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Financial and Economic Evaluation of The Egyptian Cement Company (ECC)

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Outline:

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Egyptian cement industry

The cement industry in Egypt witnessed a robust growth since the beginnings of the 1990s. Factors like the population growth and the increasing government expenditure on mega infrastructure projects have positively contributed to the cement industry. Demand for cement was steadily increasing. Although the local cement production reached more than 22 million tons in 1999, there was still a deficit to cover through imports. The cement imports increased steadily to reach more than 5 million tons by 1999 in a trial to cover the domestic consumption which reached at the same year a total of 27 million tons (Ministry of Foreign Trade and Industry, 2005).

Table 1: Cement Industry in Egypt

	1997	2004	% increase/decrease
Cement Production	20.9 m tons	28.7 m tons	37% increase
Domestic Consumption	23.7 m tons	24.5 m tons	3% increase
Exports	91,000 tons	4 m tons	400% increase
Imports	2 m tons	0	100% decrease

The slow down in the Egyptian economy in 2000, had a minimal effect on the cement consumption leading to a decline of 4%. However, supply kept increasing to reach an oversupply in 2003 (HSBC 48). Selling prices started to decline from 2000 to reach the lowest in 2003. This was mainly due to the oversupply of cement which led to a brutal price war between producers and the devaluation of the Egyptian pound. Declining prices led producers to seek external markets and export their production. By 2004, Egypt was transformed to a net exporter with a total of 4.5 million tons of cement exports. The 75% recovery in selling prices was implemented by 2004 through the exports and the joint cartel among the 12 local cement producers. Internationally, Egypt still has by far the cheapest cement.

It can be seen from the following table that ECC is one of the two companies that are privately owned with some foreign shares

Table 2: The ownership structure of the 12 local producers

Company	Ownership	Shareholders/Owners	Holding (%)
Alexandria Portland Cement Company	Listed	Lafarge/Titan	93
Ameryah Cement	Listed	Cimpore	91
Helwan Cement Company	Listed	ASEC	98
Assiut Cement	Listed	Cemenx	96
Beni Suef Cement	Private	Lafarge/Titan	100
Egyptian Cement Company	Private	Holcim	43
		Orascom Construction Industries	57
Misr Beni Suef Cement	Listed	Banque Misr	20
Misr Cement Company (Qena)	Listed	Misr Insurance Co	10
		Chark Insurance Co	10
		Kuwaiti Egyptian Investment Co	10
		Egyptian Co for Investment Projects	10
National Cement Company (Qawmia)	Listed	Government	98
Sinai Cement Company	Listed	Fika	29
Suez Cement Company	Listed	Ciments Francais	34
Tourah Cement Company	Listed	Suez Cement Co	66
		Government	19

Source: Shuaa Capital 2005

The impact of the cement industry on the economy

Positive economic impacts:

In the case of Egypt, the transformation from being a net importer to a net exporter has benefited to the economy. The most obvious effect is the inflow of the foreign currency through the increasing exports. Also, the major competitive advantage that the Egyptian cement industry enjoys is its low per-ton operating cost which allows companies to enjoy high profit margins compared to cement producers in other countries. The major catalyst for this improvement was analyzed to be the privatization of the cement industries.

Negative economic impacts:

The main negative impact of the cement production is mainly on the environment. The global cement industry produces an estimated 5% of total man-made CO_2 emissions. The CO_2 emissions from the production process cause air pollution and hence respiratory diseases.

Company Profile

The OCI Cement Group is the largest cement producer in the Middle East and a leading regional cement exporter. The principal operating cement subsidiaries are Egyptian Cement Company and Algerian Cement Company, which has an installed annual production capacity of 5 million tons. Currently, OCI is constructing cement plants in Pakistan, Kurdistan and Nigeria which will increase their annual production capacity to 22.5 million tons. ECC constitutes 53% of the cement group of the Orascom Construction Industries.

