

## **Ceramics Industry in India: A Trade Perspective**

### **Introduction**

Ceramics also known as fire clay is an inorganic, non-metallic solid article, which is produced by the art or technique of heat and subsequent cooling<sup>1</sup>. Ceramics is a diverse industry and contains several categories of products, including sanitary ware, refractories<sup>2</sup>, cement, advanced ceramics and ceramic tiles<sup>3</sup>.

Ceramic products like crockery, sanitary ware, tiles etc play a very important role in our daily life. This is because, apart from their decorative look, ceramic products are primarily hygiene products. This is also one of the chief reasons for their wide usage in bathrooms and kitchens in modern households to medical centres, laboratories, milk booths, schools, public conveniences etc.

The ceramic industry has a long history, with the first instance of functional pottery vessels being used for storing water and food, being thought to be around since 9,000 or 10,000 BC. Clay bricks were also made around the same time. The ceramic industry has been modernising continuously, by newer innovations in product design, quality etc.

### **Section I: Global Scenario**

#### **Global Trade Profile**

During the period from 2001 to 2008, total ceramics trade grew at a CAGR of 9.8%, from US\$ 39.6 billion to US\$ 83.5 billion. During the period exports

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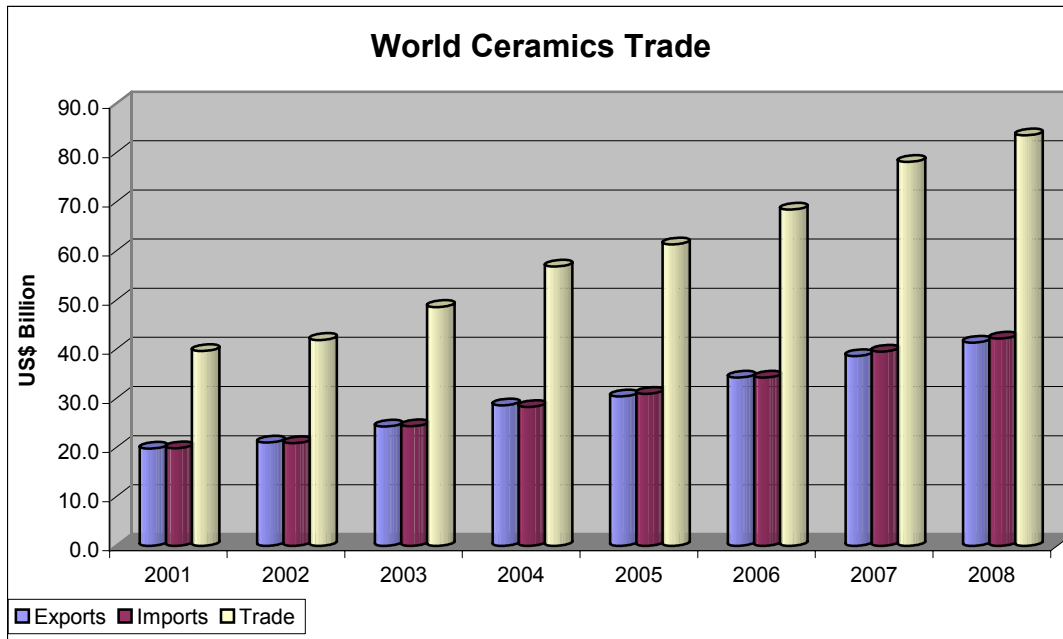
<sup>1</sup> Ceramic Tiles and Stone Standards

<sup>2</sup> Refractory is a ceramic material, which can withstand volatile and high-temperature conditions encountered in the processing of metals. Refractory ceramics are enabling materials for other industries as well. The chemical, petroleum, energy conservation, glass and other ceramic industries, all rely upon refractory materials.

<sup>3</sup> Tiles could be further segmented into wall tiles, floor tiles, vitrified and porcelain tiles.

increased from US\$ 19.8 billion to US\$ 41.3 billion (CAGR of 9.7%), while imports increased from US\$ 19.9 billion to US\$ 42.2 billion (CAGR of 9.9%).

**Figure I**



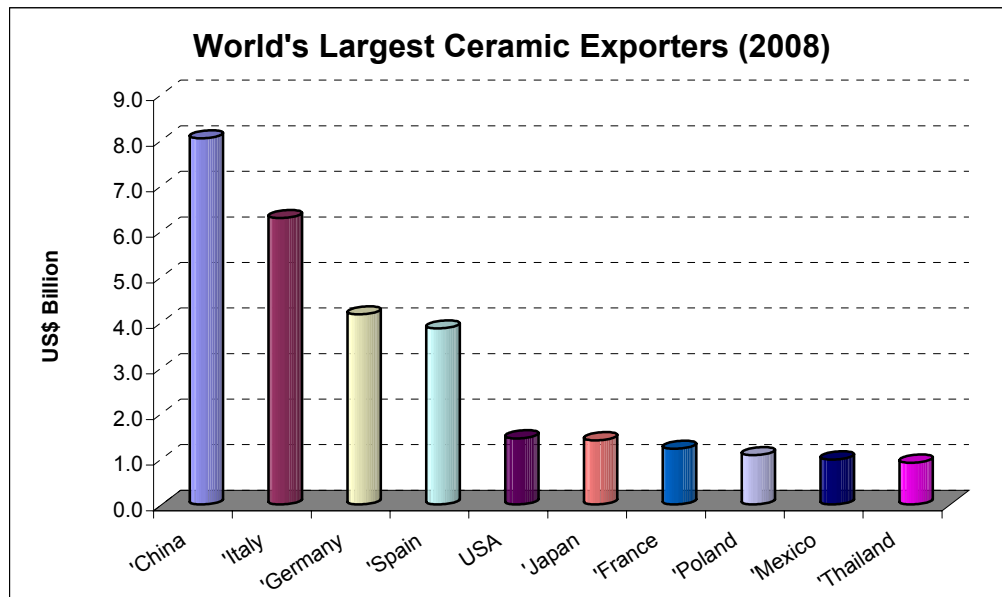
SOURCE: ITC, Geneva

China is the largest trader of ceramics in the world, with total trade of US\$ 8.5 billion during 2008, followed by Italy, US and Germany with total trade of US\$ 7.4 billion, US\$ 6.9 billion and US\$ 6.8 billion, respectively.

