jordan Phosphate Mines Co.Ltd.	0.24	0.24	0.22	0.24	0.36	0.39	0.46	0.41	0.34	0.28	0.25
4.	Industrial Commercial and Agricultural Co.Ltd	0.42	0.28	0.31	0.39	0.31	0.30	0.40	0.49	0.52	0.52	0.55
5.	Jordan Pipes Manufacturing Co.Ltd	0.96	0.75	0.63	0.61	0.59	0.54	0.48	0.38	0.35	0.38	0.31
6.	Arab Potas Co.Ltd.	0.15	0.28	0.34	0.54	0.12	0.17	0.43	0.95	0.58	0.89	0.86
7.	Jordan Spinning and Weaving CO.Ltd.	0.91	0.94	0.78	0.82	0.76	0.74	0.73	0.42	0.42	0.36	0.34
8.	Jordan Cement Factories Co.Ltd.	0.41	0.86	0.64	0.71	0.51	0.81	0.68	0.86	0.87	0.86	0.88

Sources : Computed from table 3.23 and table 3.19

Assets are high as compared to the Total Net Assets, the profitability of the company will be affected in the long run. The company may face difficulty of changing technology policy specially when the proportion of Fixed Assets are high because it requires replacement of a high proportion of the Total Net Assets. The higher the proportion of Fixed Assets in Total Assets of the industry, more difficult would it be for the industry to adopt to changing technology and adversely would the profitability of the industry be affected. For the purpose of our study, we assume a negative association between the Net Fixed Assets to Total Net Assets ratio and the profitability of the company. Net Fixed Assets comprises of Fixed Assets and Current Assets. The Net Fixed Assets to Total Net Assets ratio is represented in table 6.3 .

3. Index of Sales (X3) :

The number of units sold by a company directly affects profitability. Keeping other factors constant, the profitability will increase as a result of an increase in the number of units sold. The larger the sales volume, the larger would be the profitability. The management of the company is interested in maximising the amount of profit of the company. In short, the larger the capacity of production, the higher would be the sales revenue, the smaller would be the cost of production and the larger would be the profitability of the company and vice-versa. We assume the existence of positive relation between sales and profitability. The growth of sales for the studied companies from 1975 to 1985 is represented in table 6.4.

Table : 6.4

Annual Growth Rate of Sales for the studied Companies from 1975 to 1985

Sr.No.	Name of the Company	Years 1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	63.20	2.14	48.30	4.55	9.48	23.65	31.17	13.24	-(8.76)	31.70	26.40
2.	Jordan Petroleum Refinery Co.Ltd.	18.79	38.88	14.39	27.13	14.91	10.83	7.84	70.51	375.10	15.07	-(0.87)
3.	Jordan Phosphate Mines Co.Ltd.	3.66	-(2.30)	-(8.49)	12.08	33.77	70.80	21.70	-(3.58)	0.27	38.39	-(5.41)
4.	Industrial Commercial and Agricultural Co.Ltd	-	44.29	12.98	-(4.32)	4.87	30.83	38.51	11.76	-(18.82)	17.29	-(20.50)
5.	Jordan Pipes Manufacturing Co.Ltd	-	-	-	-	121.04	13.85	21.23	-(7.53)	-(17.06)	23.93	1.46
6.	Arab Potas Co.Ltd.	-	-	-	-	-	-	-	-	1686.51	163.95	96.22
7.	Jordan Spinning and Weaving CO.Ltd.	-	-	-	-	30.06	0.65	-(19.21)	46.37	79.51	56.02	-(19.27)
8.	Jordan Cement Factories Co.Ltd.	-	-(18.35)	22.83	3.62	257.38	16.97	34.40	38.73	-(7.83)	9.61	8.77

Sources : Computed from table 3.2

4. Rate of Growth of Assets (X4) :

The rate of growth of assets is an important indication for the profitability of any company. The growth of a company or the investment decisions are guided by the opportunities to make profits. We assume here that profitability is a function of growth of assets. E.T. Penrose argues "If profits are a condition of successful growth, but profit are sought primarily for the sake of the firm. that is to reinvest in the firm rather than to reimburse onwers for the use of their capital or their risk bearing, then, from the point of view of investment policy, growth and profits equivalent as the criteria for the selection of investment programs. Firm will never invest in expansion for the sake of growth if the return on investment is negative. Hence, it does not matter whether we speak of growth or profit as the goal of the firm's investment activities" [2].

Rate of growth of assets is defined as the rate of growth of physical assets and is represented in table 5.2.

