

## **CEMEX: Globalization “The CEMEX Way”**

*Donald R. Lessard and Cate Reavis*

*When one wants to globalize a company, especially when it is from a developing country like Mexico, you really need to apply more advanced management techniques to do things better. We have seen many cement companies that use their capital to acquire other companies but without making the effort to have a common culture or common processes, they get stagnant.<sup>1</sup>*

—Lorenzo Zambrano, Chairman and CEO CEMEX

On June 7, 2007 Mexico-based CEMEX won a majority stake in Australia’s Rinker Group. The \$15.3 billion takeover, which came on top of the major acquisition in 2005 of the RMC Corporation – then the world’s largest ready-mix concrete company and the single largest purchaser of cement – made CEMEX one of the world’s largest supplier of building materials. This growth also rewarded CEMEX’s shareholders handsomely through 2007, though its share price had fallen precipitously in 2008 in response to the global downturn and credit crisis coupled with the substantial financial leverage that had accompanied the Rinker acquisition.

CEMEX’s success over the 15 years from its first international acquisition in 1992 to the Rinker acquisition in 2007 was not only noteworthy for a company based in an emerging economy, but also in an industry where the emergence of a multinational from an emerging economy (EMNE) as a global leader could not be explained by cost arbitrage; given cement’s low value to weight ratio little product moves across national boundaries.

Much of CEMEX’s success could be attributed to how it looked at acquisitions, and the post-merger integration (PMI) process that ensued, as an opportunity to drive change, and as a result, continuously evolve as a corporation. Since it began globalizing its operations in the early 1990s, the company had

---

<sup>1</sup> John Barham, “An Intercontinental Mix,” *Latin Finance*, April 1, 2002.

---

This case was prepared by Cate Reavis from published sources under the supervision of professor Donald R. Lessard. Professor Lessard is the Epoch Foundation Professor of International Management.

Copyright © 2009, Donald R. Lessard. This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 Unported License. To view a copy of this license visit <http://creativecommons.org/licenses/by-nc-nd/3.0/> or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California, 94105, USA.

been praised for its ability to successfully integrate its acquisitions by, at one and the same time, introducing best practices that had been standardized throughout the corporation and making a concerted effort to learn best practices from the acquired company and implement them where appropriate. Known internally as the CEMEX Way, CEMEX standardized business processes, technology, and organizational structure across all countries while simultaneously granting countries certain operational flexibility, enabling them to react more nimbly to local operating environments. In addition, CEMEX was known as an innovator, particularly in operations and marketing, and the CEMEX Way encouraged innovation, particularly if it could be applied throughout the firm. For CEMEX, the resulting innovation and integration process was an ongoing effort as it recognized the value of “continuous improvement.”

The development of CEMEX’s growing international footprint and the associated learning process could be divided into four stages: Laying the Groundwork for Internationalization, Stepping Out, Growing Up, and Stepping Up. (See **Table 1.**) This case details how CEMEX has exploited its core competencies, initially generated at home, and enhanced these with learnings from new countries, to begin the cycle again.

**Table 1 CEMEX Internationalization Timeline**

Year	Stage	Key Events	Key Steps in Internationalization Process (italics indicate acquisition)
	Laying the Groundwork		
1982		Mexican crash	
1985		Zambrano named CEO	
1989		Consolidates Mexican market position with acquisition of <i>Tolteca</i>	
1989		Anti-dumping penalties imposed on exports to U.S.	
	Stepping Out		
1992			Spain
1994			Venezuela, Panama
1995		Mexican recession	Dominican Republic
	Growing Up		
1996			Colombia
1996		Death of CFO	PMI applied to Mexico
1997-1999			Philippines, Indonesia, Egypt, Chile, Costa Rica
1999		NYSE Listing	
	Stepping Up		
2000			Southdown US
2005			<i>RMC</i> (UK- based global ready-mix)
2007			<i>Rinker</i> (Australian/US based global concrete, aggregates)

## Laying the Groundwork for Internationalization

In the 25 years leading up to the Rinker deal, CEMEX had evolved from a small, privately-owned, cement-focused Mexican company of 6,500 employees and \$275 million in revenue to a publicly-traded, global leader of 65,000 employees with a presence in 50 countries and \$21.7 billion in annual revenue in 2007. See **Exhibit 1** for financials and **Exhibit 2** for market share information.

Well before its first significant step toward international expansion in 1992, CEMEX had developed a set of core competencies that would shape its later trajectory including strong operational capabilities based on engineering and IT, and a culture of transparency. It also had mastered the art of acquisition and integration within Mexico, having grown through acquisitions over the years.<sup>2</sup> Between 1987 and 1989 alone, the company spent \$1 billion in order to solidify its position at home.

When the current CEO, Lorenzo Zambrano, assumed this post in 1985, Mexico had already begun the process of opening up its economy, culminating with its entry into NAFTA. The 1982 crash undercut the state-led nationally-focused model that had been predominant in Mexico over the years, and Mexico began the process of entering GATT, the precursor of the WTO. Recognizing that these events would significantly change the Mexican cement industry from a national to a global game, Zambrano began preparing the firm for a global fight.

The first step would involve divestitures from non-related businesses and the disposal of non-core assets. CEMEX also began “exploring” opportunities in foreign markets through exports, which required a fairly aggressive program of building or buying terminal facilities in other markets. Finally, the company began laying the groundwork for global expansion by investing in a satellite communication system, CEMEXNET, in order to avoid Mexico’s erratic, insufficient and expensive phone service, and allow all of CEMEX’s 11 cement factories in Mexico to communicate in a more coordinated and fluid way.<sup>3</sup> Along with the communication system, an Executive Information System was implemented in 1990. All managers were required to input manufacturing data—including production, sales and administration, inventory and delivery—that could be viewed by other managers. The system enabled CEO Zambrano to conduct “virtual inspections” of CEMEX’s operations including the operating performance of individual factories from his laptop computer.