### Major Exporters

China was the largest ceramic exporter during 2008, with exports of US\$ 8 billion. Italy, Germany and Spain followed China with annual exports of US\$ 6.3 billion, US\$ 4.2 billion and US\$ 3.9 billion, respectively. The top ten countries together accounted for close to 72% of total ceramics exports during 2008.

**Figure II**



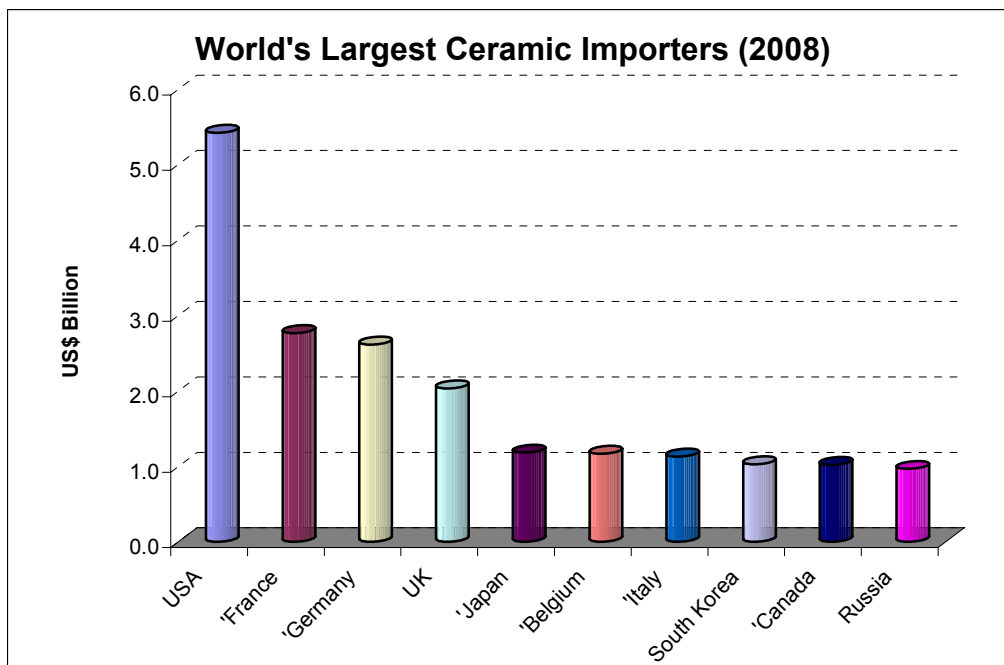
SOURCE: ITC, Geneva

### **Major Importers**

United States was the world's largest ceramic importer during 2008, with imports worth US\$ 5.4 billion. US rely heavily on imports of ceramic to meet its domestic ceramics consumption. This is also reflected in its high ceramics trade deficit of close to US\$ 4 billion.

US is followed by France, Germany and United Kingdom with annual imports of US\$ 2.7 billion, US\$ 2.6 billion and US\$ 2.0 billion, respectively.

**Figure III**



SOURCE: ITC, Geneva

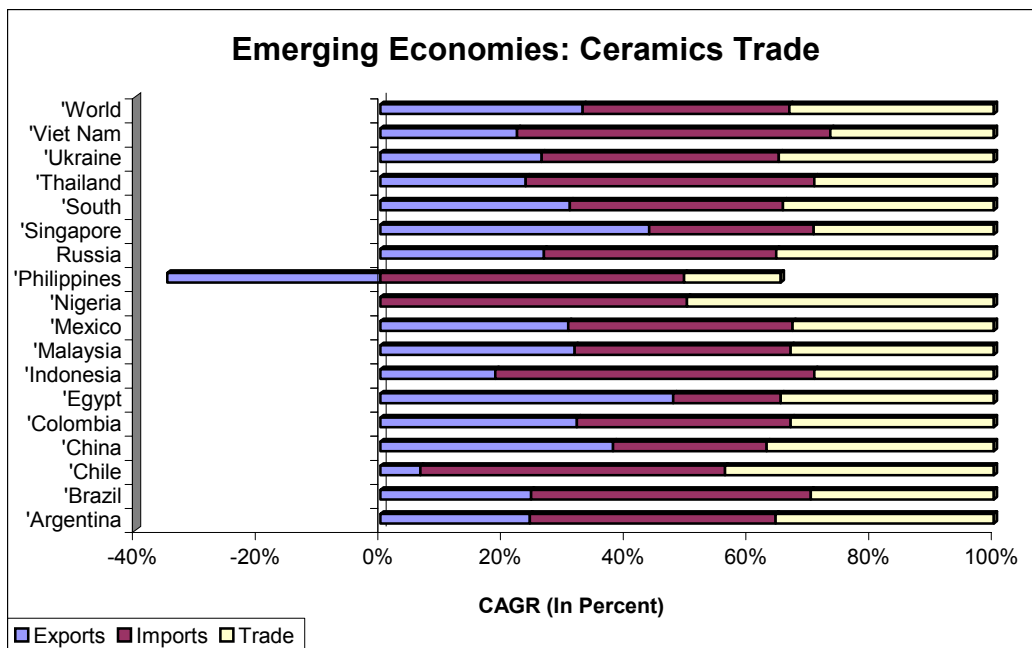
### **Trade situation in emerging markets**

The global ceramic industry has undergone a period of significant change over the years, driven by the demands of a globalised economy. While the traditional markets of Europe and the US continue to grow, primarily led by public sector investment, the most significant developments are however to be found in the emerging economies. They have, in recent years become the most significant players in the ceramic market, in terms of consumption, growth and investment.

Since the future of the ceramic sector is so intricately linked with the continued economic growth in emerging economies, the paper assesses the trade situation in emerging<sup>4</sup> markets, excluding India.

