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Mexico's Evolving Sweet Spot in the Globalization Landscape

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As companies vie for competitive advantage around the globe, constantly seeking lower-cost locations for their sourcing and production activities, what role remains for Mexico? Its labor costs, while significantly lower than those in highly developed countries, are nonetheless higher than those in China, India, and a host of other rapidly developing economies (RDEs). Is Mexico therefore doomed to lose out to those lower-cost competitors? Or are there compelling reasons for global companies to consider locating some of their operations in Mexico?

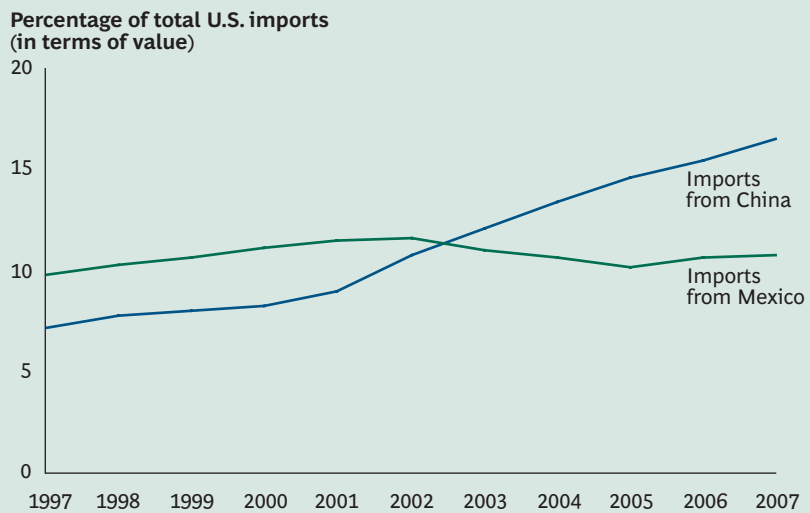
In our view, the answer to the latter question is a clear and resounding yes. Mexico offers a unique set of advantages that constitute a privileged "sweet spot" in the globalization landscape. Before we delineate those advantages, let's take a look at the competitive context that shapes them.

The New Competitive Challenge

Over the past few years, the increasing migration of production to very-low-cost countries, particularly China, has directly affected Mexico's economic development. As of 2007, trade with the United States represented 83 percent of Mexico's exports and 28 percent of its gross domestic product (GDP). However, from 1997 through 2007, Mexico's share of U.S. imports languished at around 10 percent while China's share more than doubled, from over 7 percent to more than 16 percent. Along the way, China displaced Mexico as the second-largest trading partner of the United States. (See Exhibit 1.)

The drop in Mexico's trade-share rank reflected a significant loss of jobs in the country's maquiladora industry. Maquiladoras, sometimes referred to as "twin plants," are manufacturing facilities located in Mexico and owned by a parent company with administrative facilities in the United States. This structure allows the parent company to capitalize on Mexico's low labor costs while retaining the business benefits of being based in the United States. Typically, the parent company can send raw materials, equipment,

Exhibit 1. U.S. Imports from China Have Surpassed Those from Mexico



Source: U.S. Census Bureau, Foreign Trade Division.

machinery, and other supplies to its plants south of the border for assembly or processing without paying import duties. The factories can then export the finished products back to the United States, sell them in Mexico, or export them to other countries. From 2000 through 2003, the Mexican maquiladora industry lost some 260,000 jobs—a 20 percent decline.

The main reason for the displacement of jobs from Mexico to other locations is significant cost differentials. According to the International Labour Organization, as of 2007 an hour of manufacturing labor cost $3.46 in Mexico and $1.69 in China, making Mexico's manufacturing-labor costs slightly more than double China's. Moreover, the average cost of electricity in 2007 was 10.4 cents per kilowatt-hour in Mexico, according to the country's secretary of energy, whereas it was 5.1 cents per kilowatt-hour in China, according to the China Electricity Council.