5. Rate of Inflation (X5) :

Inflation is defined as a significant price increase for a number of years. The effect of inflation is evident in the rise of the price of the commodities. The producers will be benefited at the time of inflation because they get higher prices for their finished products. The revenue from the sale of finished products will rise sharply during the inflationary period. The

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2. Penrose E.T., The Theory of the Growth of the firm, oxford, Basil Black Well, 1959, P.30

prices of output will increase higher than the increase in the cost of input such as wages and salaries, raw materials, etc. Therefore, the profitablity of the industrial companies assumed to increase fast during the period of inflation. We assuem the existence of positive association between inflation in the economy and profitability of the industrial companies in Jordan over the studied period

Table 6.5

The rate of Inflation in Jordanian Economy

Years	Rate of Inflation
1975	12.10
1976	11.50
1977	14.50
1978	7.00
1979	14.10
1980	11.10
1981	7.70
1982	7.40
1983	5.00
1984	3.90
1985	3.00

Sources : ALTANMIYA, No. 195, August, 1989 P.73.

6. Debt - Equity Ratio (X6) :

The debt equity ratio measures the proportion of long term loans to equity capital. Debt is considered to be fixed obligations, the larger the debt equity ratio, the greater is the

Table : 6.6
The Debts of the studied COmpanies from 1975 to 1985

Sr.No.	Name of the Company	Years										
		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	358336	1640240	808870	1311784	1758177	1758173	3756537	5743857	5595118	6858012	11048116
2.	Jordan Petroleum Refinery Co.Ltd.	13744794	6060327	15148739	31461254	40371549	55490009	59578334	65957818	80937782	91058539	1.0E+08
3.	Jordan Phosphate Mines Co.Ltd.	14565233	21690128	27282058	34064032	42259561	51463072	48589490	44133174	46422827	50222635	51594539
4.	Industrial Commercial and Agricultural Co.Ltd	623967	1371788	1953006	1348237	920614	920514	1838414	5246983	5496139	5370562	4237005
5.	Jordan Pipes Manufacturing Co.Ltd	574514	1096645	2007123	1651076	1539383	1468046	883702	1533258	1443810	675944	1017627
6.	Arab Potas Co.Ltd.	14932	1386306	1665837	691461	19742078	43185106	69498683	80986197	97336441	1.1E+08	1.1E+08
7.	Jordan Spinning and Weaving CO.Ltd.	736537	1178059	1538774	1553670	1879379	2395787	2661912	1448787	1193026	1234759	932322
8.	Jordan Cement Factories Co.Ltd.	2525124	2549584	11241332	19891206	27157802	27157802	32932881	44716845	56819474	65497739	1.3E+08

Suurces : Annual reports of the companies under study from 1975 to 1985

Table : 6.7

Debt-Equity Ratio

Sr.No.	Name of the Company	Years										
		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	0.69	0.65	0.19	0.32	0.39	0.37	0.75	0.57	0.54	0.81	0.89
2.	Jordan Petroleum Refinery Co.Ltd.	1.13	0.14	0.35	0.68	0.84	1.10	1.12	1.24	1.15	1.61	1.87
3.	Jordan Phosphate Mines Co.Ltd.	1.19	1.72	2.43	2.40	2.70	2.38	1.17	1.04	1.07	1.09	0.95
4.	Industrial Commercial and Agricultural Co.Ltd	0.41	0.87	1.15	0.76	0.25	0.47	1.45	1.35	1.27	1.31	0.87
5.	Jordan Pipes Manufacturing Co.Ltd	0.69	0.88	1.18	0.84	0.76	0.68	0.30	0.52	0.48	0.22	0.33
6.	Arab Potas Co.Ltd.	0.05	0.52	0.25	0.05	0.53	0.75	1.13	1.28	1.97	3.63	0.31
7.	Jordan Spinning and Weaving CO.Ltd.	0.69	0.99	0.99	1.21	0.95	4.36	5.91	0.41	0.31	0.36	0.22
8.	Jordan Cement Factories Co.Ltd.	0.48	0.14	0.38	0.66	1.14	1.53	1.48	1.31	1.62	1.55	1.75

Sourse is computed from Table 6.6 and 4.6

Sources : Computed from table 3.23 and table 3.19

chance of inability of repaying the obligations by the company. Moreover, the higher the debt equuity ratio, the greater is the rate of return on shareholder's equity through the use of financial leverage Ramachandran argues "Borrowed money is always cheaper than equity capital. Furthermore, a company having a larger borrowing, will accrue a net surplus to be distributed among a smaller number of equity shareholders, resulting in larger earnings per share"[3]. Hence, we assume higher the debt equity ratio, higher the profitability of the company. A positive association is assumed to exist between debt equity ratio and the profitability of the studied industrial companies in Jordan from 1975 to 1985. Debt equity ratio compares the debt with shareholders' equity and it calculated in the following :

$$\text{Debt Equity Ratio} = \frac{\text{Debt}}{\text{Shareholder's Equity}}$$

This ratio is used to assess the debt policy and determines task of outsiders and equity shareholder in the company. For the purposes of this study, debt means long-term loans, current liabilities, etc. In other words debt means total liabilities minus shareholders' equity.

7. Capital - Output Ratio (X7) :

Capital -output ratio is very necessary to be examined and analysed to check the output per unit of capital. Hashim and Dadi argue "Capital - Output ratio has played an important role in the dynamic theory ever since its use in Harrod - Damol Model of

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3. Ramchandran H., Financial Planning and Control, S. Chand & Co. Pvt. Ltd., Delhi, 1972, P.106.