## Stepping Out

In 1989, CEMEX completed a major step in consolidating its position in the Mexican cement market by acquiring Mexican cement producer Tolteca, making CEMEX the second largest Mexican cement producer and putting it on the Top 10 list of world cement producers. At the time of the acquisition,

---

<sup>2</sup> CEMEX was formed in 1931 from a merger between Cementos Hidalgo and Cementos Portland Monterrey. Later acquisitions and domestic expansion activity included: 1966, acquisition of Cementos Maya’s plants in Merida and Yucatan (South East Mexico) and construction of new plants in Torreon, Coahuila and Ciudad Valles, San Luis Potosi (Central Eastern); 1970, acquisition of a plant in Central Mexico; 1976, acquisition of Cementos Guadalajara’s three plants (Central Western); 1987, acquisition of Cementos Anahuac; 1989, acquisition of Cementos Tolteca (Distrito Federal).

<sup>3</sup> Hau Lee and David Hoyt, “CEMEX: Transforming a Basic Industry,” *Stanford Graduate School of Business Case No. GS-33*.

CEMEX was facing mounting competition in Mexico. Just three months before the deal with Tolteca was finalized, Swiss-based Holderbank (Holcim), which held 49% of Mexico's third largest cement producer Apasco (19% market share), announced its intention to increase its cement capacity by 2 million tons.<sup>4</sup> This, along with easing foreign investment regulations that would allow Holderbank to acquire a majority stake in Apasco, threatened CEMEX's position in Mexico.<sup>5</sup> At the time, CEMEX accounted for only 33% of the Mexican market while 91% of its sales were domestic.

In addition to these mounting threats in its home market, CEMEX was confronted with trade sanctions in the United States, its largest market outside of Mexico. Exports to the U.S. market began in the early 1970s, but by the late 1980s, as the U.S. economy and construction industry were experiencing a downturn, the U.S. International Trade Commission slapped CEMEX with a 58% countervailing duty on exports from Mexico to the United States, later reduced to 31%.<sup>6</sup>

In 1992, CEMEX acquired a majority stake in two Spanish cement companies, Valenciana and Sanson, for \$1.8 billion, giving it a majority market share (28%) in one of Europe's largest cement markets.<sup>7</sup> The primary motivation for entering Spain was a strategic response to Holcim's growing market share in Mexico. As Hector Medina, CEMEX Executive VP of Planning and Finance, explained, "Major European competitors had a very strong position in Spain and the market had become important for them."<sup>8</sup>

A further important reason for the acquisition was that Spain during this time was an investment-grade country, having just entered the European Monetary Union, while domestic interest rates in Mexico were hovering at 40%, and Mexican issuers faced a country risk premium of at least 6% for offshore dollar financing.<sup>9</sup> Operating in Spain enabled CEMEX to tap this lower cost of capital not only to finance the acquisition of Valenciana and Sanson, but also to fund its growth elsewhere at affordable rates. (See **Exhibit 3** for CEMEX organizational structure.) While this benefit could have been obtained in any EU country, Spain offered considerable opportunities for growth and was relatively affordable. In addition, the linguistic and cultural ties between the two countries made it a sensible strategic move.

In order to pay off the debt taken on to fund the acquisition, CEMEX set ambitious targets for cost recovery. However, it soon discovered that by introducing its current Mexican-based best practice to the Spanish operation, it was able to reduce costs and increase plant efficiency to a much greater

---

<sup>4</sup> "Holderbank of Switzerland Announces Major Investment Plans," *Neue Zuercher Zeitung* October 13, 1989.

<sup>5</sup> John Barham, "An Intercontinental Mix," *Latin Finance*, April 1, 2002.

<sup>6</sup> Pankaj Ghemawat and Jamie L. Matthews, "The Globalization of CEMEX," *Harvard Business School Case No. 701-017*.

<sup>7</sup> Pankaj Ghemawat and Jamie L. Matthews, "The Globalization of CEMEX," *Harvard Business School Case No. 701-017*.

<sup>8</sup> Joel Podolny and John Roberts, "CEMEX, S.A. de C.V.: Global Competition in a Local Business," *Stanford University Graduate School of Business, Case No. S-IB-17*.

<sup>9</sup> L. Hossie, "Remaking Mexico," *The Globe and Mail*, February 7, 1990.

extent, with annual savings/benefits of \$120 million<sup>10</sup> and an increase in operating margins from 7% to 24%.<sup>11</sup>

Thus, while the primary motive for the Spanish acquisition was to respond to a competitive European entry in its home market, a major source of value resulting from the acquisition was the improvement in operating results due to the transfer of best practice from a supposedly less advanced country to a supposedly more advanced one.

Further, although it had acquired and integrated many firms within Mexico, this acquisition, because of its size and the fact that it was in a foreign country, forced CEMEX to formalize and codify its Post Merger Integration (PMI) process. CEMEX also enhanced its capabilities through direct learning from Spain. The company discovered, for example, that the two Spanish companies were unusually efficient due to the use of petroleum coke as a main fuel source. Within two years, the vast majority of CEMEX plants began using petroleum coke as a part of the company's energy-efficiency program.<sup>12</sup>

### **Accelerating Internationalization and Consolidating the CEMEX Way**

CEMEX's move into Spain was followed soon after with acquisitions in Venezuela, Colombia, and the Caribbean in the mid-1990s, and the Philippines, and Indonesia in the late 1990s. These acquisitions, by and large, could be seen as exploiting CEMEX's core capabilities, which now combined learnings from the company's operations in Mexico and Spain.

The PMI process also underwent a significant change during this period. Attempts to impose the same management processes and systems used in Mexico on the newly acquired Colombian firm resulted in an exodus of local talent. As a result of the difficult integration process that ensued, CEMEX learned that alongside transferring best practices that had been standardized throughout the company, it needed to make a concerted effort to learn best practices from acquired companies, implementing them when appropriate. This process became known as the CEMEX Way.