Despite these sizable differentials, the loss of jobs to lower-cost countries has had a smaller impact on the Mexican economy than might be expected. Certainly some industries—especially textiles, apparel, small appliances, and toys—have lost numerous jobs. In other sectors, however, Mexico has established a solid competitive advantage and is not only preventing job migration to lower-cost countries but also achieving rapid growth. Notably, from 2004 to 2007, maquiladoras saw a 25 percent surge in employment, more than compensating for the earlier losses.

What accounts for this healthy growth? And what are its strategic implications for multinational companies?

Mexico's Sweet Spot

Mexico's unique role in global trade rests largely on its privileged geographical location adjacent to the United States, together with its relatively low labor costs, abundance of skilled labor and managerial talent, and long experience doing business in the Western Hemisphere. Compounding these advantages are a large and healthy domestic market and the strong incentives provided by federal and local governments to attract direct investment. Increasingly these conditions are leading to—and being reinforced by—the emergence of clusters of suppliers organized geographically by industry. All of these factors combine in a powerful, self-reinforcing system that continuously enhances Mexico's sweet spot.

In some sectors, Mexico has established a solid competitive advantage.

In recent years, macroeconomic stability and economic growth have spurred domestic consumption, making the Mexican domestic market sizable enough to provide critical mass for many kinds of consumer products. With a 2007 population of 107 million, grouped into 26 million households, Mexico is the eleventh most populous country in the world. Moreover, with a per capita GDP of $10,700, defined in terms of purchasing-power parity (according to the U.S. Central Intelligence Agency's online *World Factbook*), Mexico is poised for a boom in domestic consumption. The primary beneficiaries will be companies that sell consumer products such as electronics and white goods.

In addition, the federal government has established an economic policy to foster the development of higher-value-added capabilities and products. Beginning in 2003 under the broad label of "economic policy for competitiveness" and continuing under the present administration, the government has initiated programs for various industries intended to improve exporting conditions and fiscal incentives, ensure a better-educated work force, and improve infrastructure.

Two of the most successful are Programa para la Competitividad de la Industria Electrónica y de Alta Tecnología (PCIEAT) and Programa para el Desarrollo de la Industria de Software (PROSOFT).[1] PCIEAT has fostered the establishment of more than 250 suppliers to major multinationals and created more than 30,000 jobs, according to official sources. PROSOFT aims to upgrade Mexico's software industry by improving the education of the local work force and by promoting new telecommunications networks and other infrastructure. Under the new Calderón administration, the secretary of economy has continued to support both programs strongly, even announcing, in early 2008, an increase in funding for PROSOFT.

1. Program for Competitiveness in the Electronics and High-Technology Industries; Program for the Development of the Software Industry.

Criteria for Benefiting from Mexico's Sweet Spot

The net effect of these positive political and economic conditions is that Mexico offers significant opportunities for companies in certain industries and product lines to gain global advantage. Specifically, Mexico constitutes a uniquely advantaged location for companies planning to sell in North American markets those products whose manufacture meets some or all of the following criteria:

- Significant logistics costs
- Stringent responsiveness requirements
- A large labor component
- Strong managerial involvement

Significant Logistics Costs. A considerable portion of global trade consists of large, bulky products for which shipping represents a sizable share of the cost structure. In assessing a product's bulkiness in this context, what matters is the volume-to-weight ratio of the *packaged* product, not of the product in its usable form. Take, for example, big pieces of furniture that are designed to be packed into flat containers for cost-effective shipping—in other words, products with low volume-to-weight ratios. They would not benefit from Mexico's sweet spot, because shipping accounts for only a small portion of their overall cost, and the lower cost of shipment from Mexico to other North American markets would not be enough to outweigh the large labor-cost advantage offered by China or some other RDE.

In contrast, other products have high volume-to-weight ratios, volume-to-value ratios, or both. For example, in the case of a refrigerator—a very bulky product—manufactured in a low-cost Asian country and sold in the United States for $500, the cost of shipping represents up to $100 of the price tag, or 20 percent. Shipping it from Mexico would cost less than half that much. (See Exhibit 2.) So the savings would more than pay for the somewhat higher Mexican labor costs. Assuming that four man-hours are needed to assemble the refrigerator and that China's wages are approximately half of Mexico's, the latter's cost advantage is close to 74 percent.