Table : 6.8

The capital - Output Ratio

Sr.No.	Name of the Company	Years 1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	2.87	7.62	5.82	4.83	3.98	4.24	3.74	5.44	3.72	7.03	7.5
2.	Jordan Petroleum Refinery Co.Ltd.	4.02	7.51	6.2	4.93	3.75	4.36	31.06	10.7	35.96	26.45	29.75
3.	Jordan Phosphate Mines Co.Ltd.	8.42	4.58	7.11	8.82	7.02	4.69	5.48	14.01	8.32	4.73	4.98
4.	Industrial Commercial and Agricultural Co.Ltd	3.56	3.47	4.44	9.1	12.44	10.29	9.22	10.04	11.69	5.97	38.45
5.	Jordan Pipes Manufacturing Co.Ltd	-	-	-	13.82	-	4.44	4.92	5.78	5.5	3.79	3.89
6.	Arab Potas Co.Ltd.	-	-	-	-	-(17.77)	-	-	-	-(34.23)	-(44.95)	18.29
7.	Jordan Spinning and Weaving CO.Ltd.	-	-	-	-(70.81)	10.67	42.33	17.63	-(70.67)	6.81	4.74	4.9
8.	Jordan Cement Factories Co.Ltd.	2.56	15.99	9.73	8.82	1.14	13.35	7.22	5.27	2.53	4.46	8.2

Source : Computed from table 3.21 and tables in chapter four which include the generation of value for different companies under study.

Sources : Computed from table 3.23 and table 3.19

growth, and the constancy of this ratio has been found to be of particular interest"[4]. When other factors remain constant, an increase in the capital results in an increase int he output and will lead to rise in the profitability of the company. The capital and output should grow at the same rate. If capital grows at a faster rate than output, causing a ris in the capital-output ratio initially but the outptu per unit of capital will decline and the profitbility of the company will decrease and vice-versa.

Hence, there is a negative association between capital - output ratio and profitability. The lower capital - output ratio will be accompanied with rising profitability.

The capital-output ratio is the proporation of capital to the output of the company. Many difficulties arise and views are differ while defining capital. Many items are inclued in one definition while they are excluded in others. However, E.D. Domar argues "in defining capital and output I would place the emphasis on the expression produced by it. In the sense that the stock of capital should include all capital needed to produce a given output, while the latter should contain all output produced by a given stock of capital"[5].

The concept of capital, from the above given definition implies, the means of production is suitable to consider the operating assets as the mean of production because the operating assets

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4. Hashim S.R. and Dadi M.M., Capital - Output Relations in Indian Manufacturing, 1946 - 1964, M.S. University of Baroda Press, 1973, P.33.

5. Domar E.D. "The capital - Output Ratio in United States : Its variation on Stability" in Theory of Capital(ed) by Lutz E.A. ad Hoque D.C., 1961, P.96.

alone directly affect the output of the company. Hence, the capital is represented by the value of operating assets and output is represented by the value added generated by the company Operating assets include the total of all assets excluding intangible and fictitious assets, work in progress, machinery in transit etc. Value added may be defined as the ultimate value of sales of goods and services by the company less the cost of all goods and services bought from outside the company. Value added is the wealth which the company has been able to create on its own and its employees' efforts. D.C Jain argues An enterprise may exist without making profit but cannot survive without adding value. The enterprise not making profit, is bound to become sick but not adding value may cause its death over a period of time [6].

The capital - output ratio of the eight studied companies from 1975 to 1985 has been represented in table 6.8 and the effect of this ratio is examined with the help of statistical multiple regression analysis.

8. Fixed Assets - Sales Ratio (X8) :

This ratio is used to examine and ascertain the efficiency and profitability of the company over a period of time. The total fixed assets are compared with the sales of the company. The more the sales, the more the efficient is the use of fixed assets. In case if the sales are less as compared to the investment in fixed assets, it means that the fixed assets are not adequately used by

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6. Jain D.C., "Concept of Value Added" The Chartered Accountant, May 1987, P.54.

Table : 6.9

The Fixed Assets Sales Ratio

Sr.No.	Name of the Company	Years 1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1.	Arab Pharmaceutical Manufacturing Co.Ltd.	0.31	0.57	0.45	0.47	0.49	0.39	0.4	0.74	0.35	1.36	1.08
2.	Jordan Petroleum Refinery Co.Ltd.	0.86	1.46	1.19	0.99	0.86	0.74	1.98	1.49	0.29	0.22	0.2
3.	Jordan Phosphate Mines Co.Ltd.	0.29	0.36	0.44	0.5	0.67	0.52	0.56	0.51	0.43	0.26	0.28
4.	Industrial Commercial and Agricultural Co.Ltd	0.37	0.25	0.29	0.32	0.38	0.32	0.51	0.59	0.79	0.65	0.84
5.	Jordan Pipes Manufacturing Co.Ltd	-	-	-	1.65	0.71	0.59	0.46	0.48	0.55	0.41	0.37
6.	Arab Potas Co.Ltd.	-	-	-	-	-	-	-	-	23.98	7.3	3.81
7.	Jordan Spinning and Weaving CO.Ltd.	-	-	-	3.34	2.41	2.36	2.96	1.85	1.01	0.62	0.71
8.	Jordan Cement Factories Co.Ltd.	0.46	1.68	1.61	1.46	0.32	1.55	1.14	1.56	2.07	2.06	3.86