Egyptian Cement Company (ECC) was formed in 1996 and was the first private sector cement company established after the Egyptian government deregulated the industry and began to privatize the state-run cement companies. The OCI Cement Group owns 56% of ECC. The Swiss Holcim, one of the world's largest cement companies, owns 44% of ECC.

ECC is located in the Suez area and operates four dry process production lines, each yielding 2 million tons of cement annually giving ECC a total plant production capacity of 8 million tons of cement per year. Full scale production of the first cement line at ECC began in April 1999, followed by the second line in October 1999. The third line began production in November 2000 and the fourth line began operations in November 2001. The production equipment was supplied by ThyssenKrupp Polysius.

ECC manufactures ordinary portland, sulphate resistant and high slag cement, which are sold in bags and in bulk to cement dealers, ready mix producers and contractors. ECC maintains a market share in Egypt of approximately 18% and is a leading cement exporter. Cement exports exceed 2 million tons annually and are shipped to more than 30 countries.

For more than 15 years, major cement producers in Europe and the USA have been using their cement kilns to incinerate various waste materials for a fee. Cement kilns have been

found to be even more efficient than dedicated incinerators at permanently disposing of waste materials due to their higher operating temperatures and exposure time. Cement kilns can be used to incinerate both liquid waste including solvents, oils, paints, glues, varnishes as well as solid waste materials including cardboard, wood, plastic, rubber, foam, carpets, tires, medical waste and wastewater sludge. These waste materials act as an alternative fuel source reducing the amount of fuel oil or natural gas needed in the combustion cycle. During 2002, the ECC has successfully launched its alternative fuel and raw materials (AFR) program. Under the AFR program, ECC expects to lower its production costs by disposing of waste fuel oil and oil contaminated soil in one of its cement kilns.

During 2004, ECC completed a lengthy process of testing and assessments with BVQI to allow the company to begin "CE Marking" its products, packaging and literature. CE marking symbolizes the conformity of a product with applicable European Community standards for safety and performance and is a mandatory requirement for cement products to be sold legally in EU countries. ECC also produces cement for sale in the USA which complies with ASTM C150 Type I/II standards. This type of high performance cement has a high 1-day compressive strength and a low alkali content.

ECC issued LE 1 billion non-convertible bonds, payable over a period ending in December 2009, at the annual interest rates of 13% fixed on 60% of the bonds and variable at 2% above Central Bank rate on the remaining 40%. The proceeds were used to refinance the company's production lines. In November 2004, these bonds were replaced by a second bond issue with a six and half year maturity. The second issue consists of LE 500 million at an annual interest of 11.75% and US$ 80 million at 1.5% above LIBOR rate.

Financial Analysis

Investment cost

Investment cost is defined as the sum of fixed capital and net working capital. It is the capital required to accomplish the project. The Egyptian Cement Company has estimated its investment cost to amount for US$ 960 million. The year 2004 was chosen because of the partially stable Egyptian economy. We derived the present value of the initial investment to be L.E. 3.742 billion.

Fixed capital includes all assets bought for the purpose account producing the output or the intermediary goods that will be used in the process of final output production. Total fixed assets amounted for L.E. 2.8 billion. The gross working capital is calculated as the sum of the accounts receivable, inventory of unfinished products and inventory of the final goods. The net working capital is the gross working capital minus the accounts payable.

Analysis of revenue

Gross sales of the ECC are composed of local sales and exports. Since, there is no distortion in prices between the market price and the export price; we have used the exports prices to calculate the total revenue.

Costs of operation are subdivided into the direct costs and the indirect-fixed and indirect-variable costs. For the direct costs, ECC has benefited greatly from a reduction in its total direct costs due to the cheap labor and the cheap raw material. Also, for the indirect variable costs, ECC was saving by using natural gas as its major energy source used in the production process. On average, 80% of the cement producers in Egypt use the Mazot as their major source of energy. Egypt imports Mazot, which adds to the cost of production of any of the producers using this kind of energy.

Being located in the free industrial area in Suez, ECC has benefited greatly from the tax holiday that is guaranteed till 2009.