To illustrate the magnitude of the differences in shipping costs, let's compare freight costs for shipping a two-TEU container to Pittsburgh, Pennsylvania, from Mexico, Brazil, and China.[2] From Mexico City, the shipping cost would be $2,679; from São Paulo, $4,637; and from Shanghai, $5,437. (These figures represent estimated total door-to-door costs based on land transport and ocean freight, according to maritimeChain.com.)

Some products destined for sale in the United States have a very high labor component but are prohibitively expensive to ship great distances, whereas others have different profiles. So decisions about what to manufacture where must be made on a product-by-product basis. For instance, in 2004, when the Japanese electronics company Pioneer relocated production of its small audio speakers for automobiles from Mexico to Shanghai, it left the assembly of its large, customized car speakers in Mexico, because they were too big to ship cost-effectively from China.

Mexico's competitive advantage over other low-cost locations is thus greatest for items with a high volume-to-weight ratio, including customized or modified vehicles such as ambulances, fire engines, and recreational vehicles, as well as noncollapsible furniture, electrical machinery, and large appliances. Many of these items are still pro-

2. TEU stands for 20-foot equivalent unit. Most containers used in North America and Europe are about 40 feet long, making them equal to two TEU.

Exhibit 2. Freight Costs Can Play a Major Role in Creating Competitive Advantage

Product	Typical U.S. retail price	Units per two-TEU container[1]	Freight costs per unit from Asia[2] (percentage of product price tag)	Freight costs per unit from Mexico[3] (percentage of product price tag)	Advantage
Refrigerator	$500	~ 55	$100.00 (20.0%)	$48.70 (9.7%)	Mexico
Stove	$450	~ 95	$58.00 (12.9%)	$28.20 (6.3%)	Mexico
29-inch TV set	$450	~ 170	$32.00 (7.1%)	$15.90 (3.5%)	China
DVD/CD player	$150	~ 3,700	$1.50 (1.0%)	$0.73 (0.5%)	China

Sources: maritimeChain.com; BCG analysis.
[1]TEU = 20-foot equivalent unit.
[2]Door-to-door freight costs from Shanghai to Pittsburgh, Pennsylvania.
[3]Door-to-door freight costs from Aguascalientes to Pittsburgh, Pennsylvania.

duced in the United States. For the companies that manufacture them, moving production to Mexico represents an opportunity to cut costs that countries farther away cannot equal, thanks to the difference in shipping costs.

In recent years a number of companies have built or announced plans to build production facilities in Mexico to capture this opportunity. For example, in the second quarter of 2006, KONE, an elevator manufacturer, began producing elevator doors and cars for the U.S. market in its purpose-built factory in Torreón, Coahuila, in northern Mexico. In mid-2007, recognizing the advantages of its Mexican plant, the company reassigned elevator-manufacturing activities from its McKinney, Texas, plant to Torreón, leaving the McKinney plant to focus on functions related to R&D and customer support. The Torreón operations now employ locally recruited managers as well as more than 100 line workers. Trinity Industries, a $3 billion U.S. company that produces more than 50,000 railcars each year, has moved one-third of its production to Mexico for similar reasons.

Other companies may follow sooner rather than later. In a 2003 interview published by ViewsWire Latin America, Peter Wiegandt, vice president of Dell Latin America, said that "as [U.S.] retail prices begin falling towards $600 [per PC unit], the cost of the logistics involved [in shipping from Asia versus from Mexico] will put Mexico back on the map."

Stringent Responsiveness Requirements. Another aspect of logistics, of course, is response time. Global companies' quest to minimize response times tends to favor Mexico as a production site. For instance, the ability to offer just-in-time shipping is an important factor for many manufacturers and their suppliers. Since 2004, Toyota has been producing truck beds in Tijuana for shipment to the company's assembly plant in California—a distance short enough to render production in Asia impractical.

Opportunity costs can have a significant impact on profits.

Door-to-door time for products sourced from China's east coast and continuing into the interior of the United States averages three to four weeks via the West Coast of the United States and four to six weeks via the East Coast. In contrast, door-to-door time is less than a week for products sourced from Mexico, thanks in part to the country's 2,000-mile land border with the United States (See Exhibit 3). This advantage in delivery time can become critical if demand for a product is volatile or its carrying costs are high, as they are for perishable, bulky, and seasonal products.