Source : Computed from table 3.2 and table 3.23

Sources : Computed from table 3.23 and table 3.19

the company and indicates less efficiency and profitability. The amount invested in the fixed assets should be accompained by an increase in the profitability The lower the ratio, the higher is the profitability because of more efficiency in the utilization of the available amount of fixed assets, but the higher the fixed assets sale ratio, the lower is the profitability because the fixed assets are not properly utilised and it is an indication of over investment in the fixed assets. The fixed assets sales ratio represented in table 6.9.

9. Cost of goods sold to sales Ratio (X9) :

The cost of goods sold consists of the cost of raw materials used, direct cost, etc. An increase in the cost of goods sold lead to fall in the amount of profitability of the company and the lower rate of cost of goods sold results in an increase in the profitability of business. We assume a negative association between the cost of goods sold to sales ratio and profitability. The higher the ratio, the lower the efficiency in the utilisation in the amount of raw materials and vice-versa. Cost of goods sold to net sales ratio is represented in table 3 3.

M e t h o d o l o g y

This section of the study attempts to expain the effects of the above metnioned explanatory factors in the variation of profitability. The statistical methods of multiple regression analysis for time series and cross section analysis are applied to all industrial companies undertaken for the study except Arab Potash Co. Ltd due to the unavailability of data for Potash Company. „The model is to be applied for a time period from 1975

to 1985. The mulitple regression analysis is applied to net profit as a dependent variable and explantory variable from X1 to X9 as independent variables.

$$P = X0 + X1\ X1 + X2\ X2 + X3\ X3 + X4\ X4 + X5\ X5 + X6\ X6$$
$$X7\ X7 + X8\ X8 + X9\ X9 + e$$

Where P = Net Profit

X1 = Turnover Assets Ratio

X2 = Net fixed Assets as proportion of total net assets.

X3 = Index of sales

X4 = Rate of Growth of Assets

X5 = Rate of Inflation

X6 = Debt - Equity Ratio

X7 = Capital - Output Ratio

X8 = Fixed Assets Sales Ratio

X9 = Cost of goods sold to Sales Ratio

X0 to X9 are in the parameters to be estimated.

e = Error Term.

We assume that the Turnover Assets ratio (X1), Index of Sales (X3), Rate of Grwth of Assets (X4), Rate of Infaltion (X5) and Debt - Equity Ratio (X6) are positively associated with the profitability of the companies while Net Fixed Assets as proportion of Total Net Assets (X2), Capital - Output Ratio (X7), Fixed Assets Sales Ratio (X8) and Cost of Goods sold to Sales Ratio (X9) are negatively associated with profitability of the selected industrial companies in Jordan.

Main Findings

A) Time Series Analysis :

We have included nine variable affecting net profit to each of the Jordanian manufacturing companies undertaken in the study from 1975 to 1985. After using the multiple linear regression, we present the following observations :

1) Table 6.10 shows the multiple regression results for Arab Pharmaceutical Manufacturing Co. Ltd. It is clear that the rate of inflation, debt-equity ratio and capital-output ratio are found to be very important variables affecting the net profit. They are according to the aprior sign i.e. the rate of inflation and debt-equity ratio positively and capital-output ratio is negatively associated with net profit. They are statistically significant at 0.25 per cent level related to the net profit of the company.

The turnover assets ratio, net fixed assets as proportion of total net assets, rate of growth of assets and fixed assets sales ratio are either significantly related to net profit at 0.25 per cent level or fail to give apriory sign or given the apriory sign but they fail to be statisticaly significant.

The remaining two variables i.e. index of sales and the cost of goods sold to sales ratio are neither according to the theory nor give statistically significant results. That means, these two variables are not imporant from the net proit point of view, rather they are not according to the net profit of the company.

The value of R^2 is found to be very high (0.96) which shows that 96% of the variation in net profit is explained by the explanotory variables included in our model. The $\bar{R}^2$ is 0.63 per

Table 6.10

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Arab Pharmaceutical Manufacturing Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
B0	98.709	27.6252	3.57314
B1	-61.909	40.5095	1.52826
B2	-159.21	175.754	-0.907940
B3	-0.202358E-01	0.933461E-01	-0.216779
B4	-0.031829E-01	0.225964E-01	-1.40856
B5	1.1376	0.483610	2.34401
B6	21.412	12.4978	1.71396
B7	-24.487	9.48413	-2.58194
B8	78.527	73.9367	1.06208
B9	0.511673	0.589305	0.876852

Anova Table

Source	SS	% TSS	DF	MSS
Regression	246.327	96.3437	9	27.3696
Residual	9.34830	3.65632	1	9.34830
Total	255.675			

Test Statistic

R - Squre = 0.963437 R - Value = 0.98155
R - Bar Squre= 0.634368
F - Statistic with D.F. (9,1) = 2.92776
Durbin - Watson Statistic = 2.63806

Source : Table 3.20,6.3,6.4,6.5,6.6,6.7,6.9,3.3 and the annual reports the studided companies.

cent that is due to the index of sales and the cost of goods sold to sales ratio which are not important variables but included in our model.