The CEMEX Way, also known as internal benchmarking, was the core set of best business practices with which CEMEX conducted business throughout all of its locations. More a corporate philosophy than a tangible process, the CEMEX Way was driven by five guidelines:

- Efficiently manage the global knowledge base;
- Identify and disseminate best practices;
- Standardize business processes;
- Implement key information and Internet-based technologies;

---

<sup>10</sup> J. Duncan, "CEMEX Wings Savings from Spanish Purchases," *Reuters*, March 19, 1993.

<sup>11</sup> Joel Podolny and John Roberts, "CEMEX, S.A. de C.V.: Global Competition in a Local Business," *Stanford University Graduate School of Business*, Case No. S-IB-17.

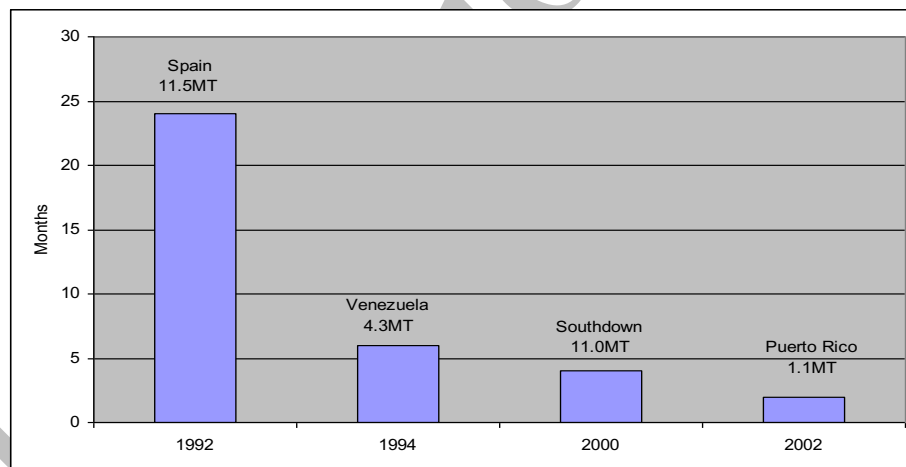
<sup>12</sup> Francisco Chavez, "CEMEX Takes the High Road," *NYSE Magazine*, October/November 2006.

- Foster innovation.

As part of the integration phase of the PMI, the CEMEX Way process involved the dispatch of a number of multinational standardization teams made up of experts in specific functional areas (Planning Finance, IT, HR), in addition to a group leader, and IT and HR support. Each team was overseen by a CEMEX executive at the VP level.<sup>13</sup>

The CEMEX Way was arguably what made CEMEX’s PMI process so unique. While typically 20% of an acquired company’s practices were retained, instead of eliminating the 80% in one swift motion CEMEX Way teams cataloged and stored those practices in a centralized database. Those processes were then benchmarked against internal and external practices. Processes that were deemed “superior” (typically two to three per standardization group or 15-30 new practices per acquisition) became enterprise standards and, therefore, a part of the CEMEX Way. As one industry observer noted, CEMEX’s strategy sent an important message of, “We are overriding your business processes to get you quickly on board, but within the year we are likely to take some part of your process, adapt it to the CEMEX system and roll it out across operations in [multiple] countries.”<sup>14</sup> By some estimates, 70% of CEMEX’s practices had been adopted from previous acquisitions.<sup>15</sup> Furthermore, in just 8 years, CEMEX was able to bring down the duration of the PMI process from 25 months for the Spanish acquisitions to less than five months for Texas-based Southdown.

**Figure 1** *Duration of Post-Merger Integration Process*



Source: CEMEX.

A key feature of the PMI process was the strong reliance that CEMEX placed on middle-level managers to both diffuse the company’s standard practices and to identify existing capabilities in the acquired firms that might contribute to the improvement of CEMEX’s current capability platform.

<sup>13</sup> Joel Whitaker and Rob Catalano, “Growth Across Borders,” *Corporate Strategy Board*, October 2001.

<sup>14</sup> Marc Austin, “Global Integration the CEMEX Way,” *Corporate Dealmaker*, February 2004.

<sup>15</sup> Joel Whitaker and Rob Catalano, “Growth Across Borders,” *Corporate Strategy Board*, October 2001.

PMI teams were formed ad-hoc for each acquisition. Functional experts in each area (finance, production, logistics, etc) were selected from CEMEX operations around the world. These managers were then relieved from their day-to-day responsibilities and sent, for periods varying from a few weeks to several months, to the country/ies where the newly acquired company operated.

Because these managers were the ones who *did* at home what they were teaching newly acquired firm's managers, they were the best teachers as well as the most likely CEMEX employees to identify which of the standard practices of the acquired firm might make a positive contribution if adapted and integrated into the CEMEX Way. On the other hand, because they were seen as the best and the brightest within CEMEX, these managers had the legitimacy to propose and advocate for changes in the firm's operation standards in a way that no other manager could. Hence, PMI team members were low enough in the organization that they were in a unique position to identify and evaluate different ways of doing things. At the same time, however, these managers were high enough in the organization that they could effectively 'sell' the value of changing a particular practice to corporate level managers.

Drawing key people from multiple countries to form these teams represented a significant challenge for what CEMEX referred to as 'legacy operations.' Since these positions were not covered with new hires and lowering performance was not in the realm of possibilities, ongoing operations had to find ways to do the same work with less people and uncover the capabilities of those that remained.

A significant step in consolidating the CEMEX Way and making "One CEMEX" a global reality occurred as the result of the tragic death in 1996 of CEMEX's CFO Gustavo Caballero. Hector Medina, who at the time was the general manager of Mexican operations, took over the CFO role, and Francisco Garza, who had been general manager of Venezuela, was named to head Mexican operations. When Garza took charge of the Mexican operations, he decided to "PMI Mexico," to apply the PMI process to Mexico as if it had just been acquired. Roughly 40 people broken down into 10 functional teams spent between two and three months dedicated to improving the Mexican operation. Savings of \$85 million were identified.<sup>16</sup> More importantly, it clearly established the principle of learning and continuous improvement through the punctuated PMI process and the continuous CEMEX Way.