Moreover, opportunity costs can have a significant impact on profits. Opportunity costs arise mainly from three sources: delays during transport, inventory overstocks, and stockouts. According to some estimates, although the median cost of stockouts as a percentage of revenue is 5 percent, that cost can exceed 10 percent.

It is important to note that overland shipping from Mexico into the United States is not completely seamless. In the past, trucks from Mexico were not permitted to cross the border, so all shipments were unloaded there and reloaded onto U.S. trucks—a process that delayed shipments for up to eight hours. However, starting in September 2007 under a one-year demonstration project, Mexican carriers have been granted "hosted carrier" status, which allows them free movement within the United States, thus reducing shipping times.

The Federal Motor Carrier Safety Administration (FMCSA), the U.S. agency regulating the program, announced that during its first 30 days, 13 trucking companies had been given operating authority. As of December 2007, the FMCSA had notified an additional 34 Mexican carriers that they had successfully passed a preauthorization safety audit and were close to obtaining hosted-carrier status. As part of the demonstration project, Transportes Olympic, a Mexican trucking company based in Nuevo León, became the first Mexican carrier to operate beyond U.S. commercial border zones. The company delivered a load of steel to North Carolina, where it will be used to build a church.

However, even the historic eight-hour delays seem negligible compared with the delays that trans-Pacific containers are already facing—and the far worse delays they may potentially face—because of congestion at ports on the U.S West Coast. In peak shipping seasons, products arriving at these ports have experienced significant delivery delays. U.S. ports have

Exhibit 3. Shipping from China to the United States Is Slower and Less Predictable Than Shipping from Mexico

Source: BCG analysis.
[1]Transshipment is the transfer of a container from one conveyance to another, such as from truck to ship or vice versa.

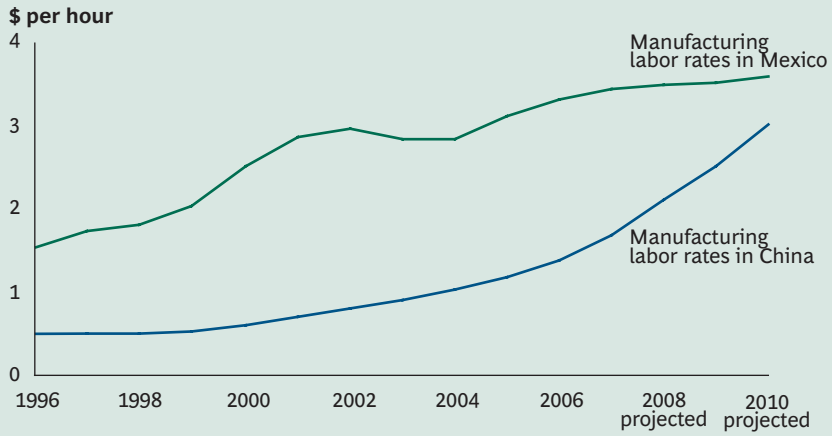
limited room for expansion and will reach saturation within the coming decade. Current forecasts predict that demand for port services will exceed capacity nationwide by 2010. This impending bottleneck has prompted a number of companies to explore alternative ways to convey their products from China to the United States. Some companies are investigating longer and more time-consuming routes through the Panama Canal to East Coast ports, while others are considering opportunities to reach the United States through Mexican ports.

A Large Labor Component. The third criterion for making the most of Mexico's sweet spot is a relatively large labor component in the product's cost structure. According to the International Labour Organization and the Economist Intelligence Unit (EIU), as of 2007, hourly manufacturing labor rates were $3.46 in Mexico and $25.51 in the United States. And those are just averages. In some areas, Mexico's labor rates are as much as 16 times lower than U.S. rates.