Hence, calculating the net cash flow was done according to the following equation:
Net Cash Flow = GOP – Taxes – Change in Investment.
The following table summarizes the results for the revenues, costs and the net cash flow over the six years of study.

Table 3: Revenues, costs and net cash flow (in L.E. million)

	1999	2000	2001	2002	2003	2004
Revenue	460	920	1150	1610	1725	1840
Q	2	4	5	7	7.5	8
Price	230	230	230	230	230	230
Cost	(239)	(319)	(359)	(438)	(458)	(478)
NCF	535	601	792	1171	1266	1362

Financial Evaluation

To determine the financial viability of the project, we derived the weighted average cost of capital and compared it with the internal rate of return. The WACC is derived from the following formula: (cost of debt*weight of debt) + (cost of equity*weight of equity). After subtracting the inflation rate, the adjusted WACC resulted in 10.6%. This has led to a positive NPV of L.E. 23.92 billion. Hence deriving the IRR resulted in 16.4562 %, which confirms that the IRR is greater than the WACC. To conclude, the project is financially viable.

Table 4: Summary of the financial profitability indicators

NPV	23,923
Cost of equity	17%
Weight of equity	86.4%
Cost of debt	9.6%
Weight of debt	13.6%
Inflation rate	6%
WACC	10.6%
IRR	16.456%

Other simpler ways to test the financial viability of the project is through calculating the payback period and the breakeven point. The payback period is the period required for the project to cover its initial investment cost. The project is expected to payback its initial investment after 6 year. For the breakeven point, it was calculated as follows: (total fixed cost / (price – average variable cost). It yielded a quantity of 831,809 tons which represents approximately 11% of the total production of the grey cement.

Table 5: The payback period

NCF	535	601	792	1171	1266	1362
Investment	3724	3189	2588	1796	625	-

Table 6: The breakeven point

Total Fixed cost	159200000
Price	230
Average Variable cost	38.06
Breakeven point	**831,809.40 tons**

Economic Analysis

To avoid the price distortions and reach a solid economic evaluation, some adjustments should be done in four markets in the economy, namely, the commodity market, the labor market, the capital market and the foreign exchange market. These adjustments to the financial prices, will lead to an appropriate evaluation of the project and its impact on the economy.

Price adjustment

1. Commodity market: since cement is an exportable good, then the FOB price should be used. We have discovered that ECC uses the FOB locally. Hence, there is no distortion in the price of the output. For the inputs, limestone and natural gas are used for the process of production. Limestone is a non-exportable; hence there is no adjustment in its price. For the natural gas, and because it is exportable, we compared between its FOB price and domestic price. The domestic price for natural gas is higher than its FOB price. As a result, the domestic price is used. In conclusion the direct benefit is the same as the value of the revenue.

2. Labor market: for the skilled labor, because there is no distortion, no adjustment will be done. The major adjustment is with the unskilled labor. In the ECC case, the total number of employees is 1300. We have assumed that 80% of the total accounts for the workforce and the rest accounts for the staff. Out of the 80%, we have assumed that 60% (624 workers) are unskilled workforce and 40% (416 workers) are the skilled ones. Since it was difficult to get the breakdown of the workers wages, we have assumed that the skilled workers get wages that are higher 5 times than the unskilled workers. Hence, this resulted in a monthly wage of L.E. 378 per worker. The distortion is obvious if compared with the shadow wage rate, L.E. 209, calculated for the agriculture workers according to the following formula: Shadow wage rate = MP + Cost of Transfer + Change in Consumption. As a result, the shadow wage rate is used for the adjustment. The difference between the market wage and shadow wage resulted in a total of L.E. 1.3 million.

3. Capital market: the social discount rate was calculated according to the following equation: interest rate at which the country can borrow from abroad + the risk of devaluation*borrowing interest rate + country risk* borrowing interest rate. It was found out to be 15%. Subtracting the inflation rate from the nominal SDR, we get an SDR = 9%.