<sup>4</sup> The paper uses the World Bank list of emerging economies. The emerging economies as identified in the paper are Ukraine, Nigeria, Vietnam, Egypt, Philippines, Russia, Malaysia, China, South Africa, Thailand, Venezuela, Chile, Singapore, Colombia, Brazil, Argentina, Mexico, and Indonesia.

**Figure IV**



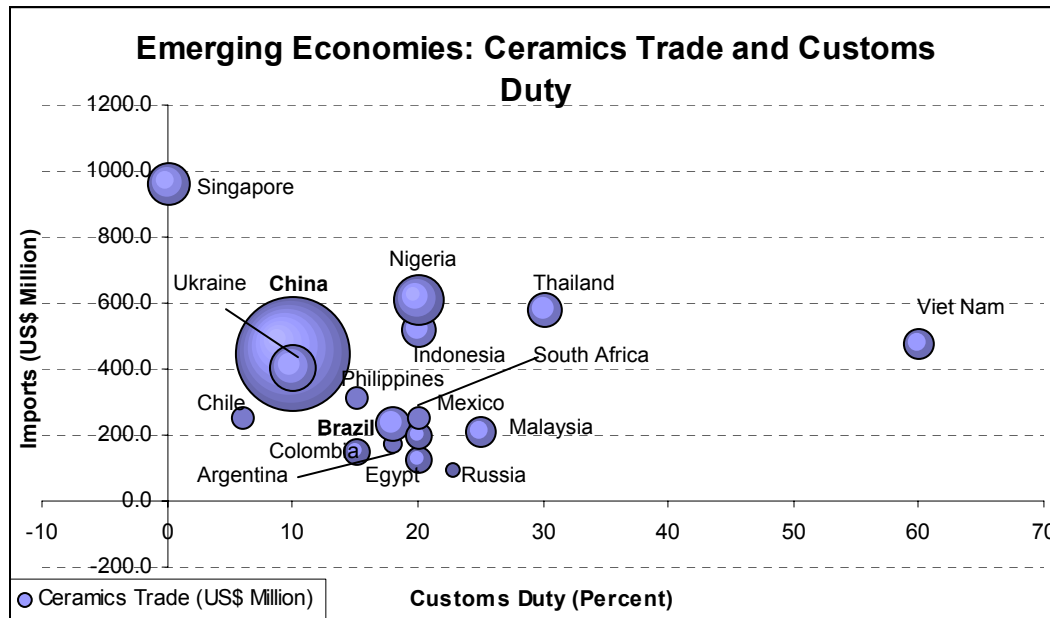
**SOURCE: ITC, Geneva**

As per the data available, during the period from 2001 to 2008, while the world ceramics trade grew at a CAGR of 9.8%, the average growth in trade for these economies was around 14%. The increased demand for ceramics in emerging markets may be attributable to rapid economic growth and greater public and private sector investment in these countries.

Nigeria witnessed the highest growth in ceramics trade, with a CAGR of 29.4%. The rapid increase in Nigeria's ceramics trade was led by rapid increase in ceramics imports. Ukraine, Russia and China followed Nigeria with a CAGR of 21.6%, 21.2% and 20.3% respectively.

Despite a high base, China's exports grew at a CAGR of 20.8% and ceramic imports increased by 13.7%.

**Figure V**



SOURCE: ITC, Geneva

During 2008, Vietnam imposed the highest<sup>5</sup> customs duty of 60%, on ceramics, among the emerging economies under consideration. This was followed by Thailand, which imposed a customs duty of 30%. Like India, China and Ukraine imposed a customs duty of 10%, while Chile imposed a customs duty of 6% and Singapore did not impose any customs duty on ceramic imports.

### Level of Intra-Industry Trade

Intra-industry trade arises if a country simultaneously imports and exports similar types of goods or services. The paper uses the Grubel Lloyd Index<sup>6</sup>, proposed by Grubel and Lloyd in 1975, to determine the extent of intra-industry trade.

<sup>5</sup> Vietnam joined the World Trade Organisation (WTO) in January 2007 and as per the WTO accession clause, it is expected to significantly reduce its tariff levels only by 2012. Consequently, during 2008, Vietnam imposed the highest customs duty of 60%, on ceramics, among all the emerging economies under consideration.

<sup>6</sup> The Grubel-Lloyd Index measures the extent of intra-industry trade in a particular industry or an economy as a whole.

For an industry *i* with exports  $X_i$  and imports  $M_i$  the index is

$$GL_i = 1 - [|X_i - M_i| / (X_i + M_i)],$$

Where  $X_i$  is the export in a certain line of goods and  $M_i$  – import in the same commodity group.

The value of  $GL_i$  index can vary between 0 and 1, whereas the former denotes zero intra-industry trade and the latter corresponds to the situation where all trade is intra-industry.

If the country only imports or only exports goods or services within the same sector, such that there is no intra-industry trade, value of the Grubel – Lloyd Index reduces to zero. On the other hand if the export value is exactly equal to the import value, Grubel – Lloyd Index takes a value of 1. The Grubel–Lloyd index therefore varies between zero (indicating pure inter-industry trade) and one (indicating pure intra-industry trade).