Improvements resulting from the CEMEX Way were not limited to operational processes. During the 1990s, CEMEX also developed a branded cement strategy in Mexico that addressed the specific needs of customers for bag cement. While bulk cement accounted for roughly 80% of CEMEX's cement sales in developed countries, bagged cement represented the same percentage in developing countries like Mexico, reflecting the fact that many households built their own houses.<sup>17</sup> These

---

<sup>16</sup> Joel Podolny and John Roberts, "CEMEX, S.A. de C.V.: Global Competition in a Local Business," *Stanford University Graduate School of Business*, Case No. S-IB-17.

<sup>17</sup> Hau Lee and David Hoyt, "CEMEX: Transforming a Basic Industry," *Stanford Graduate School of Business Case No. GS-33*.

customers were willing to pay a premium for known quality and convenient distribution, and CEMEX steadily introduced value-added features for these customers.

Finally, with a growing number of plants and markets on the Caribbean rim, CEMEX began to actively exploit the capacity for cement trading to smooth/pool demand, economizing on capacity and raising average utilization rates in an industry notorious for large swings in output in line with macroeconomic fluctuations.<sup>18</sup>

### **Stepping Up**

Toward the end of the 1990s, CEMEX found that there were few acquisition targets that met its criteria of market growth/attractiveness and "closeness" to CEMEX in terms of institutional stability and culture at a reasonable price, and began to consider diversification into other activities, among other things. However, in order to "shake up" its strategic thinking, it made a series of changes in the way it explored potential acquisitions, including asking the Boston Consulting Group, its long-time strategic advisor, to assign a new set of partners. One important resulting change was to redefine large markets, such as the United States, into regions. Once this was done, the United States, which CEMEX planners had viewed as a slow growing market with little fit with CEMEX, was transformed into a set of regions, some with growth and other characteristics more aligned with the rapidly growing markets CEMEX was used to. This set the foundation for the acquisition of Texas-based Southdown, making CEMEX North America's largest cement producer.

Another change was to shift the way performance was measured, from an emphasis on margins, which had made cement appear much more attractive than concrete or aggregates, to return on investment, which in many cases reversed the apparent attractiveness of different businesses. With this reframing, other targets were identified, most importantly RMC, a UK-based, ready-mix concrete global leader.

On March 1, 2005, CEMEX finalized its \$5.8 billion acquisition of U.K.-based RMC. This acquisition, which surprised many in the industry who assumed that RMC would be acquired by a European firm, was CEMEX's first acquisition of a diversified multinational.

To prevail, CEMEX had to pay a 39% premium,<sup>19</sup> and the financial markets did not respond favorably. CEMEX's share price dropped 10% hours after the announcement, and Moody's indicated that it was putting CEMEX on credit watch for a possible downgrade, voicing concern that the size of the RMC acquisition would distract management from its goal of cutting the company's debt.<sup>20</sup>

---

<sup>18</sup> For a description of how CEMEX was able to turn an environmental disadvantage – the macroeconomic volatility that has characterized the Mexican economy and many of the emerging markets in which it has invested – into a source of competitive advantage see Lessard and Lucea (2007).

<sup>19</sup> Roy A. Grancher, "U.S. Cement: Development of an Integrated Business," *Cement Americas*, September 1, 2005.

<sup>20</sup> Michael Thomas Derham, "The CEMEX Surprise," *LatinFinance*, November 1, 2004.



The acquisition of RMC significantly changed CEMEX’s business landscape. The deal gave the company a much wider geographic presence in developed and developing countries alike, most notably France, Germany, and a number of Eastern European countries. Analysts predicted that as a percent of product revenue, cement would fall from 72% to 54% and aggregates and ready-mix concrete would nearly double from 23% to 42%.<sup>21</sup> Meanwhile, revenue from CEMEX’s Mexican operations would fall from 36% prior to the deal to just 17%.

Financially, RMC was suffering. The company recorded a net income loss of over \$200 million in 2003, and was trading at six times EBITDA, compared to industry average of 8.5 to 9 times.<sup>22</sup> RMC profit margin of 3.6% was far below the ready-mix concrete average 6% to 8%.

Culturally, RMC was the polar opposite of CEMEX. RMC was a highly decentralized company with significant differences across countries in business model, organizational structure, operating processes, and corporate culture. CEMEX, in contrast, brought the CEMEX Way and a single operating/engineering culture that connected more readily at the plant and operation level than RMC.

And yet, despite all of RMC’s challenges, CEMEX was able to work its PMI “magic” in a very short period of time. Within one year, CEMEX had delivered more than the \$200 million in the synergy savings it promised the market and it expected to produce more than \$380 million of savings in 2007.<sup>23</sup> CEMEX had clearly joined the big leagues, yet the imprint of its early years remained very strong.

In 2007, CEMEX took another major step, acquiring control of the Rinker Corporation. Rinker did not suffer the same lack of learning processes and cultural integration as RMC and thus at least some analysts questioned whether CEMEX would be able to work the same magic once again.

---

<sup>21</sup> Imran Akram, Paul Roger and Daniel McGoe, *Global Cement Update: Mexican Wave*, Deutsche Bank, November 26, 2004.

<sup>22</sup> Michael Thomas Derham, “The CEMEX Surprise,” *LatinFinance*, November 1, 2004.

<sup>23</sup> Steven Prokopy, “Merging the CEMEX Way,” *Concrete Products*, May 1, 2006.