4. Foreign exchange market: in the financial analysis we have used the market exchange rate which is L.E. 5.9/US$ 1. However, for the purpose of the economic evaluation, we will use the shadow exchange rate which is estimated to be L.E. 5.6/US$ 1.

Indirect benefits and costs

For the indirect benefits to the society, we figured out that they are mostly represented in the value added of the project to the economy as well as the foreign exchange and employment effects.

For the indirect costs, we considered the cost of preventing the damage of pollution and the solid waste that result from the production process of cement. We have known from the ECC that they are already applying a system for liquefying the waste including solvents, oils and other by-products like paints, glues, varnishes as well as solid waste materials and wastewater sludge to act as an alternative fuel source reducing the amount of fuel oil or natural gas needed in the combustion cycle. This process is generated through the cement kilns that are used to incinerate all these kinds of waste. This program is known as the Alternative Fuel and Raw Materials (AFR). The development of this program began 2001, and its full operation began in 2002. The costs for the installation of the necessary equipment were already included in the costs.

Economic Evaluation

As a result, we expect that if we conducted the economic evaluation, it will be equal to the financial evaluation since there will be no difference in the indirect costs.

However, after calculating the indirect costs and benefits and adjusting the revenues and costs, we derived the total net benefit through subtracting the indirect costs from the indirect benefits. By discounting the net benefit and deriving the NPV, we found out that the NPV is positive and is equal to L.E. 185 million which denotes that the project is economically viable. Also the ERR is equal to 10.667% which is higher than the SRD used which is equal to 9%.

Table 7: Economic Evaluation

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Adjusted benefits	460	920	1,150	1,530	1,725	1,840
Adjusted costs	238	317	357	438	458	477
NB	221	602	792	1,173	1,268	1,363
PV NB	203	552	667	905	898	886
Sum PV NB	**3,909**					
PV Investment	**3,724**					
NPV NB	**185**					
SDR	**9%**					
ERR	**10.667%**					

Value Added Criteria

The domestic value added effect is derived through subtracting the gross output and the material inputs. Material inputs are derived by adding the wages, interest and the profit. Then the inputs are subtracted from output to derive the domestic value added. The indirect value added to obtained through adding all the indirect effects of the cement sector and dividing the total by its direct value added. This results in a ratio. We multiplied that ratio and the value added of the project. To derive the national value added, we subtracted the indirect value added and the transfer abroad from the domestic value added.

For ECC, the transfer abroad consists of only 5% of the total payroll which represents the payroll to expatriates. ECC doesn't have debts that should be paid abroad. Hence, after deriving the national value added, we discounted it and compared it with the present

value of the investment. The absolute efficiency test is derived through comparing the PV of NVA and PV of Investment. The AET resulted in 11,579 > 0. The relative efficiency test is calculated by dividing the PV of the NVA over the PV of Investment. It yielded a result of 1.27. If we used only the direct value added, we derive the value added of the project on its sector. It was in this case equal to 2.38. Hence, it can be seen directly that the value of the project on the overall performance of the economy is higher than its value on its own sector.

Table 8: Value added effect

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Gross output	460	920	1150	1610	1725	1840
T. Material inputs	65	98	115	149	157	166
Domestic value added	394	822	1036	1461	1568	1674
Ratio	3.12	3.12	3.12	3.12	3.12	3.12
Indirect value added	1233	2566	3232	4564	4897	5230
Transfer abroad	1.7	3.4	4.2	5.8	6.3	6.7
NVA	1231	2562	3228	4558	4891	5224
Discounted NVA	1130	2156	2492	3229	3179	3115
Sum		**15303**				
PV Investment		**3724**				
AET		**11,579**				
RET (using total value added)		**4.109**				
RET (using direct value added)		**2.38**				

Foreign Exchange effect

The foreign exchange effect is represented in the difference between the foreign exchange inflow and outflow. The foreign exchange inflow is represented in the volume of exports of ECC. The foreign exchange outflow is assumed to be 15% of the total cost, represented in the imports of the spare parts. By discounting the net foreign exchange, we get a positive foreign exchange effect of L.E. 556 million. This is despite the fact that ECC started to export a percentage of its production since 2002.