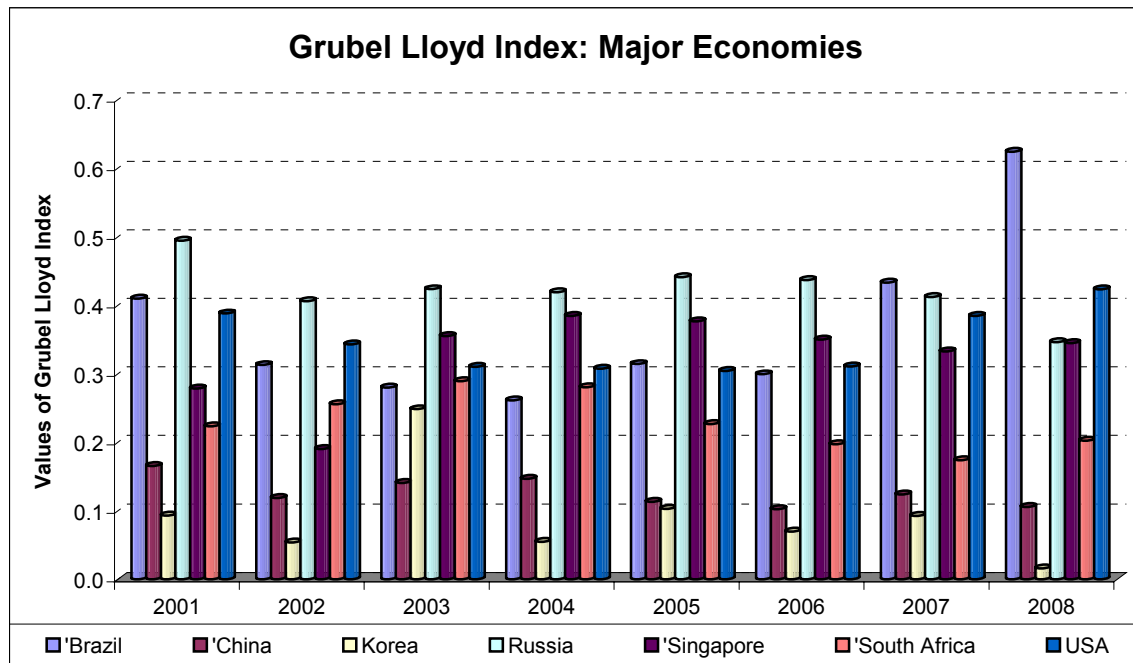
Figure VI below shows the level of intra-industry trade in Ceramics, among major economies of the world, excluding India. As visible in the figure, China and South Korea have amongst the lowest level of intra-industry trade among all the economies under consideration. On the other hand Brazil and USA have the highest level of intra-industry trade.

Since the value of the Grubel-Lloyd Index changes with an increase in deviation in country's imports and exports, low level of intra-industry trade in China may be explained by low level of ceramics imports compared to exports. On the other hand, low intra-industry trade in South Korea may be explained by low value of exports compared to imports.

While, China, Russia, South Korea and South Africa saw a drastic decline in the Grubel-Lloyd Index values during the period from 2001 to 2008, the Index values for Brazil, Singapore and USA increased.

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**Figure VI**



SOURCE: ITC, Geneva and CII analysis

## Section II. India's Trade Profile and Market Access

The ceramics industry in India came into existence about a century ago and has matured over time to form an industrial base. From traditional pottery making, the industry has evolved to find its place in the market for sophisticated insulators, electronic and electrical items. Over the years, the industry has been modernising through new innovations in product profile, quality and design to emerge as a modern, world-class industry, ready to take on global competition.

The Indian Ceramic Industry ranks at 8th position in the world and produces around 2.5% of global output. The industry provides employment to 550,000 people, of whom 50,000 are directly employed. Gujarat accounts for around 70 % of total ceramic production.



The ceramic products are produced both in organised as well as in unorganised sector. The share of organised sector in total production is around 55%. The organised sector is characterised by the existence of a few large players<sup>7</sup>. Small and medium enterprises (SMEs) account for more than 50 per cent of the total market in India, offering a wide range of articles including crockery, art ware, sanitary ware, ceramic tiles, refractory and stoneware pipes among others. Most of the players are grouped together in clusters.

Over the last two decades, the technical ceramics segment has recorded an impressive growth propelled by the demand for high-alumina ceramics, cuttings tools and structural ceramics from the industry. Overall, the Indian ceramics industry has emerged as a major manufacturer and supplier in the global market.

### **India's Ceramic Trade**

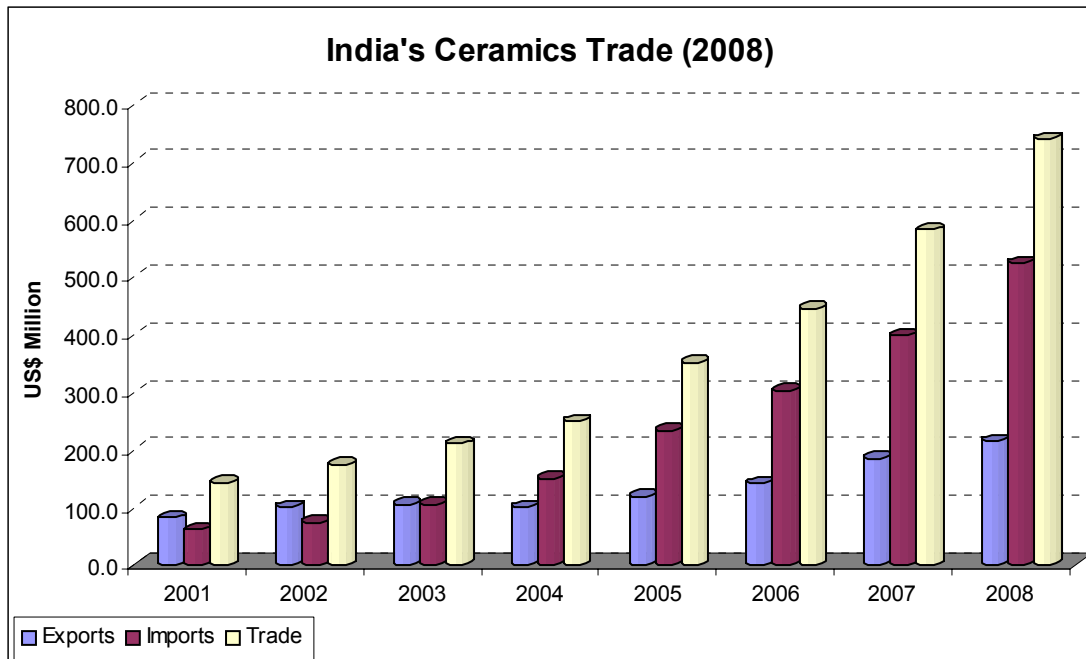
During 2008, India was the 24<sup>th</sup> largest ceramic trading nation in the world and accounted for a share of around 0.9% in total ceramics trade. During the period, from 2001 to 2008, India's ceramics trade increased from US\$ 143 million to US\$ 738 million at a CAGR of 22.2%. The increase in trade was led by rise in imports, which increased, from US\$ 60.9 million in 2001 to US\$ 523.8 million in 2008, at a CAGR of 30.9%. India's ceramic exports on the other hand increased at a CAGR of 12.8%, from US\$ 82.3 million to US\$ 214.5 million.