2) Table 6.11 shows that the linear multivariate model fitted well to the Jordan Petroleum Refinery Co. Ltd. only for debt-equity ratio. This is found to be very important variable affecting the net profit.

The net fixed assets as proportion of total net assets, index of sales, rate of growth of assets, rate of inflation, capital-output ratio and cost of goods sold to sales ratio are either statistically signifiont or with the apriory sign but not the both.

The turnover assets ratio and fixed assets sales ratio are neither statistically significant nor with apriory sign. These two varibales are not important and not affecting the net profit of the company.

The value of R^2 is shown to be very good(o.93). The net profit of the company is affected by 93% of the explanatory variables which are included in our model. The R^{-2} shown at 35% due to insignificant contribution of turnover assets ratio and fixed assets sales ratio which are included in our model and not affecting the dependent variable.

3) If we examine the performance of Jordan Phosphate Mines Co. Ltd., we observe from table 6.12 that the Capital-output ratios plays the most effective role in the determination of net profit. This variable is according to apriory sign and is negatively related to the net profit of the company.

Table 6.11 .

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Jordan Petroleum Refinery Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
Bo	32.160	58.1571	0.552990
B1	0.14047E-01	29.8303	0.4708805E-03
B2	-4.8650	23.5717	-0.206390
B3	0.46994E-02	0.251171E-01	0.187101
B4	-0.18171E-01	0.81006E-01	0.224311
B5	0.12499	1.13820	0.109812
B6	11.086	9.24584	1.19903
B7	-0.71968	3.38962	-0.212320
B8	8.4733	31.9959	0.264263
B9	-0.42464	0.825942	-0.514126

Anova Table

Source	SS	% TSS	DF	MSS
Regression	644.135	93.5543	9	715706
Residual	44.3796	6.44569	1	44.3796
Total	688.515			

Test Statistic

R - Squre = 0.935543 R - Value = 0.96725
R - Bar Squre = 0.355431
F - Statistic with D.F. (9,1) = 1.61269
Durbin - Watson Statistic = 1.51129

Source : See The Source of Table 6.10

Table 6.12

Multiple Regression Results for Determinants of Net Profit (Time Serial analysis) from 1970 to 1985 for the Jordan Phosphate Mines Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
Bo	-3.3763	41.9149	-0.805523E-01
B1	23.614	14.0173	-1.68464
B2	150.40	170.606	0.905037
B3	0.226792	0.319441	-0.838712
B4	0.9248838E-01	0.115047	0.8035222
B5	-0.20359	0.539836	-0.376766
B6	21.550	21.9581	0.981408
B7	1.3394	0.759602	-1.76323
B8	-133.43	133.511	0.998623
B9	0.24637	0.340483	0.723431

Anova Table

Source	SS	% TSS	DF	MSS
Regression	85.2839	91.7681	9	9.47598
Residual	7.65019	8.23185	1	7.65019
Total	92.9341			

Test Statistic

R - Square = 0.117681 R - Value = 0.95796
R - Bar Square= 0.176815
F - Statistic with D.F. (9,1) = 1.23866
Durbin - Watson Statistic = 2.43585

Source : See The Source of Table 6.10

The turnover assets ratio, net fixed assets as proportion of total net assets, index of sales, rate of growth of assets and debt-equity ratio are either according to the a priory sign i.e. rate of growth of assets and debt-equity ratio are positively associated with the net profit or they are statistically significant.

The rate of inflation, fixed assets sales ratio and the cost of goods sold to sales ratio are neither statistically significant nor according to apriory sign. These three variable do not affect the net profit of the company.

The value of R^2 is found to be very significant (0.91) and the value of R^{-2} is shown at 17% that is due to the inclusion of the rate of infltaion, fixed assets sales ratio and the cost of goods sold to sales ratio which are not found to be important explanatory variables in our model.

4) As far as the Industrial Commercial and Agricultural Co. Ltd. is concerned, it is clear from table 6.13 that the capital - output ratio is according to apriory sign i.e. negatively related to the net profit and is statistically significant.

The net fixed assets as proportion of the total net assets, the rate of growth of assets, the rate of inflation and debt-equity ratio though giving the apriory sign i.e. net fixed assets as proporition of total net assets are negatively related to the net profit and the rate of growth of assets, the rate of inflation and debt-equity ratio are positively related to the net profit but these variables fail to be statistically significant.