Table 9: Foreign exchange effect

	1999	2000	2001	2002	2003	2004
FX in	0	0	0	345	391	460
FX out	149	235	277	437	457	477
	0.15	0.15	0.15	0.15	0.15	0.15
	22	35	41	65	68	71
Net FX	(22)	(35)	(41)	279	322	388
Net PV FX	(19)	(26)	(27)	159	160	167
Sum of PV	**556**					

Employment Effect

The Employment effect was found to be negligible. We found out that every L.E.1,000,000 create 4 jobs.

Annex: Sensitivity Test

Our major assumption here will be that ECC is not applying the AFR program and the investment cost doesn't include the cost of installing the machinery. Hence we assume that the cost of purchasing and installing the cement kiln is L.E. 40 million. We also assumed that ECC bought and installed the kiln during 2002. For the cost of maintenance, we assumed it to be 2.5% of the original cost. In general, the installation of such kilns is said to reduce the productivity by a percentage up to 20%. However, for the purpose of this evaluation we would assume it will decrease the productivity by only 5 %.

Economic Evaluation

After calculating the indirect costs and benefits and adjusting the revenues and costs, we derived the total net benefit through subtracting the indirect costs from the indirect benefits. By discounting the net benefit and deriving the NPV, we found out that the NPV is positive and is equal to L.E. 175 million which denotes that the project is economically viable. Also the ERR is equal to 10.2% which is higher than the SRD used which is equal to 9%.

Table A1: Economic Evaluation

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Adjusted benefits	460	920	1,150	1,530	1,639	1,748
Adjusted costs	238	317	357	438	458	477
NB	222	603	793	1091	1181	1270
PV NB	203	552	667	718	675	631
Sum PV NB	**3,899**					
PV Investment	**3,724**					
NPV NB	**175**					
SDR	**9%**					
ERR	**10.2%**					

Value Added Criteria

For ECC, the transfer abroad consists of only 5% of the total payroll which represents the payroll to expatriates. ECC doesn't have debts that should be paid abroad. Hence, after deriving the national value added, we discounted it and compared it with the present value of the investment. The absolute efficiency test is derived through comparing the PV of NVA and PV of Investment. The AET resulted in 11,055 > 0. The relative efficiency test is calculated by dividing the PV of the NVA over the PV of Investment. It yielded a result of 3.96 using the total value added.

Table A2: Value added effect

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
Gross output	460	920	1150	1529	1638	1748
T. Material inputs	65	98	115	149	157	166
Domestic value added	395	822	1035	1380	1481	1582
Ratio	3.12	3.12	3.12	3.12	3.12	3.12
Indirect value added	1233	2566	3232	4313	4628	4943
Transfer abroad	1.7	3.4	4.2	5.8	6.3	6.7
NVA	1231	2562	3228	4307	4622	4936
Discounted NVA	1130	2156	2492	3051	3003	2943
Sum		**14779**				
PV Investment		**3724**				
AET		**11,055**				
RET (using total value added)		**3.96**				
RET (using direct value added)		**1.27**				

Foreign Exchange effect

The foreign exchange effect is represented in the difference between the foreign exchange inflow and outflow. The foreign exchange inflow is represented in the volume of exports of ECC. The foreign exchange outflow is assumed to be 15% of the total cost, represented in the imports of the spare parts. By discounting the net foreign exchange, we

get a positive foreign exchange effect of L.E. 556 million. This is despite the fact that ECC started to export a percentage of its production since 2002.

Table A3: Foreign exchange effect

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
FX in	0	0	0	345	391	460
FX out	149	235	277	437	457	477
	0.15	0.15	0.15	0.15	0.15	0.15
	22	35	41	65	68	71
Net FX	(22)	(35)	(41)	279	322	388
Net PV FX	(19)	(26)	(27)	159	160	167
Sum of PV	**556**					

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