European Journal of Business and Social Sciences, Vol. 3, No. 9, **December 2014.** **P.P. 114 - 128**
URL: *http://www.ejbss.com/recent.aspx-/*
ISSN: 2235 -767X

CONSUMPTION ANALYSIS OF ELECTRICITY IN SOUTHERN AREA OF JORDAN "EVIDENCE THROUGH PANEL DATA ANALYSIS (2001 – 2014)

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ABSTRACT

This paper tests the electricity consumption in industrial sector of southern area of Jordan, were government is working on the implementation of measures in line with the objectives to improve fiscal of macro-economic situation. The analysis considered the data of industrial sector of textile, food, chemical, other manufacturing. The data used analyses of pooled OLS (cross section) and fixed effect methods, then output and price of electricity are utilized in analyses , logarithm of output and price of electricity, then the log of optimal used by the firm and log of electricity usage of firm, and the log of labor employed in firms. The results shows that both the pooled (cross section), and fixed effect can be used adequacy to simulate industrial consumption in this region of Jordan.

Enhance, result indicates that demand across the sample 0.67 and the output electricity is 0.15, these results imply that 9% increase in the price of industrial electricity will lead to a 3% decreased in the demand of electricity.

Keywords: *Southern of Jordan, Industrial sector, Electricity demand, Pooled cross-section, Fixed effect, Panel data,*
Jell classification: E12, C22, C23, E21, E37.

Section 1: Introduction:

In the period of this study which extended from 2001 – 2014, the history of amount electricity generated has fallen for short of the economic-wide demand in southern area of Jordan, this put government and its policies in front critical point, which determine future policy measures to tackle this shortages also the topic of electricity demand in Jordan as whole country is vast.

1-1: Objectives of the Study:

A - This paper look at the economy-wide demand in southern area of Jordan.

B - Although the paper focuses on industrial level demand; and

C - To answer the question that the policy makers alight point of what will be the economy-used demand for electricity in coming 15 years future? and now does the prices of electricity effect the industrial level output?

Each objective is a topic on which vast research is possible in this field, but an important aim is to predict the future demand in the future electricity usage in industrial sector and Jordan usage.

2-1 : Research Hypothesis:

The research is based on a question which are:

A- What is the influence of variables affects the demand of electricity in industrial sector in southern area of Jordan ?
B- Weather the per capita income affect the prices of electricity in Jordan ?
C- If there is influence impact of capital, labor, and electricity usage of electricity demand in industrial sector in southern area of Jordan?

3-1 : The assumption are untitled through the hypothesis which are:

A -The per capita income has a significant effect relationship with price.

B- The factors such as labor force, capital, electricity usage has influenced effect with electricity demand in southern area of Jordan.

C -The consumption of electricity usage in branches of industrial sector in southern area is vary between branches.

4-1: limitation of the study :

Many limitations faced the researcher during the collection of data such as dearth of data as in other developing countries, these can make use of high resolution electricity consumption about the household and industry of electricity consumption data ,and a large set of information about the data, limitations are:

A- Use energy intensity as only indicator for analyzing electricity consumption .
B- Non distinction between (idle)consumption of the households used in industry and peak consumption.
C- Partial set of explanatory variables , and shortening of information and statics about them.
D- Use of aggregates (low resolution) consumption data.

Few papers treys to determine future electricity demand in Jordan, but related to the southern area of Jordan demand of electricity. I'm not found any paper analyzed the demand of electricity, this paper focus on time

series data for this area. The area of study included Ma'an, Karak, Aqaba and Tafila, Madaba governorates, in general most of industrial companies and commercial center in Aqaba, potash, plaosphate mines and other activities in this area, we can say that the truism and Aqaba port and other industrial activities increased the demand of electricity year to other beyond the increased demand of house hold. This paper takes a different approach, and looks at each using two unique data sets, and using a unique panel data sets from 2001 up to 2014.

The study included the relationship between income per capita and electricity demand (consumption) is estimated, and the growth of demand in Jordan and the southern area of Jordan. The other data set using the world bank survey for Jordan, and the effort of researcher of collect consumption of industrial sector of this area to construct a panel dataset over the period of study. This paper setup as follows: Section I: provides an introduction, Section II: included the back ground of southern area industrial sector, Section III: included the econometric models of the study, Section IV: included the data analysis and empirical results, and contains conclusions.