China was India's main source of ceramics imports, during 2008 with imports worth US\$ 317.5 million followed by Germany and Italy with imports worth US\$ 50.7 million and US\$ 22.5 million, respectively. India's top five import sources together accounted for close to 82% of India's total ceramics imports during 2008. China alone accounted for 60.7% of India's ceramic imports.

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<sup>7</sup> EXIM Bank: Indian Ceramic Industry: Perspectives & Export Potential

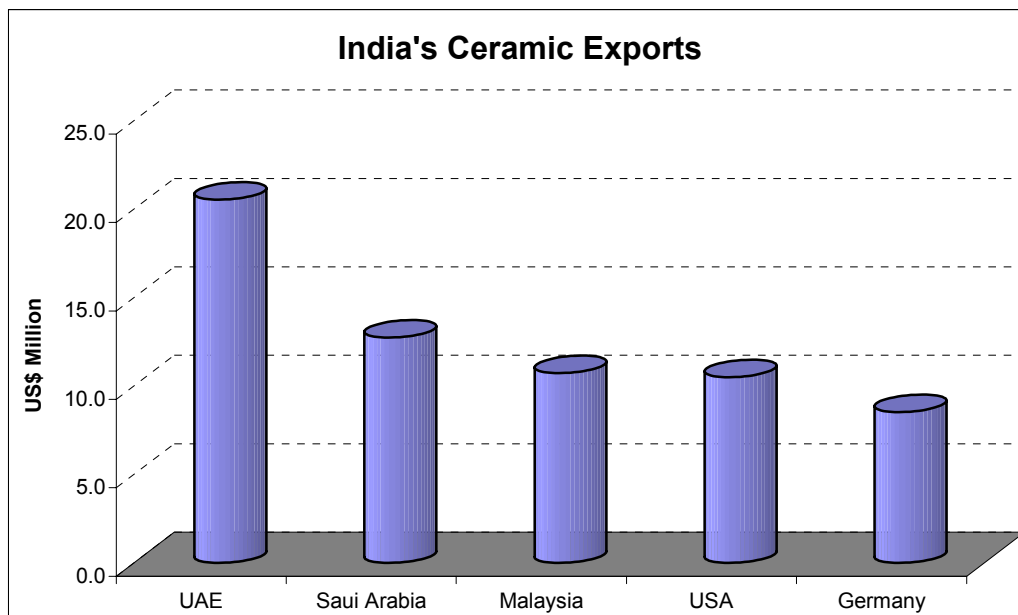
**Figure VII**



**SOURCE: ITC, Geneva**

UAE, Saudi Arabia and Malaysia were the major destinations for India's Ceramics exports during 2008. India's top five ceramics export destinations together accounted for 30% of India's total ceramics exports.

**Figure VIII**



SOURCE: ITC, Geneva

### **India's sectoral competitiveness**

This paper measures India's changing pattern of trade specialisation by applying an approach originally adopted in Lafay (1992). The Lafay Index<sup>8</sup> defines a country's trade specialisation with regard to a specific good as the difference between the trade balance of that good and the country's overall trade balance, weighted by the good's share of total trade.

The Lafay index for the ceramics sector in India has been computed at a disaggregate level of 6-digit HS classification. The results of which are given in Table I below.

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<sup>8</sup> The Lafay Index is a measure of country's trade specialisation with regard to a specific product. Positive values of the Lafay Index indicate the existence of comparative advantage in a given item and the negative value indicates the point of despecialisation. The greater the value of the index the higher is the degree of specialisation.

**Table I**

<b>Lafay Index Values for India's Ceramics Sector - 2008</b>		
<b>HS Code</b>	<b>Sector Classification</b>	<b>Lafay Index Values</b>
'690320	Refractory ceramic goods nes, >50% of Al <sub>2</sub> O <sub>3</sub> /mx/compds alumina/silica SiO <sub>2</sub>	0.006750
'691090	Ceramic sinks, wash basins etc & similar sanitary fixtures nes	0.004672
'690220	Refractory bricks etc >50% alumina Al <sub>2</sub> O <sub>3</sub> , silica SiO <sub>2</sub> or mixture etc	0.002231
'690990	Ceramic troughs, tubes etc used in agriculture, ceramic pots etc	0.001124
'691110	Tableware and kitchenware of porcelain or china	0.000872
'690100	Bricks, blocks etc & ceramic goods of siliceous fossil meals o sim earths	0.000606
'690600	Ceramic pipes, conduits, guttering and pipe fittings	0.000387
'690390	Refractory ceramic goods nes	0.000324
'690510	Roofing tiles, ceramic	0.000086
'690911	Ceramic wares laboratory, chemical/other technical uses of porcelain/china	0.000082
'690912	Ceramic laboratory wares, hardness >9 on Mohs scale	0.000045
'691410	Articles of porcelain or china nes	0.000016
'690490	Ceramic flooring blocks, support or filler tiles and the like	-0.000002
'690410	Building bricks	-0.000009
'691310	Statuettes and other ornamental articles of porcelain or china	-0.000105
'690590	Chimney-pots, cowls, chimney liners etc & other ceramic constructional goods	-0.000168
'691390	Statuettes and other ornamental articles of ceramics nes	-0.000180
'690310	Refractory ceramic goods nes, >50% of graphite/other forms of carbon etc	-0.000320
'691190	Household articles nes & toilet articles of porcelain or china	-0.000432
'691010	Ceramic sinks, wash basins etc & similar sanitary fixtures of porcelain/china	-0.000497
'690710	Tiles, cubes and similar <7 cm rect or not etc, unglazed ceramics	-0.000585
'690919	Ceramic wares laboratory, chemical/other technical uses nes	-0.001054
'691200	Ceramic tableware, kitchenware, other household & toilet articles nes	-0.001136
'690890	Tiles, cubes and similar nes, glazed ceramics	-0.001322
'691490	Articles of ceramics nes	-0.002094
'690810	Tiles, cubes and sim <7 cm rect or not etc, glazed ceramics	-0.002363
'690290	Refractory bricks etc nes	-0.006261
'690790	Tiles, cubes and sim nes, unglazed ceramics	-0.008783
'690210	Refractory bricks etc >50% Mg, Ca o Cr expressed as MgO, CaO o Cr <sub>2</sub> O <sub>3</sub> o mx	-0.014123