The turnover assets ratio, index of sales, fixed assets sales ratio and cost of goods sold to sales ratio are neither

Table 6.13

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Industrial Commerical and Agricultural Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
Bo	-3.0965	28.2217	-0.109721
B1	0.38545	9.33500	0.412908E-01
B2	-13.051	21.3488	-0.611333
B3	-0.18486E-01	0.400188E 01	-0.461938
B4	-0.194822E-01	0.261324E-01	0.745527
B5	0.10844	0.234361	0.633365
B6	0.49690	1.53344	0.324045
B7	0.63215	0.104877	-6.02754
B8	14.515	18.1204	0.801015
B9	0.13718	0.237817	0.576840

Anova Table

Source	SS	% TSS	DF	MSS
Regression	251.957	99.4454	9	27.9952
Residual	1.40516	0.554607	1	1.40516
Total	253.362			

Test Statistic

R - Squre = 0.994454 R - Value = 0.99722
R - Bar Squre= 0.944539
F - Statistic with D.F. (9.1) = 19.9231
Durbin - Watson Statistic = 3.17331

Source : See The Source of Table 6.10

according to the theoritical sign nor give statistically significant results. In other words, these variables are not important from the point of view of net profit and they do not affect the net profit of the company at all.

The value of R^2 is found to be very high i.e. 99% which means that 99% of the variation in net profit is a result of expalnatory variables which are inlcuded in our model. The value of R^{-2} is 94% which is considered to be very good.

5) Table 6.14 reveals the determinants of net profit for Jordan Pipes Manufacturing Co. Ltd. It is clear that the turnover assets ratio, net fixed assets as proportion of the total net assets, debt-equity ratio, fixed assets sales ratio and the cost of goods sold to sales ratio are found to match with the apriory sign but they fail to be statistically significnt related to net profit. the turnover assets ratio and debt-equity ratio are positively related and fixed assets as proportion of total net assets, fixed assets sales ratio and cost of goods sold to sales ratio are negatively related to net profit.

While the other variables like index of sales, rate of growth of assets, rate of inflation and capital - output ratio do not offer any significant statistical results and are not according to apriory sing. That means these four variables are not important from the net profit point of view, instead they do not affect the net profit of the the company at all.

The value of R^2 is very high and shown at 96%. The value of R^{-2} is shown at 64% because of the four insignificant variables which are included in ou model but they do not affect the

Table 6.14

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Jordan Pipes Manufacturing Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
Bo	-4.3671	9.2.9147	-0.470012E-01
B1	18.154	31.0240	0.585161
B2	-7.1452	107.093	-0.667194E-01
B3	-0.173720E-01	0.182078E-01	-0.950455
B4	-2.2471	2.50686	-0.894780
B5	-0.21445	1.9471	-0.1101140
B6	19.972	26.3199	0.7588
B7	1.4743	0.2711	0.487048
B8	-14.082	47.8200	-0.302841
B9	-0.21532	0.924791	-0.27077

Anova Table

Source	SS	% TSS	DF	MSS
Regression	304.521	96.4546	9	33.8557
Residual	11.1934	3.54543	1	11.1934
Total	315.715			

Test Statistic

R - Squre = 0.964546 P - Value = 0.98211
R - Bar Squre= 0.645457
F - Statistic with D.F. (9.1) = 3.02282
Durbin - Watson Statistic = 2.34806

Source : See The Source of Table 6.10

profitability of the company.

6) As far as the Jordan Spinning and Weaving Co. Limited is concerned, it is clear from table 6.15 that the turnover assets ratio, net fixed assets as proportion of total net assets and cost of goods sold to sales ratio play the most effective role in the determination of net profit of the company. They are found to be important variables affecting net profit. They are according to the apriory sign and are statistically significant.

The remaining variables reveal that the index of sales and rate of growth of assets are according to apriory sign but they are statistically insignificant while rate of inflation, debt-equity ratio, capital-output ratio and fixed assets sales ratio are found to be statistically significant but they are not according to the apriory sign.

The value of R^2 and R^{-2} are found to be very high i.e. 99% and 97% respectively. This means that the variation in the net profit of the company is covered by the explanatory variables which is included in our model to the extent of 99%.

7) If we examine the performance of the Jordan Cement Factories Co. Ltd., we find from table 6.16 that the rate of growth of assets and fixed assets sales ratio are important variables affecting the net profit. They are according to the apriory sign i.e. the rate of growth of assets is positively and fixed assets sales ratio is negatively associated with net profit. They are also stastistically significantly.

The net fixed assets as proportion of the total net assets, index of sales, capital-output ratio and cost of goods sold to sales ratio are according to apriory sign but they fail to be

Table 6.15

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Jordan Spanning and Weaving Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
B0	267.59	28.0204	9.54648
B1	101.1	36.0531	2.80432
B2	172.98	41.3833	-4.17985
B3	0.514734E-01	0.11422	0.545561
B4	0.5604E-01	0.435047	0.128814
B5	-3.8247	2.67059	-1.43038
B6	-4.75165	2.89647	-1.64215
B7	0.697789	0.248462	2.80882
B8	87.142	10.8757	7.99778
B9	3.5302	0.336743	10.5070

Anova Table

Source	SS	% TSS	DF	MSS
Regression	23886.9	99.7211	9	2654.1
Residual	66.8022	0.278881	1	66.8022
Total	23953.7			

Test Statistic

R - Squre = 0.997211 R - Value = 0.9986
R - Bar Squre = 0.972112
F - Statistic with D.F. (9,1) = 39.7306
Durbin - Watson Statistic = 3.43071

Source : See The Source of Table 6.10

Table 6.16

Multiple Regression Results for Determinants of Net Profit (Time Serial Analysis) from 1975 to 1985 for the Jordan Cement Factories Co. Ltd.