The demand of electricity increased during the period of study at a rate of (12% - 20%) however, rapid urbanism, industrialization, and rural electrification initiatives led to a significant growth in the demand for electricity, many shorts fall of supply early from 1990s, requiring approximately more electricity power generation, were government policy increased the load shedding and try to dealt the incentives for private sector pourer generation.

Table (1) shows the situation in the electricity sector, with a short fall through the surplus power of demand.

Table (1): Projection for demand and supply in South area

Year	Firm supply (MW)	Peak demand (MW)	Surplus deficit (MW)
1997 – 2001	8.039	1.927	0.872
2002 – 2009	6.578	1.939	0.133
2010 – 2014	9.352	2.014	1.625

Calculated by the author from the field.

Beyond of industrial sector many of residential electricity demand estimated that use nationwide data are based on panel data, aggregated at the state level such as (Houthakker, 1980; Maddala et al., 1997), and (Bernstein and griffin, 2005), these starters have provide through their analysis a regional elasticity's in both short-term and long run, but one can be aware and use caution when applying electricity estimates from these results of studies to policy analysis at the household level. (Dubin and McFadden, 1984), using aggregate data and pointed out demand estimation many subject to misspecification bias due to aggregation over elasticity usage and prices.

Although Herrings and King 1994; and Reiss and Ultite, 2005) study and employ household level data in their analysis, but these studies are constrained to many factors such as geographical narrow regions, the other constrains non heterogeneity due absence of national data set of electricity rate structure or of household-specific billing information (Keiss and White, 2005), using rate structure data from southern California electricity rates had to be matched up indirectly with individual household data, applying such techniques nationwide would quickly become intractable.

Were Shine (1985), finds an evidence that consumer respond to average prices from the utility bill rather than marginal prices, hope and Morimoto (2004) investigated the causal relationship between electricity supply and GDP using Granger causality analysis, and concluded the changes in electricity supply have a

significant impact on change in real GDP in Serilanka. Although Jayatissa, 1993). For industrial sector used annual data for the period 1971 – 1972 and again estimated a number of elasticity demand model using OLS, and concluded that in general industrial demand was neither output nor price elastic in short and long term. She used a monthly micro data for 80 individual consumer from industrial sector, but this study did not included.

Individual firms output since the data not available, the estimated were poorly defined. Bornstein (2009), finds no evidence of bunching around the points where the marginal price increased in a country to what a model of perfectly informed and optimizing consumer would imply, also he shows:

> That the average of price is better indicator of consumer demand response than the marginal price. Lto (2010), also used household billing data from two utilities in southern California obtains the same finding that consumers are more likely to responds to average price than to marginal prices.

(Herrison et. al., 2010) Contributes to previous studies by addressing the need for nationwide electricity estimates using household level data, under the assumption that consumer responds to average price. Enhance they developed an empirical strategy based on the generalized method at moments (GMM), their results shows considerable differences in price elasticizes are noticeably larger than other residential demand estimating using household – level data. (Allrani, 2006), used panel causality analysis, related causality procedures, his evidence no insight on causality for individual countries.

The paper organized as section one included the introduction ,were second section contains the historical approach of energy consumption in Jordan , in third section included the econometric models and methodology of the paper , were forth section describes the results of micro level analysis of electricity in southern area of Jordan ,then lastly section five represents concluded remarks of the paper.

Section 2 : historical approach of energy in Jordan (literature review) :

A 96% of total primary energy supply is imports to Jordan , and Jordan is almost totally dependent on imported oil, domestic energy resources including oil and gas, cover only 3 – 4% of the country's energy needs.

Enhance Jordan spends more than 7.5% – 11.4% of its national income to purchase the energy, also 80% of gas needs covered by imported from Egypt to generate electricity. The Jordanian electricity Authority has been responsible for the generation and transmission of electrical energy throughout Jordan.

Alack of financial and administrative independence, autonomy and free market orientation as well as an in adequate tariff structure were the rapid growth in the demand for power every year meant large scale investment were necessary to expand the number of power station and the power grid.