Although China's manufacturing wage rate is even lower than Mexico's, at $1.69 per hour, shipping costs and responsiveness requirements can often outweigh a labor-cost advantage, as noted above. Moreover, the pattern and extent of the cost advantage generated by low labor rates are not fixed. As production moves to cheaper locations, wages there inevitably go up. For example, in 1996, according to the EIU, manufacturing labor cost 35 times less in China than in the United States; ten years later, it cost only 16 times less. Furthermore, Chinese labor rates are still rising and are expected to significantly narrow the gap with Mexico's rates, growing from 33 percent of the latter in 1996 to 85 percent in 2010, according to the EIU. (See Exhibit 4.)

In addition, the cost of doing business on China's coast, where most international companies have established facilities, is on the rise. Not only has the growing demand for labor pushed up wages in the region—despite the migration of workers from the interior—but the

Exhibit 4. Manufacturing Labor Rates Are Likely to Rise Faster in China Than in Mexico, Thus Narrowing China's Cost Advantage



Source: The Economist Intelligence Unit.

price tags on industrial land, office space, and related items are also increasing. Few international companies have yet established factories in the western part of China, despite local government incentives. Such a move would considerably increase transportation costs; moreover, there is a real scarcity of skilled labor and experienced management in the region.

Recent Mexican history may shed some light on the likely evolution of wages in China and other RDEs. During the mid-1990s, after the North American Free Trade Agreement (NAFTA) came into effect, many factories opened in cities along the Mexico-U.S. border. These factories quickly absorbed most of the available skilled labor and managers, creating a scarcity that posed a threat to continued growth. Within a decade, wages almost tripled. Moreover, as labor markets grew more competitive along the border, factories moved farther south, attracted in part by local government incentives. This shift boosted wages throughout the country but also stabilized their rate of growth. So Mexico has already experienced the rapid growth in labor wages that other low-cost locations are still experiencing; just as important, it experienced that growth in many well-developed manufacturing regions far from the border. Mexico's wages have already surged; China's may be poised to do so.

In addition, the fact that China's currency is now undervalued creates an artificially wide gap in relative costs between China and Mexico. Once the yuan is allowed to float freely (as Mexico's peso already does), China's labor costs will increase in dollar terms, further reducing the existing labor-cost advantage. The yuan has been in a slow but continuing upward trend, appreciating by more than 7 percent in 2007 alone, and analysts expect it to appreciate by 8 to 10 percent in 2008.

Finally, the Mexican government's economic policy, mentioned above, will foster the development of improved capabilities and hence improved products. An element of this policy is the creation of a specialized labor pool that offers international investors a wide assortment of skills that other, lower-cost locations do not have. Moreover, as we describe below, Mexico is developing regional specialization, with certain areas focusing on services while others focus on skilled, high-value-added activities.

Strong Managerial Involvement. When a product or process requires a significant amount of managerial involvement, time zone differences can become a critical factor. China's coastal areas are 12 or 13 hours away from the East Coast of the United States: when it's noon in New York, it's midnight or 1 a.m. in Shanghai. In contrast, most of Mexico, including the majority of its important cities, is just one hour behind New York. Moreover, Mexico has an indisputable advantage over China in terms of the convenience of arranging face-to-face meetings. Flights from Los Angeles to Shanghai are likely to take more than 12 hours, and from New York at least 16, whereas flights from Los Angeles and New York to Mexico City are 4 and 6 hours long, respectively.

Furthermore, when substantial managerial involvement is required in the overall process, the availability of local talent can be a very important issue. For instance, the electronics-manufacturing-services industry in Mexico recently shifted from high-volume, long-run manufacturing (such as the assembly of printed circuit boards) to a lower-volume,

more diverse product mix (including system builds and final configurations) requiring a higher level of involvement by managers. For such operations, Mexico provides a significant edge. It has a sizable pool of U.S.-educated managers with a good command of English, as well as the less tangible yet equally important benefit of Western ways of thinking and doing business. In contrast, China faces a shortage of experienced managers, and deep dissimilarities between Chinese and Western business cultures can complicate communication beyond mere language differences.

Profiting from the Sweet Spot: The Cluster Phenomenon

Recognizing the advantages to be gained by manufacturing or assembling their products in Mexico, a number of industries are beginning to form cost-effective—and business-effective—clusters in the country. These clusters, in turn, enhance the advantages that Mexico offers in a self-reinforcing "virtuous cycle." Prime examples are appliances and aerospace.