**Exhibit 1a CEMEX Country Sales, EBITDA and Assets, 2006**

	Sales	Operating Income	EBITDA	Assets
Mexico	3,635	1,235	1,391	5,800
United States	4,170	919	1,207	7,118
Spain	1,841	471	555	3,089
United Kingdom	2,010	(7)	149	6,249
Rest of Europe	3,644	176	390	6,692
South/Central America & Caribbean	1,586	341	472	3,267
Africa/Middle East	705	136	167	1,251
Asia	346	58	75	861
Other	311	(384)	(270)	(4,355)
<b>Total</b>	<b>18,249</b>	<b>2,945</b>	<b>4,138</b>	<b>29,972</b>

**Exhibit 1b CEMEX Select Financials, 1999-2004 (in US\$ millions, except percentages)**

	1999	2000	2001	2002	2003	2004	2005	2006
Net Sales	4,828	5,621	6,923	6,543	7,143	8,149	15,321	18,249
Operating Income	1,436	1,654	1,653	1,310	1,455	1,851	2,487	2,945
Operating Margin	29.7%	29.4%	23.9%	20.0%	20.3%	22.7%	16.2%	16.1%
EBITA	1,791	2,030	2,256	1,917	2,108	2,538	3,557	4,138
EBITA Margin	37.1%	36.1%	32.6%	29.3%	29.4%	31.1%	23.20%	22.7%
Net Income	973	999	1,178	520	629	1,307	2,167	2,488
Net Income %	20.2%	17.8%	17.0%	7.9%	8.8%	16.0%	14.1%	13.6%
Debt Ratio	45.7%	51.5%	49.8%	56.4%	57.8%	52.7%	61.3%	50.6%
Free Cash Flow	860	886	1,145	948	1,143	1,478	2,198	2,689

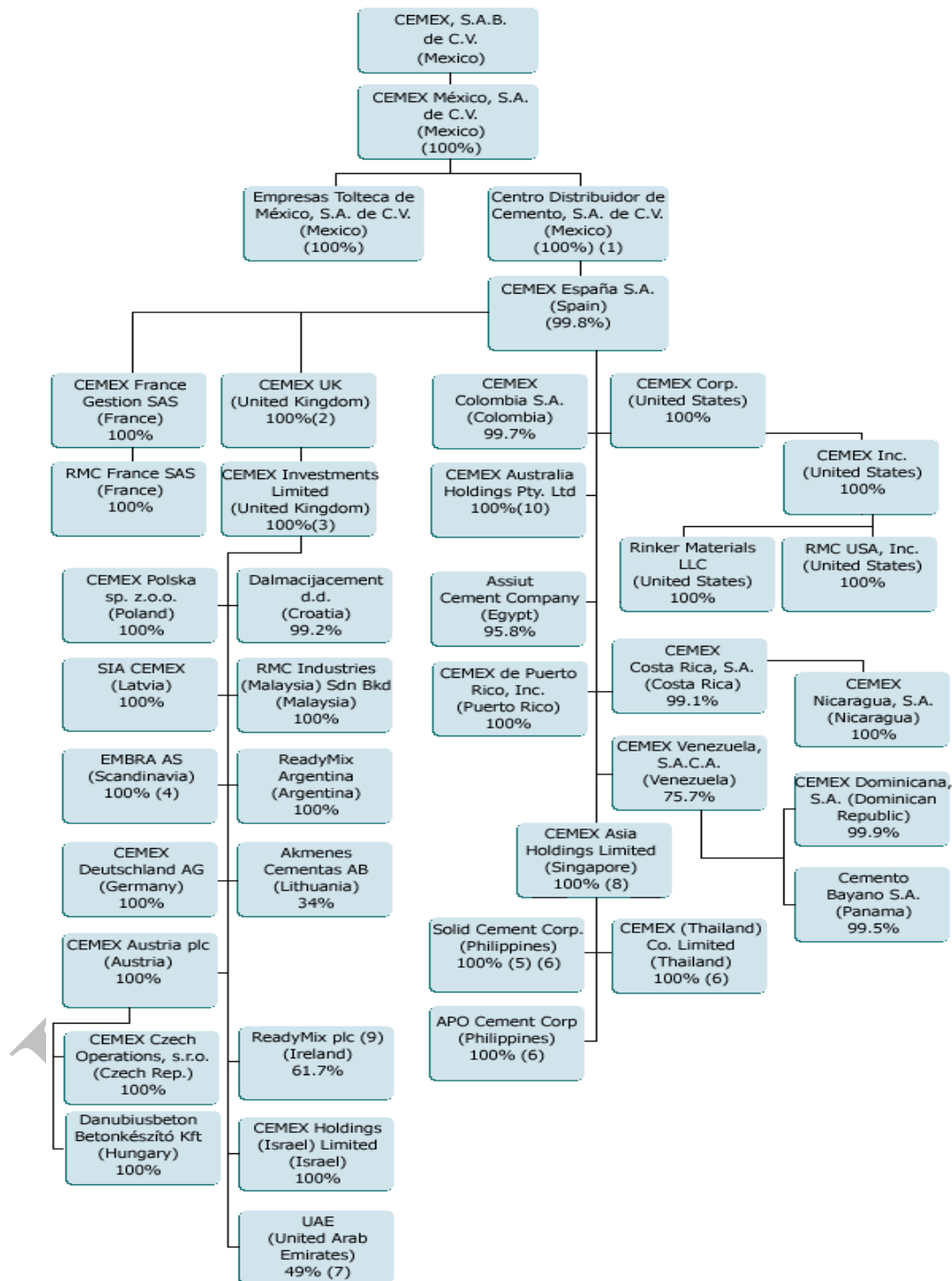
Source: CEMEX.

**Exhibit 2 CEMEX Cement Market Shares vs. Competitors**

Country	Market Share	Rank	Main Competitors
<b>Western Europe</b>			
Spain	22%	1	Cementos Portland (16%), Holcim (12%), Lafarge (9%), Cimpor (8%), Financiera y Minera (6%), Masaveu (6%)
<b>North America</b>			
United States	15%	1	Holcim (14%), Lafarge (13%), Buzzi (10%), HeidelbergCement (8%), Ash Grove (7%), Italcementi (5%)
<b>Latin America</b>			
Colombia	35%	2	Argos (52%), Holcim (13%)
Costa Rica	50%	1=	Holcim (50%)
Dominican Republic	52%	1	Cibao (36%), Holcim (12%)
Jamaica	100%	1	
Mexico	53%	1	Holcim (23%), Cruz Azul (15.5%), Montecuma (6.2%), Grupo Cemento Chihuahua (2.4%), Lafarge (0.4%)
Nicaragua	56%	1	Holcim (44%)
Panama	52%	1	Holcim (48%)
Trinidad	100%	1	
Venezuela	45%	1	Holcim (26%), Lafarge (23%), Catatumbo (3%), Andino (3%)
<b>Africa</b>			
Egypt	15%	2	Holcim (20%), Suez (14%), Tourah (10%), National (10%), Cimpor (8%), Beni Suef (8%)
<b>Asia</b>			
Philippines	21%	3	Lafarge (28%), Holcim (28%)

Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004; CEMEX.