One strategy to faces the increased of power (electricity) demand is to use renewable energy sources, but until now has been marginal according to the share of less than 1% of electricity generation, hence wind power potential, the wind speed from 4 to 6 m/s and most of attractive locations in southern area such as Fjeij near shobak, and in wadi Araba near Aqaba and drawiech area, also in Tafila 2004, the Average wind speed measurement only 4.4m/s, this encouraged the government to use this type of energy. Therefore two wind farms have been built both of which feed in to the national grid; both of them generates around 3 G / wth of electricity.

The second path is solar energy; Were the average daily solar irradiation is 5.5 kwh/m^2, while sum shines approximately 2.900 hours for annual despite of these measurements, only some households of its need of heating water used.

Third path is solar and thermal energy the installed power plant capacity, and available capacity in Jordan, 2001, 2005, 2010, 2014, can be illustrated in table (2).

Table (2): The Jordanian capacity of generating energy during 2001,2005,2010 2014

MW	**2001**	**2005**	**2010**	**2014**
Steam power plants 1013	1013	1013	1013	1013
Diesel generator	43	45	47	53
Gas turbine (diesel)	35.5	35.6	35.8	36
Gas turbine (naval gas)	120	120	120	120
Companied-cycle power station	300			350
Hydropower 10	12	12	12	15
Wind power 1.4	1.4	1.6	1.6	1.6
Biogas 1	1	1	1	1
Installed capacity	1541	1873	2000	2250

This table shows the generation of electricity in Jordan and these capacity is inefficient due to increased of demand in households and industrial sector; were table (3) shows the development price in Jordan.

Table (3) : development of electricity prices between 2003 -2014 (%)

May or Consumers	**2003 - 2005**	**2005 – 2014**	**2014%**
Demined change	2.63	2.63	3.95
Day – time tariff	0.034	0.037	0.274
Night (of-peak) rate	0.023	0.02	0.103
Large scale industry - Demand change	0.053	0.053	0.096
Night (off – peak) rate Private households	0.035	0.47	0.107
1 – 16 Dkwh	0.034	0.034	
161 – 30	0.060	0.065	
301 – 600	0.070	0.013	
Over 500 kwh	0.088	0.090	
Light industry	0.042	0.045	

The total amount of the consumed energy per capita in 2009 was 2006 kwh / capita, but in 2010 was 2114 kwh/capita with a grow rate 5.38% but in 2014 is 2779.7 with a growth rate 7.8%. Were household consumptions was 33% of total consumption in the period 2005 – 2010 and 37.5% in 2014, were industrial sector is 26%; also the commercial sector was 16% , water pumping was 14.3% , governmental consumptions was 10% and streets lighting was 2 – 4%, enhance the local consumption was 15.295 Gwh with a growth rate of 5.8% ; were the costs of imported energy in 2013 was 4053 million J.D. as:

- Crude oil and oil product 3980 million J.D.
- Imported – natural Gas 12 million J.D.
- Imported electricity 231 million J.D.

Government promoting renewable energy strategy to share 7% in the primary energy Mix in 2015 – 2017, and 10% in 2020 as follows:

- 1200 mw wind energy. - 600 mw solar energy. - 20–30 mw waste to energy.