Estimator	Estimate	STD Error	T.Statistic
Bo	95.495	28.8714	3.23833
B1	-23.548	22.0862	-1.06619
B2	-15.073	29.6795	-0.506177
B3	0.664956E-02	0.500461E-01	0.132867
B4	0.39174E-01	0.309475E-01	1.26581
B5	-1.935	1.65778	-1.24202
B6	-9.8693	8.9101	-1.10765
B7	-1.6487	1.74465	0.945019
B8	-8.8243	5.21801	-1.69113
B9	-0.623178E-01	0.490684	-0.127

Anova Table

Source	SS	% TSS	DF	MSS
Regression	640.733	95.7992	9	71.1925
Residual	28.0963	4.20082	1	28.0963
Total	668.829			

Test Statistic

R - Squre = 0.957992 R - Value = 0.97877
R - Bar Squre= 0.579918
F - Statistic with D.F. (9,1) = 2.53388
Durbin - Watson Statistic = 2.81452

Source : See The Source of Table 6.10

statistically significant. While in the case of the turnover assets ratio, rate of inflation and debt-equity ratio though significantly related to net profit but they fail to give the apriory sign.

The value of R^2 is found to be very high (0.95). The value of $\bar{R}^2$ is found to be 57% due to the variable which is either statistically significant or with apriory sign.

B) Cross Section Analysis :

After testing the multiple regression analysis for the cross section analysis for the industrial companies in Jordan for three interval years (1975, 1980 and 1985), we present the following conclusions :

1) Table 6.17 shows the mulitple regression results for the year of 1975 for all the studied companies except the Jordan Pipes Manufacturing Co Ltd., Arab Potash Co Ltd. and the Jordan Spinning and Weaving Co. Ltd. We have included for the first running regression only the effect of X1, X2 and X4 on determinants of net profit. It is clear that the net fixed assets as proportion of the total net assets (X2) is found to be an important variable affecting the net profit of the companie. It is according to apriory sign and statistically significant while the turnover assets ratio (X1) and the rate of growth of assets (X4) are statistically significant but they are not acording to apriory sign. The X1 and X4 variables must be positively related with net profit but they are negatively related with net profit. The value of R^2 is 81% and considered to be very good which

Table 6.17

Multiple Regression Results for Determinants of Net Profit (Cross Section Analysis) for the Studied Companies in 1975.

Estimator	Estimate	STD Error	T - Statistic
Bo	137.79	59.551	2.31564
B1	-94.3720	48.418	-1.94911
B2	-64.1951	44.135	-1.45537
B3	-0.286692	0.15304	-1.87271

Test Statistic

R - Squre	=0.816637	R - Value	= 0.903674
R - Bar Squre	=0.666508		
F - Statistic with D.F. (9,1)		1.40445	
Durbin - Watson Statistic		1.54131	

Estimator	Estimate	STD Error	T.Statistic
Bo	43.4654	1.0610	40.9650
B7	-4.00015	0.10836	-36.9152
B8	-5.62027	1.3892	-4.0457
B9	-6.790125E-01	0.0150838-01	-5.07045

Test Statistic

R - Squre	=0.999577	R - Value	= 0.97877
R - Bar Squre	=0.997573		
F - Statistic with D.F. (9,1)		498.549	
Durbin - Watson Statistic		0.920979	

shows that 81% of the determination in net profit of the companies undertaken in the study are explained by the expalnatory variable included in our model. The $\bar{R}^{-2}$ is low and shows at 28% due to the inclusion of turnover assets ratio X1 and the rate of growth of assets in our model because these are the only two variable statistically significant but they are not positively related to net profit.

The second trial was by including of capital output ratio (X7), fixed assets sales ratio (X8) and cost of goods sold to sales ratio (X9). The results of the regression analysis shows that all the three variables (X7, X8 and X9) are very good and they play the most effective role in the determination of net profit of the companies studied. They are according to apriory sign i.e. negatively related to net profit of the companies and are statistically very significant. The value of R^2 and $\bar{R}^{-2}$ are found to be very high 99% which shows that 99% of the variation in net profit of the studied companies as a result of these factors. The value of $\bar{R}^{-2}$ is high because all the explanatory variable included in the model are significant and according to apriory sign.