**Exhibit 3 CEMEX Organizational Structure**



Source: CEMEX.

## Appendix

### Heavy Building Materials Industry Overview

The global heavy building materials industry was a \$63 billion (EBITDA) business of which cement accounted for \$27 billion, aggregates \$17 billion, ready-mix concrete \$9 billion, concrete products \$7 billion, and distribution \$3 billion.<sup>24</sup>

Aggregates and cement were upstream products with high barriers to entry with initial investments ranging from \$50 million for aggregates and \$175 million for cement, long payback periods, and little product differentiation. Concrete and asphalt were downstream products with few barriers to entry, short payback periods and the ability to differentiate. Of the four building materials products, cement was the most profitable with 20% to 25% return on sales while ready-mix concrete was the least profitable with just 6% to 8% return on sales. (See **Exhibit 1** for industry characteristics.)

At their inception in the early to mid-1800s, the concrete and cement industries were fragmented. Local producers served communities in geographic proximity. The high cost of transportation prevented long distance competition. As the quality of roads and railway transportation improved, industry consolidation, largely on a national level, began to take place. For more than a century, there was little industry innovation and companies competed solely on price.<sup>25</sup>

In the 1970s, cement companies began to expand their operations both regionally and internationally enabling them to create more efficient operations and protect themselves financially from national and regional economic shocks.<sup>26</sup> However, cement's low value-to-weight ratio made long distance transport by land exceedingly expensive, so it remained a highly localized industry. By one estimate, 90% of U.S. production was sold within 300 miles of the producing plant.<sup>27</sup>

### Producers

China was the largest cement producer in the world, with over 40% of global production followed by India with 6% and the United States with just under 5%.<sup>28</sup> (See **Exhibit 2**.) China and India consumed the majority of the cement they produced, exporting less than 1%, while the United States was the world's largest importer accounting for 25% of global imports (**Exhibit 3**). In general, the cement industry was not an export-driven business. Exported cement accounted for a mere 6% of total global consumption.<sup>29</sup>

---

<sup>24</sup> Imran Akram, Paul Roger, Daniel McGoey, Global Cement Update: Mexican Wave, *Deutsche Bank*, November 26, 2004.

<sup>25</sup> Arnoldo C. Hax and Rafael Lucea, *CEMEX: A leading company; A study through the Delta Model*, MIT Sloan School of Management Working Paper.

<sup>26</sup> Ibid.

<sup>27</sup> Joel Podolny and John Roberts, "CEMEX, S.A. de C.V.: Global Competition in a Local Business," *Stanford University Graduate School of Business*, Case No. S-IB-17.

<sup>28</sup> U.S. Geological Survey, *Mineral Commodity Summaries*, January 2005.

<sup>29</sup> Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.

By 2004 the cement industry had consolidated to the point where the six largest cement companies accounted for 42% of the world's cement capacity outside of China, up from 9% in 1988.<sup>30</sup> (See **Table A**). The top players' earnings straddled both developed and developing markets. While the majority of CEMEX's and Holcim's earnings came from developing markets (73% and 69%, respectively), earnings for Lafarge and Heidelberg came largely from developed markets (62% and 69%). (See **Exhibit 4**.)

**Table A**            **Six Largest Cement Companies by Capacity**

Company	Country	Capacity 2003 (million tons)
Lafarge	France	108.0
Holcim	Switzerland	94.3
CEMEX	Mexico	64.7
HeidelbergCement	Germany	51.1
Italcementi	Italy	45.6
Taiheiyo	Japan	37.9

Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.

There were, however, a number of "second tier" players who were beginning to invest outside of their home markets and stirring up the industry's competitive dynamics including Italy's Italcementi and France-based Cimentis Francais. As **Exhibit 5** shows, national players dominated cement markets in Eastern Europe, Asia and the Middle East.

## Consumers

Asia accounted for 56% of cement consumption followed by Western Europe with 12% and North America with 6.4%. Since 2002, year-over-year growth rates of cement consumption had slowed most notably in Asia and Eastern Europe (**Exhibit 6**). Developing countries accounted for 69% of cement consumption, a percentage that was expected to increase to 85% by 2020. In growth rate terms, between 2003 and 2020, developing countries' cement consumption was predicted to increase 4.4% per year compared to .8% for developed countries.<sup>31</sup>

Cement consumption was largely driven by local socio-economic conditions. As GDP per capita increased above \$3,000, cement consumption tended to increase substantially in response to growing need for improved infrastructure and housing. However, once GDP per capita exceeded \$15,000,

<sup>30</sup> Ibid.

<sup>31</sup> Ibid.

consumption tended to level off.<sup>32</sup> Weather—heavy rainfall was a deterrent—and population growth rates and density — higher densities usually demanded taller buildings—were other variables that affected consumption.<sup>33</sup> In 2003, China accounted for 44% of global cement consumption and industry observers expected the country’s share to increase to 53% by 2020.<sup>34</sup>

The way in which cement was consumed differed among developing and developed countries. Developing markets tended to be dominated by individual homebuilders who purchased bag cement instead of bulk. CEMEX believed that as much as 80% of cement sales in developed countries were bulk cement compared to the same percentage of bagged cement in developing countries.<sup>35</sup> Thus in these markets companies like CEMEX had to brand their product through packaging and getting the company name out in front of their customer base.<sup>36</sup> In contrast, cement consumers in developed countries tended to be large construction companies that bought in bulk and required timeliness to their cement deliveries. State of the art logistics and technology platforms were paramount to compete. Additionally, cement companies had to be prepared to meet local preferences. Consumers in Egypt preferred darker cement believing it was of higher quality whereas Mexicans preferred light colored cement.