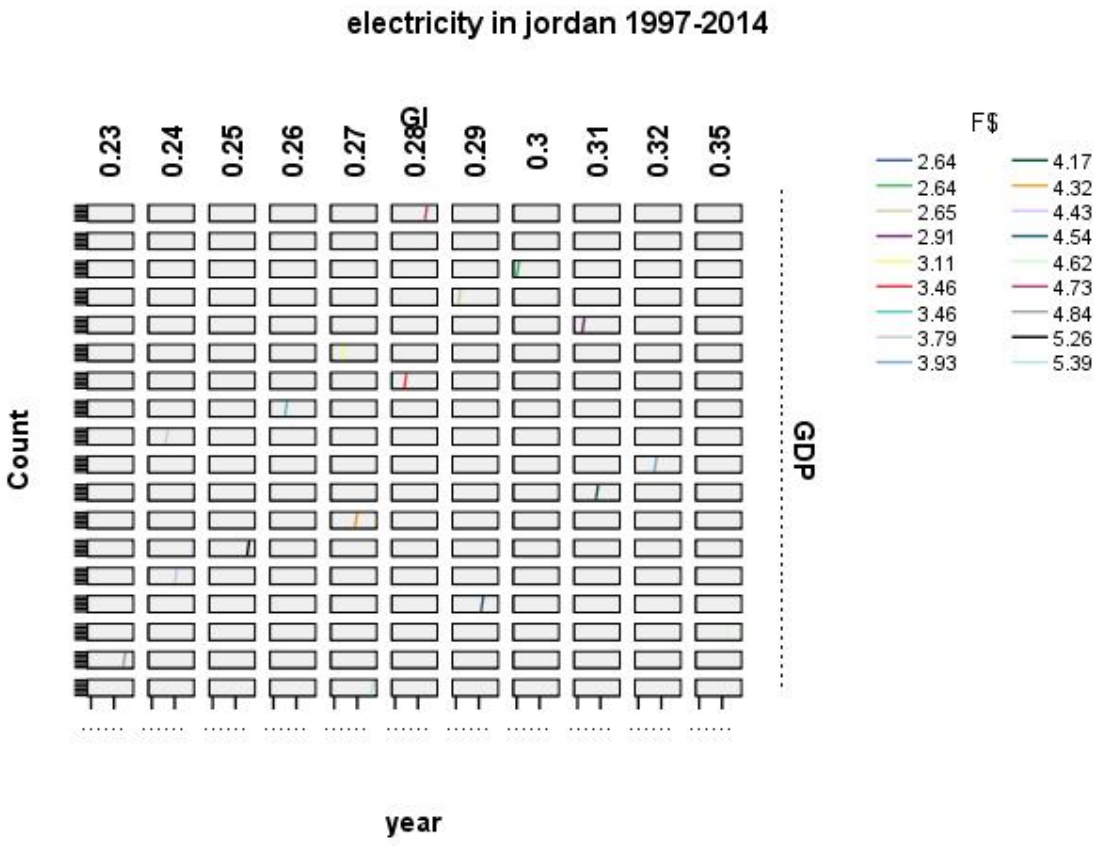
Table (4) : Jordanian industrial sector electricity consumption (million J/D)

year	E(T/J)	G_I/G_N	PE $	HF$	CU	$G10^3$JD
2000	6.847	0.29	10.094	2.645	63.1	3.167.108
2001	7.106	0.31	10.098	2.908	60.30	3.404.568
2002	7.895	0.27	10.111	3.114	65.00	3.699.845
2003	8.316	0.28	10.372	3.456	70.1	3.884.715
2004	8.924	0.26	10.644	3.648	72.1	4.901.867
2005	9.113	0.27	10.688	3.794	76.3	4.976.913
2006	9.422	0.31	10.871	3.928	83.1	5.089.657
2007	9.537	0.32	10.865	4.156	86.2	5.156.423
2008	9.762	0.31	10.785	4.327	87.5	5.237.982
2009	9.803	0.33	10.996	4.418	89.4	5.398.621
2010	9.963	0.29	11.104	4.534	90.2	5.421.876
2011	10.123	0.30	11.327	4.618	92.4	5.643.721
2012	10.329	0.27	11.458	4.726	92.8	5.789.564
2013	10.475	0.29	11.897	4.834	93.2	6.231.587
2014*	11.163	0.25	12.425	5.263	92.7	6.453.278

- Approximately to 2014 estimated the rest 3 months of the year according to the previous numbers of the consumption of electricity of industrial sector.
- Where : Gi: electricity intensive , GN: non electricity intensive , PE :electricity price , HF: heavy fuel prices in dollars . CU: capacity utilization ,and G output: represents the gross product in Jordanian dinars. The prices of the heavy fuel presents diesel and heavy fuel oil , were the capacity utilization represents low efficiency industrial firms will utilized the install production capacity , enhance many products as wide range of manufactured from food products to chemical and mining industries, it is extremely difficult to rely on physical products to indicates the production level. As results of table (4) at a given levels of output demand changes towards more electricity intensive industries, electricity demand will rise according that , and shift happens toward less electricity intensive industries.

  Figure (1) shows the situation of electricity in Jordan as it appears in table (4),it shows generally that the demand increased and the intensive and non intensive developed year to other and the use of heavy fuel is increased yearly.