SOURCE: ITC Geneva and CII staff calculations

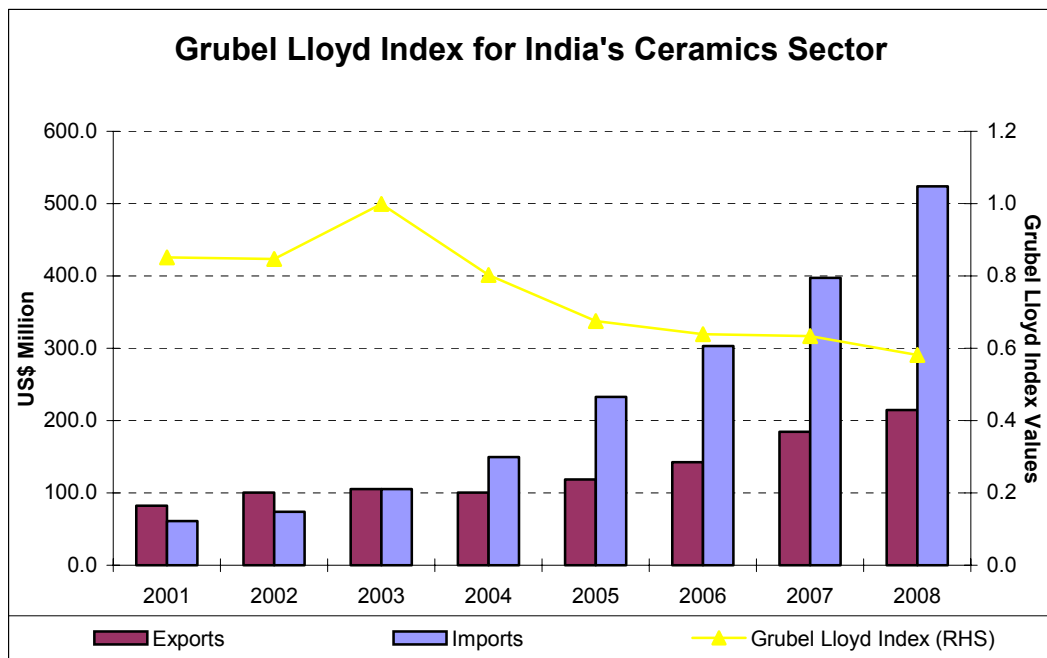
As table I, above shows, despite being the eighth largest producer of ceramics in the world, the Lafay Index values for India's ceramics sector is zero or close to

zero levels, indicating no or low level of comparative advantage in the ceramics sector for India.

### Intra-Industry Trade

The intra-industry trade in India's ceramics sector after increasing until 2005 has shown signs of falling since then. As figure IX, below shows the values of Grubel – Lloyd Index after rising to 1 in 2005 have fallen to 0.6 in 2008. Since, the Grubel-Lloyd Index measures the extent of intra-industry when the country simultaneously exports and imports the same good, any divergence between exports and imports results in fall in index values. Since, 2005 while India's ceramic imports picked up, the exports could not keep up with the pace and hence led to a decline in Grubel-Lloyd Index values.

**Figure IX**



SOURCE: ITC Geneva and CII Staff Calculations

## **Section III. The Competitiveness Matrix**

### **Major Inputs and Issues**

The ceramics industry is a highly energy intensive sector. Petroleum and raw material products together form the most critical component in the production of the sector.

As per the data from CSO, petroleum products and clay products account for a share of 15.6% and 12.7%, respectively in the production of ceramic products. Other non-metallic minerals and mineral products, bauxite etc account for a share of 11.3%, 5.3% and 4.9% respectively.

On the import duties front, while the tariffs on ceramic tiles is 10%, the inputs used in the production process attract a customs duty of 5%, 7.5% and 10%. China became member of Bangkok Agreement (now known as Asia – Pacific Trade Agreement) with effect from 1st January 2004 and ceramic tiles imported from China are eligible for 57% concession on the applied rate of customs duty.

Presently customs duty rate on ceramic tiles from China is 4.3% since 1st March 2007, which is less than customs duty on any input for tiles creating an anomalous situation. In the year 2007-08, out of total imports of Rs. 59,965 lakh of tiles under tariff heading 6907 and 6908, imports from China were Rs.45,477 lakh.<sup>9</sup>

### **Section IV: Firm level performance**

The main ceramic articles in the industry are the Wall tiles, Floor tiles, Vitri-fied tiles and Porcelain tiles, with respective market shares of 35 percent, 53 percent

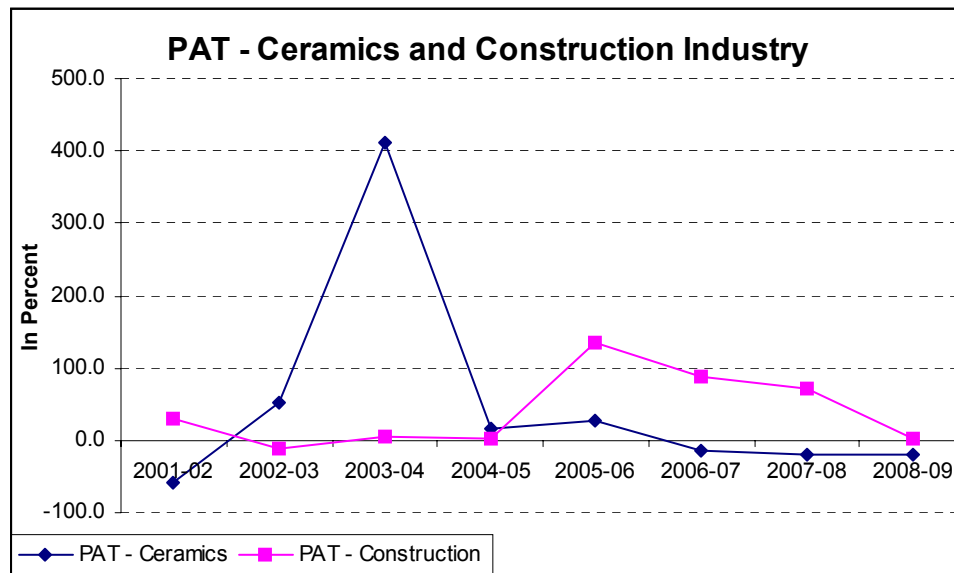
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<sup>9</sup> Union Budget 2010-11: An Analysis, CII