---

<sup>32</sup> Mike Betts and Robert Crimes, “Construction and Building Materials Sector,” JP Morgan European Equity Research, August 16, 2004.

<sup>33</sup> “The Globalization of CEMEX,” *Harvard Business School Case No. 701-017* prepared by Professor Pankaj Ghemawat and Research Associate Jamie L. Matthews.

<sup>34</sup> Mike Betts and Robert Crimes, “Construction and Building Materials Sector,” JP Morgan European Equity Research, August 16, 2004.

<sup>35</sup> “CEMEX: Transforming a Basic Industry,” *Stanford Graduate School of Business Case No. GS-33*, prepared by David Hoyt under the supervision of Professor Hau Lee.

<sup>36</sup> “CEMEX: Global Growth Through Superior Information Capabilities,” *IMD Case No. 134* prepared by Rebecca Chung and Katarina Paddock under the supervision of Professor Donald A. Marchand.

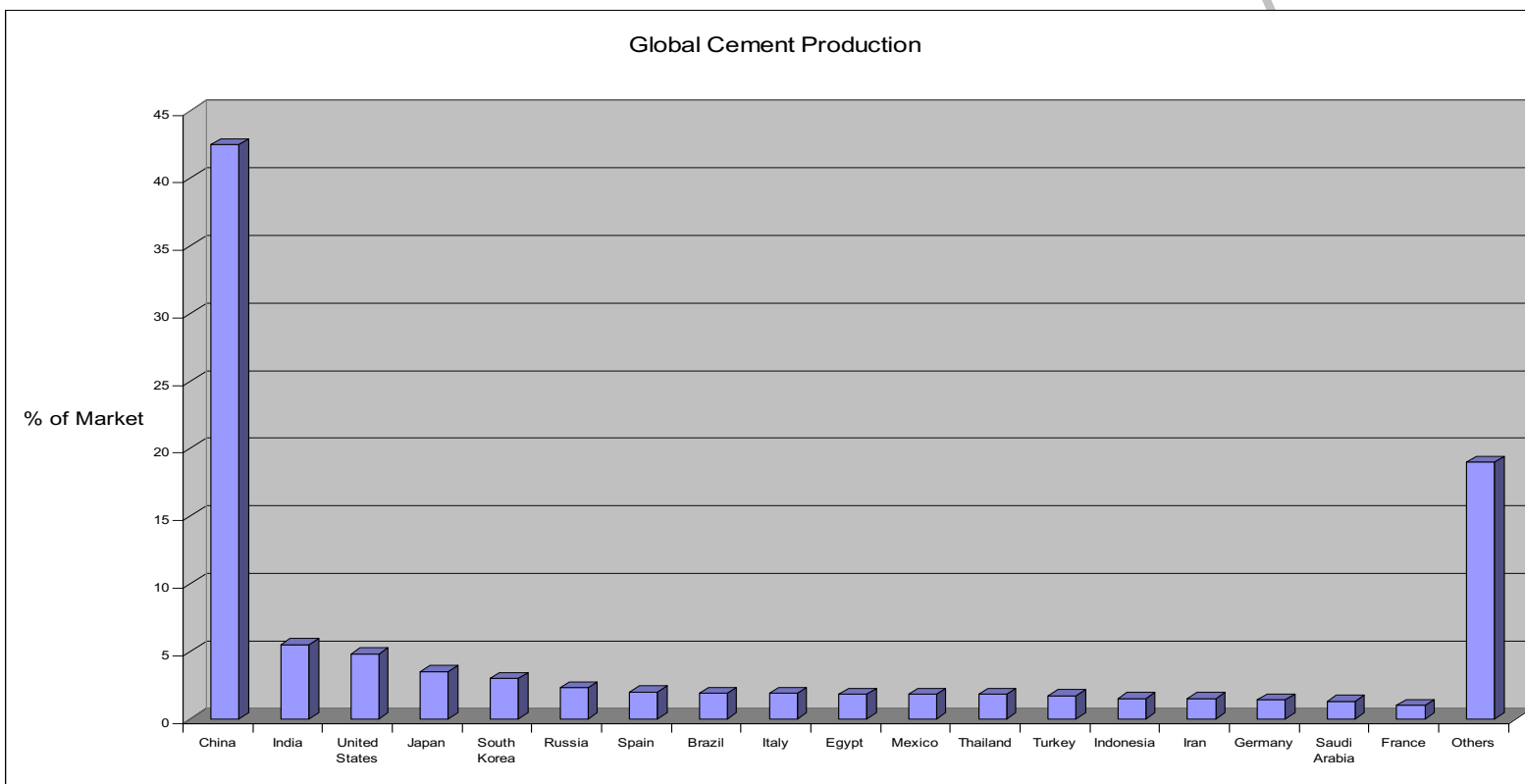
**Exhibit 1 Heavy Building Materials Industry Characteristics**

	Aggregates	Cement	Ready-Mix Concrete	Asphalt
<b>Initial investment</b>	\$50 million	\$175 million	<\$10 million	>\$10 million
<b>Entry barriers</b>	High	High	Low	Low
<b>Payback period</b>	Long	Long	Short	Short
<b>Options for vertical integration</b>	Downstream into ready-mix concrete products, decorative aggregates, asphalt	Mainly downstream into ready-mix	Either downstream into blocks, ties or pavers, or upstream into cement	Upstream into aggregates, or downstream into road contracting
<b>Return on sales (%)</b>	10-20	15-25	6-8	10-15
<b>Investment to sales (%)</b>	<100	>200	80	40
<b>Return on investment (%)</b>	8-10	8-10	8-10	8-10
<b>Product differentiation</b>	Impossible	Nearly impossible	Can differentiate from small players on some top-quality products and can innovate (e.g., high-performance concrete)	National players all have versions of low-noise, smooth surface asphalt
<b>Market flexibility in adjusting to over/under capacity</b>	Strong flexibility on existing quarries (operations can be stopped and restarted in a few months) but difficult to open new ones)	Can take decades as even 20-year old plants can still produce cash	Normally adjusts in two to four years	One to three years

Source: Imran Akram, Paul Roger, Daniel McGoey, Global Cement Update: Mexican Wave, Deutsche Bank, November 26, 2004.