2) The second period which is selceted for the cross section analysis represented in table 6.18 shows the multiple regression result for the determination of net profit for 1980. In the first trial of regression analysis, the results show the turnover assets ratio (X1), net fixed asset as proportional to the total net assets (x2) and the rate of growth of assets (X4) are very important variables in the determination of net profit for the

Table 6.18

Multiple Regression Results for Determinants of Net Profit (Cross Section Analysis) for the Studied Companies in 1980

Estimator	Estimate	STD Error	T - Statistic
Bo	4.45906	96.82	0.460554E-01
B1	117.977	91.931	1.28257
B2	-226.077	110.00	-2.06548
B3	0.268753	0.11852	2.26417

Test Statistic

R - Squre	=0.815285	R - Value	= 0.992931
R - Bar Squre	=0.63057		
F - Statistic with D.F. (9.1)		4.41374	
Durbin - Watson Statistic		2.74704	

Estimator	Estimate	STD Error	T.Statistic
Bo	57.0307	16.609	3.43376
B1	-20.1823	19.99	-1.0096
B2	-26.4887	26.18	-1.01178
B4	0.100823	0.25111E-01	4.01504
B7	-4.54902	0.43544	-10.4951

Test Statistic

R - Squre	=0.996706	R - Value	= 0.998352
R - Bar Squre	=0.990117		
F - Statistic with D.F. (9.1)		151.283	
Durbin - Watson Statistic		2.41345	

studied companies in 1980. They are statistically very significant and according to apriory sign i.e. the turnover assets ratio (X1) and rate of growth of assets (X4) are positively related to net profit and net fixed assets as proportion of total net assets is negatively related to net profit. The value of R^2 is shown at 81% which means that to the extent of 81% we have included to explanatory variable which are affecting the net profit. The value of R^{-2} shown at 63%.

The second trial which is represented in the same table shows the net fixed assets as proportion to the total net assets (X2), rate of growth of assets (X4) and capital-output ratio (X7) are the most efective variables in the determination of net profit of the companies under study for 1980. They are statisticlly significant and match with apriory sign i.e. net fixed assets are proportion of total net assets and capital output ratio are negatively related to net profit and the rate of growth of assets is positively related to the net profit of the studied companies. The turnover assets ratio is statistically significant but it is not positively related to the net profit of the companies under study. The value of R^2 and R^{-2} is very high 99% which indicates the importance of the mentined explanatory varibles in determination of net profit of the studied companies in 1980.

The table 6.19 shows that the multiple regression results for determination of net profit for all the companies except the Arab Potash Co. Ltd.

3) Table 6.19 shows that the multiple regression results for the year 1985 for all the studied companies except the Arab

Table 6.19

Multiple Regression Results for Determinants of Net Profit (Cross Section Analysis) for the Studied Companies in 1985

Estimator	Estimate	STD Error	T - Statistic
B0	48.4005	4.21212	11.6679
B1	-14.6699	2.4173	6.08141
B2	-73.6431	7.7418	-9.51243
B3	0.299638	0.625688E -01	4.78744
B4	-0.514837	0.12858	-4.00391

Test Statistic

R - Square	=0.982737	R - Value	= 0.991221
R - Bar Square	0.948211		
F - Statistic with D.F. (9,1)		28.4637	
Durbin - Watson Statistic		2.31301	

Estimator	Estimate	STD Error	T.Statistic
B0	50.5432	10.345	4.88342
B7	-0.491378	0.10697	-4.62152
B8	1.37891	0.87570	-5.00025
B9	0.518636	0.15759	-3.29096

Test Statistic

R - Square	=0.969114	R - Value	= 0.984436
R - Bar Square	=0.938728		
F - Statistic with D.F. (9,1)		31.3770	
Durbin - Watson Statistic		1.21986	

Potash Co. Ltd.

In the first trial of the running regression analysis where included only four independent variabels. It is found that the turnover assets ratio (X1) is statistically significant but it is negatively related to the net profit whereas it should be positively related to net profit. The net fixed assets as proportion of total net assets (X2) is the most effetive variable affecting the net profit, it is statistically very significant and according to apriory sign i.e. negatively related to the net profit of the companies for 1985. The index of sales (X3) is a very important variable affecting the net profit of the companies, it is statistically very significant and according to apriory sign i.e. positively associated with the net profit of the companies. The rate of growth of assets (X4) is very significant statistically but it is negatively related to the net profit whereas it should be positively related to the net profit of the companies under study in 1985. The value of R^2 is very high 98% and the value of R^{-2} is very high as 94%. The value of R^2 and R^{-2} indicates the importance of our model for including those explantory variables in our study.

The second trial was by taking the effet of capital-output ratio (X7), fixed assets sales ratio (X8) and the cost of goods sold to sales ratio (X9) on net profit of the studied companies in 1985. The table 6.20 indicates that the variables of X7, X8 and X9 are statistically very significant and are according to apriory sign i.e. these explantory variables are negatively related to the net profit of the companies under study. The value

of R^2 is shown as 96% which is considered to be very good and the value of R^{-2} is also very good and shown at the rate of 93%. The high percentage of R^2 and R^{-2} indicates the importance of our model for determination of net profit for the companies under study in 1985.