and 12 percent. There have been a few initiatives in the past at the national and international level for constant technological and quality up gradations to make the industry globally competitive. The National Program for Energy Efficiency in SME Ceramic Industries, A Joint UNIDO – DIPP Project is a major initiative in India to reduce the energy costs, improve productivity, foster market linkages and promote the Indian brand image.

Ceramics products are one of the major inputs of the construction sector. However, as the graph below shows, there is not a very high degree of correlation between the two sectors. During 2002-03, while the growth in Profit After Tax (PAT) of ceramics sector increased, the PAT of construction sector declined. It was only from 2004-05 to 2006-07, that growths in PAT of ceramics and construction sector show a mirror image of each other.

**Figure X**



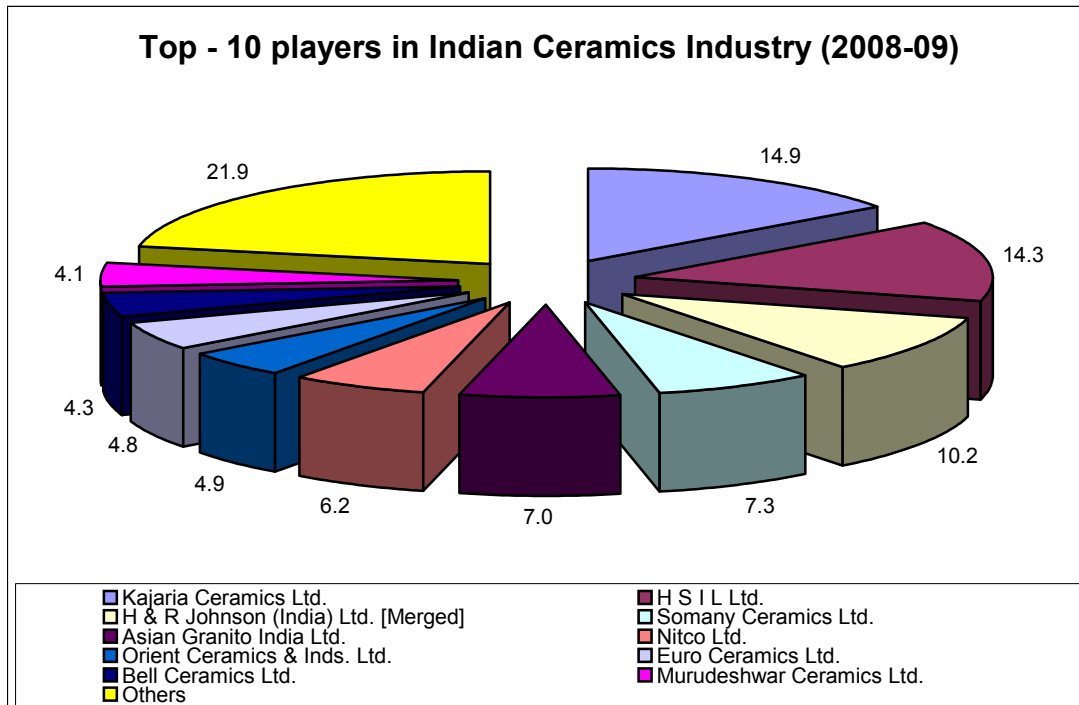
SOURCE: CMIE

### Structure of the Indian Ceramics Industry

In India ceramic items like crockery, sanitary ware, art ware, refractory, stoneware pipes and many others are manufactured in the Small and Medium

Enterprises (SME) sector. The structure of Indian ceramics industry is highly fragmented with very few large players and a large number of SMEs who face problems of poor economies of scale<sup>10</sup>.

**Figure XI**



SOURCE: Prowess, CMIE

### Profitability of Ceramics Companies

To evaluate the competitiveness of firms in the Indian ceramics industry, the paper measures the dispersion in the performance of all the public listed ceramics manufacturing companies in India, on the basis of following parameters

- **Profit Margin:** It measures how much profit does a company earn out of every rupee of sales. It is calculated as PAT/Net Sales.
- **Interest incidence:** Interest incidence measures the burden of interest expenses on total profits of the company. It is used to measure the cost of borrowed capital for a company.

<sup>10</sup> IBEF



- **Gross fixed assets turnover ratio<sup>11</sup>**: Gross fixed assets turnover ratio measures how efficiently fixed assets are utilised to generate sales.

These performance indicators have been chosen, since it is possible to compare these indicators across companies, irrespective of their size and years of operation.

### **Competitiveness of firms**

In the overall profitability rankings, HSIL Ltd was the most profitable company in the Indian market, followed by Nitco Ltd and H&R Johnson India Ltd. Over a period from 2000-01 to 2008-09, the profits of HSIL Ltd grew at a CAGR of 31%, and that of Nitco Ltd increased by 17%.