  Figure (1) :the electricity situation in Jordan during `1997-2014



Section 3 : Data and methodology :

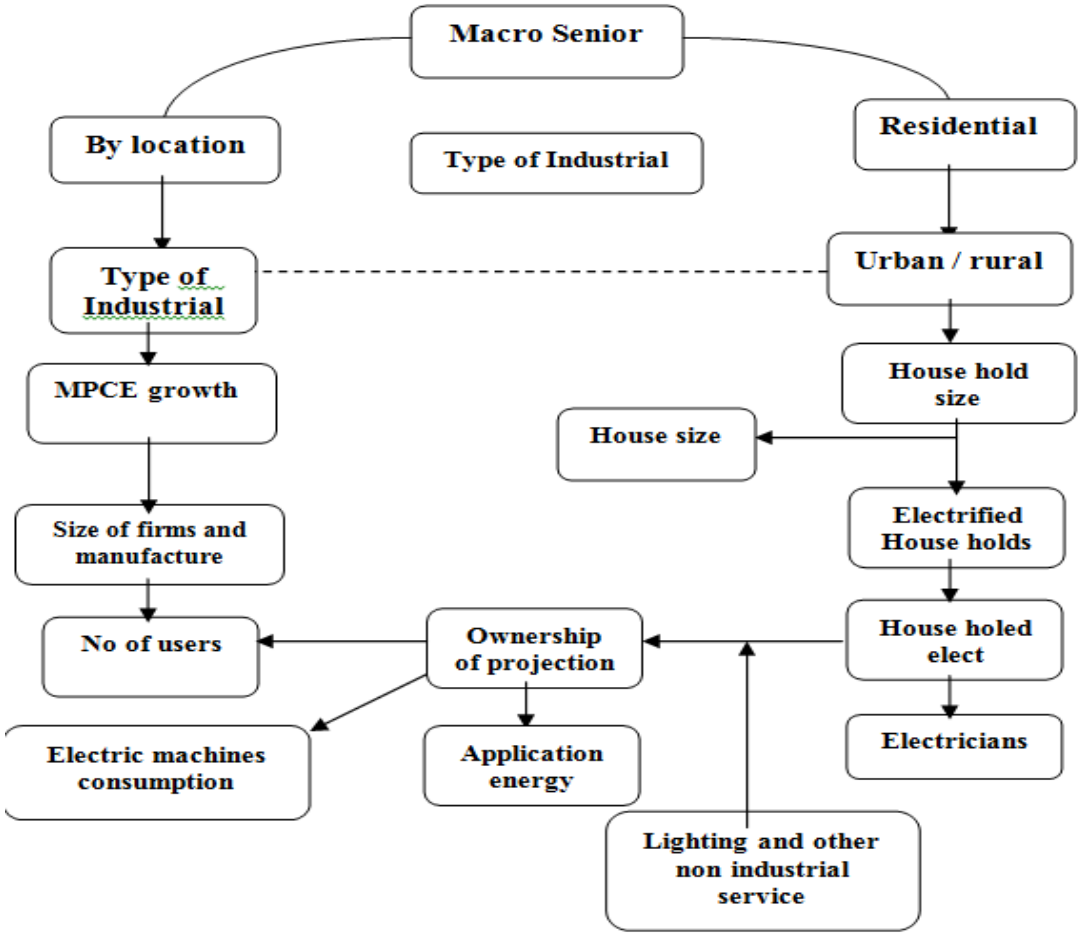
1 – 3 : Data :

Annual time series data from 1997 to 2014 for industrial electricity consumption of Jordan (KWH) **,** and industrial value added is obtained from the international energy agency reports (IEA,2009,2010,and 2013),the GDP series obtained from the world bank reports (world bank 2004,2010,2013) , also several recent issues of central Jordan bank (C,J,B), in edition to the statics of Per capita , and the nominal industrial electricity prices are obtained from the archives of the Jordanian electricity authority , the prices deflated by the Jordanian consumer index prices m data for this purpose is collected from the reports of world banks and also C.J.B . the electricity consumption of southern area industrial sector is collected from two sources ,one of them the drafted consumed series of these firms in southern area of Jordan authority of electricity ,the other one is direct information from the managers of these firms **.**

2 -3 : Methodology (Econometric Model) :

The methodology of electricity consumption generally can be deepened on on a thoughts of their consumption of electricity which modeling the framework of analyzes , this appear in figure (2).

Figure (2) :modeling framework of industrial module.