**Exhibit 2      Global Cement Production, 2005**



Source: U.S. Geological Survey, Mineral Commodity Summaries, January 2005.

**Exhibit 3      World's Leading Cement Exporters and Importers (by percentage) (2004)**

**Leading Exporting Nations**

Ranking	Country	2001	2002	2003
1	Thailand	16.6	16.6	12.1
2	Turkey	8.6	10.4	10.2
3	Indonesia	9.5	9	7.3
4	Japan	7.6	8.3	9.6
5	India	5.2	6.3	
6	China	6.1	6	
7	Greece	5.9	5.6	
8	Saudi Arabia	4.7	5.6	
9	Canada	5.4	5.5	
10	Venezuela	2.8	4.1	
11	Taiwan	3.4	3.9	5
12	Germany	3.9	3.9	
13	South Korea	4.6	3.4	3.2
14	Malaysia	2	3	
15	Italy	2.6	2.4	
16	Egypt	0.1	2.2	6.2
17	Spain	1.4	1.5	
18	Iran	2.8	1.4	

**Leading Importing Nations**

Ranking	Country	2001	2002
1	United States	25.9	24.2
2	Spain	6	7.5
3	Bangladesh	6	6.4
4	Nigeria	6	5.4
5	Hong Kong	3.9	3.9
6	Vietnam	1.6	3.1
7	Netherlands	3.4	3
8	France	2.1	2.6
9	United Kingdom	1.5	2.5
10	Taiwan	2.3	2.3
11	Kuwait	2.3	1.9
12	Ghana	1.7	1.9

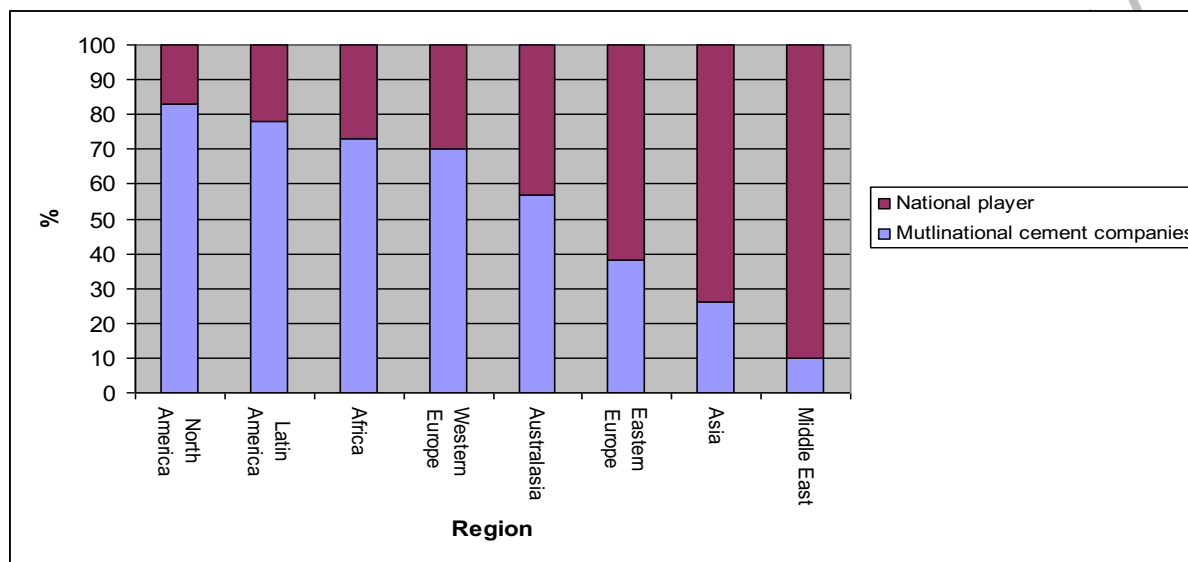
Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.

**Exhibit 4      Geographical Breakdown of Top Cement Company Earnings (% of EBITA) (2004)**

	CEMEX	Heidelberg	Holcim	Lafarge	Italcementi	Cimentis Francais	Total Average
<b>Developed markets</b>	<b>27</b>	<b>69</b>	<b>39</b>	<b>62</b>	<b>90</b>	<b>82</b>	<b>53</b>
Western Europe	13	44	18	48	78	69	36
North America	14	25	19	14	12	14	16
Australasia			2				0
<b>Developing markets</b>	<b>73</b>	<b>31</b>	<b>61</b>	<b>38</b>	<b>10</b>	<b>18</b>	<b>47</b>
Eastern Europe		17	10	6	2	3	6
Latin America	64		31	9	0	0	23
Asia	2	11	9	9	3	4	7
Middle East			1	3			1
Africa	6	4	10	11	5	10	9

Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.

**Exhibit 5**      **Multinational Cement Companies' Market Shares by Region, 2004**



Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.

**Exhibit 6 Cement Demand by Region (million tons), 2000-2005E**

	2002	2003	2004E	2005E	2006E
Asia	990.6	1,048.8	1,114.6	1,184.3	1,259.0
Western Europe	224.9	229.2	232.6	236.2	238.9
North America	116.7	121.2	125.9	128.3	129.6
Latin America	93.2	90.0	94.5	99.4	103.7
Eastern Europe	75.6	83.1	87.3	91.7	96.5
Africa	56.7	58.1	59.7	61.9	64.0
Japan	64.6	60.1	56.5	54.8	54.8
Middle East	9.8	9.6	10.0	10.5	10.9
Australasia	8.6	9.1	9.3	9.5	9.6
<b>TOTAL</b>	<b>1,803.3</b>	<b>1,878.6</b>	<b>1,967.7</b>	<b>2,062.6</b>	<b>2,162.0</b>

Source: Mike Betts and Robert Crimes, "Construction and Building Materials Sector," JP Morgan European Equity Research, August 16, 2004.