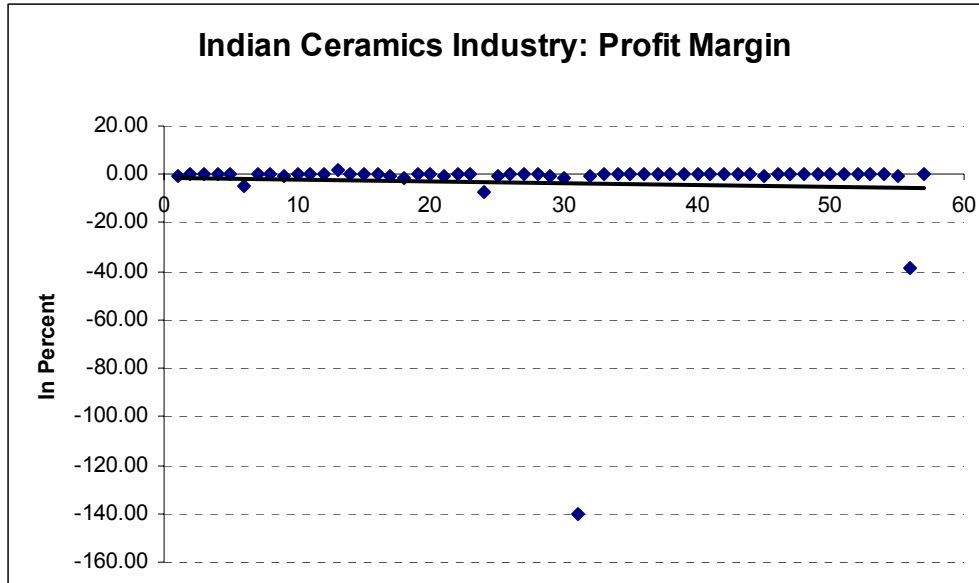
### **Profit Margin**

A look at the profit margin of all the ceramics companies in India shows that the profits per rupee of sales stood in the range of 0.01% and 0.30%, during 2008-09.

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<sup>11</sup> Gross fixed assets turnover ratio has been calculated as Sales/Gross fixed assets

**Figure XII**

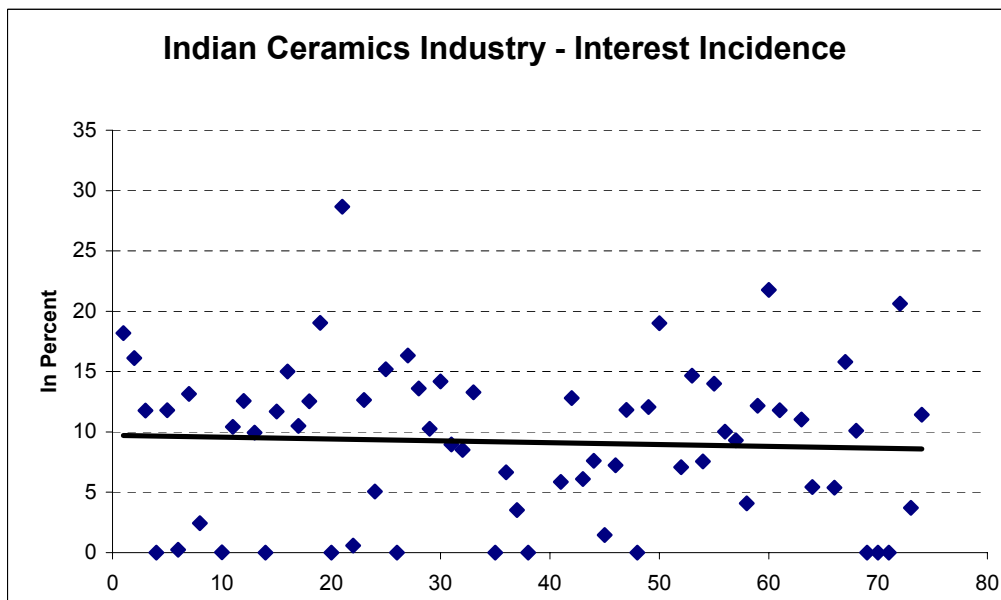


SOURCE: Prowess, CMIE

**Interest incidence**

Interest incidence during 2008-09 was in the range of 5% to 20%. The various liquidity infusion measures that the Reserve Bank of India initiated towards the latter half of 2008 to reduce the cost of credit for Indian industry.

**Figure XIII**

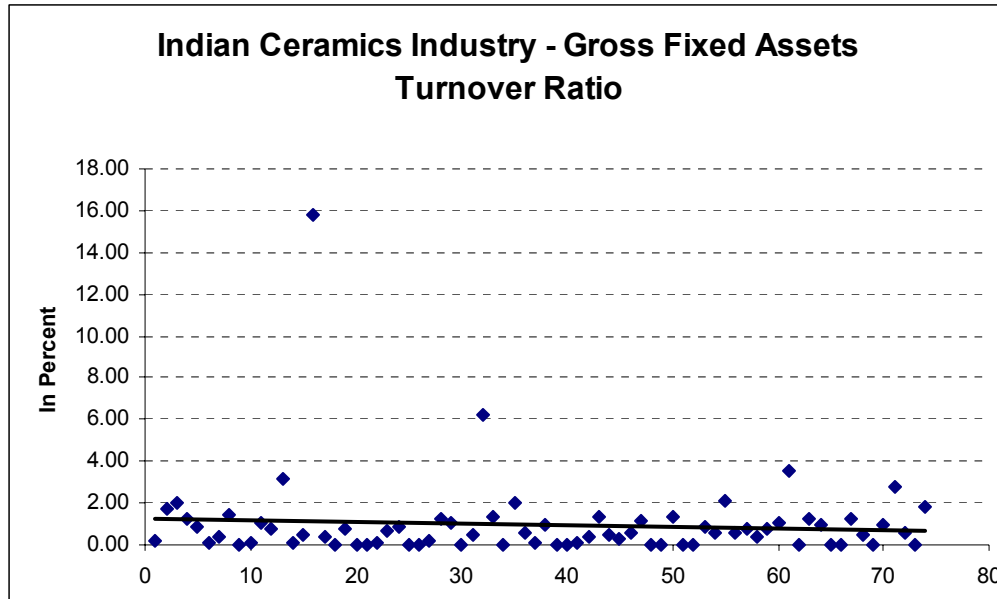


SOURCE: Prowess, CMIE

## Gross Fixed Assets Turnover Ratio

During 2008-09, the gross fixed assets turnover ratio for Indian ceramics companies 0% to 3%.

Figure XIV



SOURCE: Prowess, CMIE