According to the module there are several methods to forecasting industrial sector electricity consumption, one to identify the size of machines consumed of electricity and capacity of these machines that electrified and lighting of these firms and other services which are appliances and electrified industries. In addition to that to have the households of industrial sector expenditure uses in their productivity and the type (kind) of industry as a proxy, this depends on many explanatory variables , therefore the above figure( ) depicts the module covers industry and household of expenditures which are used in these firms to help them in their work and these are consumed electricity as a key of advantages of the analyzes **.**

The relationship between per capita consumption of electricity, real per capita and electricity prices can be formulated as:

$$\text{Pc cons}_{it} = a_1 + \beta_1 \text{ pcinc}_{it} + b_2 \text{ pricele}_{it} + \Pi_i + E_{it} \quad \ldots\ldots\ldots\ldots (1)$$

Pc cons is the consumption is the per capital consumption at time t.

$\prod_i$: is the time invariant of country specific effect that may interpreted as the technology of Jordan.

Pc inc $_{it}$, is the real per capita income of country in time t.P ric eleit = is the average price of electricity of country in time t. and (E_{it}) is the fixed effects (within grows) which based on transformation equation which can preformed as follows:

$$(\text{Pc Cons}_{it} - \text{Pc Cons}_{it}) = \beta_1 \text{ pcinc}_{it} - \text{PcCon}) + \beta_2 \text{ pricelet}_{it} + \text{Pricelet}_i) + (E_{it} + E_{it}) \quad \ldots\ldots\ldots\ldots (2)$$

The exogeneity of explanatory variable is the main assumption of the estimator of fixed effects estimator shows unbiased per capita of explanatory variables such as consumption of electricity with respect to real per capita income and electricity prices.

Table (5): Per Capita Consumption of electricity estimation in Jordan

Model	Pooled Cross – Section	Fixes effect
Log (GDp) per Capita	1.137** (0.0192)	0.547** (0.0102)
Log (Price elect)	- 0.276** (0.037)	(0.018)* (0.0196)
Constant	- 6.136** (0.316)	1.382 (1.07)
R^2	0.713	0.697
R^2 within		0.613

Between brackets is: prob level of results .

The results of table (5) at the fixed effects estimation shows that electricity of per capita consumption for electricity with respect to per capita income is approximately 0.55 . This means that at 1% increase in per capita income in Jordan will accompanied by a 2.76% increased in the demand of electricity per capita in Jordan , therefore we can predict that if population growth during future 7 years is approximately 2.8% per year and real GDP growth is approximately 3.5% the electricity demand increased with 10%, thus the policymakers should considered 10% percent increased of demand plus the present demand.

Section 4 : ***Empirical results of Micro level analysis of consumption for electricity as the industrial sector in southern region of Jordan***:

Over the last 20 years, government policy makers, and businessmen have now increasingly concerned themselves with the demand by the household and manufacturing sector for electricity. As the prices of electricity facing both households and firms has increases between year to year, the main question against prices of the impact of higher prices of electricity on manufacturing output level has become critical from both a welfare perspective and economic growth perspective ,for analysis of impact of prices used an input in their production function to be exogenous, also each firm try to minimize the cost function demand. Function can be expressed in short run written as follows:

$$C(P) = \text{Min}\ (P_1Q_1 + ...P_n Q_n).$$

subject to:

$$f\ (Q_1 .....Q_n \geq Z, \text{and}\ (Q1 ....., X_n) \geq 0\ .$$

where P : is ($P_1 + P_n$) are given factor prices for the n unputs, $(Q_1 .....Q_n)$ are the quantity of the n_{th} input used; Z is the level of output, and $f\ (Q_1 .....Q_n)$ .....(3) is the production function.

We can rewrite the econometric model for firms as a correct functional form using a simple log linear form and adopted as:

$$\text{Log Cons} = a_o + B1 \log t_{it} + B_2 \text{ av pric} + ... N_t + V_{it}. \qquad V_{it} \sim \text{i.i.d} \quad (N(0, \delta v_1) \qquad \text{……..(4)}$$

Where:

log consumption of electricity for i^{th} firms. Log T_{it} is the log of yearly output in J.D., in time t of firm adjusted by a price deflator for output of firm i.a v pric: is the average prices also adjusted by a price

deflator. B: measures the elasticity of electricity demand with respect to output, were B_2 measures of elasticity of electricity price. and Q_1 company–level variables that affect electricity demand, and N_t capture the effect of changes in unobserved variables.

That influences companies equally, such as temperature, government policies' against technological changes, there for we can expressed the fixed effect for industrial firms in southern region electricity demand as:

$$(\log \text{cons}_{it} - \log \overline{\text{cons}}_i) = B_1 (\log y_{it} - \log y_i) + B_2 (\log \text{avpric}_{it} + \log \overline{\text{avpric}_i}) + (V_{it} - \overline{V_{it}}) \quad \text{.....(5)}$$

where the subscript her, represent average variable for firms i - a cross time.

Table (6):results of pooled and fixed effect analyses of sample firms in southern area of Jordan

	Pooled Cross – Section	**Fixes effect**
Log (y_t)	0.253** (0.016)	0.148** (0.021)
Log (Price elect)	- 0.642** (0.092)	(- 0.673)** (0.126)
Constant	0.831** (0.24)	2.94* (0.365)
R^2	0.6341	0.6187
R^2 within		0.254

* significant at 10% level. ** sig at 5% , values in brackets is prop- value.

The results for sample of firms is given in table (6) shows both the pooled OLS estimates and the fixes effects estimates. As results of table, the price electricity of electricity demand across the sample of firms is 0.67 and the output elasticity of the demand elasticity is 0.148, the results imply that 9% increase in the price at industrial electricity will lead to 3% decrease in the demand of electricity in southern area, but in fact the demand increased within 10% of present time, this making the demand for electricity relatively inelastic with respect to prices.

Table (7):results of panel data of firm types analyses in southern area of Jordan

Industrial subsector	Model	Pooled Cross – Section	Fixes effect
Food	Log (output)	0.216** (0.029)	0.176** (0.037)
	Log (price)	- (0.587)** (0.216)	- (0.607)** (0.363)
	constant	0.216** (3.24)	0.176** (0.037)
	R^2	0.415	0.416
	R^2 within		0.362
	Observation	162	162
	Number of firms	35	35
Chemicals	Log (output)	0.216** (0.032)	0.18* (0.72)
	Log (price)	- (0.042) ** (0.267)	(0.087)** (0.382)
	Constant	(0.523)** (0.429)	(3.116)* (1.0231)
	R^2	0.463	0.311
	R^2 within		0.235
	Observation	108	108
	Number of firms	20	20
Textiles	Log (output)	0.316** (0.021)	0.233** (0.018)
	Log (price)	- (0.713)** (0.156)	- (0.706)** (0.167)
	Constant	(0.824)** (0.241)	(2.563)** (0.391)
	R^2	0.471	0.462
	R^2 within		0.307
	Observation	221	221
	Number of firms	39	39
Other manufacturing	Log (output)	0.243** (0.015)	0.152** (0.039)
	Log (price)	- (0.314)** (0.171)	- (0.265)** (0.183)
	Constant	(0.1.432)** (0.36)	(2.811)** (0.721)
	R^2	0.487	0.483
	R^2 within		0.17
	Observation	298	298
	Number of firms	65	65
Mineral potash, phosphate and other mineral	Log (output)	0.261** (0.018)	0.132** (0.025)
	Log (price)	- (0.251)**	- (0.28)*
	Constant	(1.266)** (0.28)	(3.16)** (0.53)
	R^2	0.379	0.365
	R^2 within		0.159

* significant at 10% level. ** significant at 5%, 1% levels. values in bran these is prob- level values.

The result of table (7) shows that textile sectors has the highest price elasticity of demand for electricity (-0.706), which is significantly higher than other sectors. Also demand for electricity in the food is more classic with respect to price (-0.607) than the average firms, the other manufacturing sectors is (-0.265) were significant, while other prices electricity for mineral sector and chemicals are insignificant.

Although the price electricity are all less than 1 (price < 1) ,and these electricity as results of (jornen et, al., 2001) which found that elasticity's are in the range (-0.4) to (0.06) across Danish industrial subsectors. The results could imply that the textile and mineral industry in this extent are the most demand of electricity, then chemical, food, and other sub sectors in the southern area of Jordan beyond this some sectors such as potash and phosphate mines has switching the own-generated electricity.

Other method can give us more discussion and can be a numerous ways to estimate firm level production function which confirmed by Aguirre Gabiria (2009) which used simple OLS to GMM estimation for dynamic panel data. Use estimations of production function focuses on two factors of production, typically labor and capital, in this text extends the normal firm level production function to include electricity, due to the realities facing the manufacturing sector in the southern region of Jordan. Through a cobb-douglas production: function we can expressed the first step to express the econometric model as:

$$Q = A\, K^{b}\, L^{1-b}$$

Thus according to this cobb-douglas function we can drive the fixed effects of the production function as:

$$(Q_{it} - \overline{Q_i}) = a_1(L_{it} - \overline{L_i}) + a_2(k_{it} + \overline{k_i}) + a_3(e_{it} - \overline{e_i}) + (N_{it} - \overline{N_i}) + (\Sigma it - \Sigma i).$$

were the econometri e model can be written as:

$$Q_{it} = a_L\, L_{it} + a_k\, k_{it} + a_t\, e_{it} + \eta_{it} + \Sigma it.$$

where:

Q_{it} : is the log of output of firm i in time t.

L_{it} : is the log of labor employed in firm i in time t.

k_{it} : is the log of capital used by firm i in time t.

e_{it} : is the log of electricity used of firm i in time t.

$\eta_{it} = \eta_1 + \sigma_t + \eta_{it}^{*}$ where η_1 is a time in variant firm specific effect

η_{it}^{*} is firm level idiosyncratic shock, and σ_t is an aggreegat shock affection all tirms. .(6)…

Analyzing the sample again shows the situation of electricity in southern region of Jordan is critical input in the production function across firms and that elasticity of output with respect inputs as high as that of labor, and significantly higher than the elasticity of output with respect to capital as results of table (8).

Table (8): estimates of production sector function for all firms in industrial southern region of Jordan

Model	**Pooled Cross – Section**	**Fixes effect**
Log (Labor)	(0.593)** (0.031)	0.503** (0.164)
Log (Capital)	(0.216)** (0.032)	(0.187)** (0.071)
constant	5.899** (0.482)	8.315** (2.129)
R^2	0.61	0.598
R^2 within log (electricity)	0.812* (0.079)	0.614** (0.186)
R^2 within		0.319
parameter	3	3

* significant at 10% level. ** significant at 5%, 10% levels.

In general this paper were an attempt in understanding the elasticity's of labor, capital, price and relationship between income per capita and consumption per capita of electricity in industrial sector in southern region of Jordan.

Section 5 :Concluded Remarks:

The analyses in this paper were an initial attempt to emphasizes the electricity demand in southern area of Jordan in industrial sector, but as approach to the analysis use should be analyzed the relationship between income per capital in Jordan and the expected growth in electricity consumption per capita , in addition to this approach the paper interested of the impact of electricity prices and electricity on manufacturing demand of electricity in this sector, then the effect of the price of electricity demand and per capita income in pooled (cross section), and fixed effect.

Many points are raises due to analysis:

- First, as income per capita in Jordan increased through data which used in analysis is increases year to other ,also the demand increased through results of relatively uniform rate increased by 10% of present demand in future times ,both significant increase in household consumption and eventually higher industrial consumption in southern area of Jordan.
- Second, as the pressure of increased of electricity consumption and the impacts of increased per capita income; which changes the standards level at life living and on poverty; the prices of electricity categories raises. The analysis show significant impacts on industrial demand for electricity sector, the demand for electricity is approximately (-0.54) in manufacturing sector, although it is higher in mineral sector (manning), then the textile sector. So, the generation capacity should increased, whenever the power of electricity generation can have a significant impact on their cost of production despite these differences little pit in demand amount of electricity, generally we can have some faith in models used forecasting. However, as shown in electricity consumption have been founded to be industry's capacity utilization and gross output.

Therefore, the government should promotes the scientific researches in the fields of renewable energy sources and efficient energy use, furthermore, the government also has the task of exploring possibilities of using the oil shale that is readily available in Jordan to produced energy. However the government promoting renewable energy to sheer 7% on the primary energy in 2015, and 10% in 2020, such as:

- 1200 mw wind energy. - 600 mw solar energy. - 20–30 mw waste to energy.

This promoting supports the sustainable production of industrial sector in southern area of Jordan. It is too important to support the generation of electricity to provide the new companies in the industrial sector in this area.

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