Appliances. Appliances are bulky products with high weight-to-value ratios; the manufacturing process is labor intensive, and management involvement is necessary. Several global companies, aware of the significance of these characteristics, have formed an industry cluster in Monterrey, in northern Mexico, to take advantage of the country's sweet spot. The cluster grew by 9 percent in 2007 from its 2006 level of $1 billion. Among the companies in the group are Carrier, Criotec, Hussmann Koxka, IMPCO Technologies, LG Electronics, Mabe, Whirlpool, and York, as well as more than 200 local suppliers.

LG Electronics, the giant South Korean company, has invested $100 million in a refrigerator plant

Industries are forming cost-effective—and business-effective—clusters in Mexico.

that will serve both the U.S. and Mexican markets. The importance of proximity was expressed by Daniel Lee, LG's then marketing director, in an interview published in the March 2005 issue of *Appliance Magazine:* "As LG white goods garner more attention in the U.S., it is clearly a logistical advantage for us to manufacture closer to the market." Whirlpool, the Michigan-based home-appliance maker, expanded its refrigerator plant in Mexico in 2007 and will continue its expansion in 2008, eventually transferring all production there from Fort Smith, Arkansas. As these major players relocate, several suppliers are following suit.

The newly emerging cluster has not gone unnoticed in China. Several Chinese companies, regular suppliers of the cluster's global corporations, are setting up shop in the vicinity. The latest example is Golden Dragon Precise Copper Tube Group, the largest precision-copper-tube producer in the world, which is building a plant in Saltillo (45 minutes from Monterrey). With an initial investment of $50 million, the plant will be operational in early 2008 and will employ more than 900 people. The plant will supply Mabe and Whirlpool with basic components for their appliances.

Aerospace. Like appliances, aerospace products meet several criteria for profiting from Mexico's sweet spot. Unlike appliances, however, they derive competitive advantage from convenient managerial involvement more than from lower shipping costs. Strong managerial involvement is critical for the aerospace industry because of its strict quality requirements. The industry also places a high premium on intellectual property protection—an area in which Mexico clearly has the upper hand over most lower-cost locations.

In 2007, Mexico's aerospace industry exported more than $1.8 billion in components to the United States—to companies such as Gulfstream, Honeywell, and Lockheed Martin. With more than 160 companies, the aerospace cluster currently employs almost 17,000 people. The industry is expected to receive a further lift and to produce even more complex components as a result of the Bilateral Aviation Safety Agreement (BASA), signed by Mexico and the United States in September 2007. The BASA recognizes the technical capabilities of Mexico's Dirección General de Aeronáutica Civil (DGAC) to certify the safety of components made in the country.[3] This recognition makes recertification by the U.S. Federal Aviation Administration unnecessary. The signing of the agreement represents the first step in a series of bilateral collaboration programs scheduled for implementation in 2008. The BASA will allow

3. Directorate General of Civil Aeronautics.

aerospace manufacturers in northern Mexico, especially Baja California, to export a wide range of complex components after certification by Mexico's DGAC.

Several companies in the aerospace industry whose products require significant coordination and managerial involvement have recently moved production facilities to Mexico. Bombardier, the Canadian jet manufacturer, announced in October 2005 a $200 million investment in a new plant in Querétaro, a two-hour drive north of Mexico City. The plant, which is now operational, is initially replacing in-house production of wire harnesses; later it will also handle production of structural parts, which is currently outsourced. The rationale, besides cost reduction, is to improve control and reduce reliance on outside manufacturers. The company currently employs 700 locally hired workers.

Bombardier's plant will serve as an anchor for the Aeronautical Park of Querétaro, an industrial park partially supported by public funds to foster the sector's activity. Several other aviation companies have also relocated to Querétaro: ITR, an Industria de Turbo Propulsores subsidiary, will make metal tubing at its Querétaro plant for Honeywell International's aerospace division. In October 2007, SAFRAN's Messier Services, the Paris-based world leader in the design and manufacture of landing gear, inaugurated a facility, also in Querétaro, for landing-gear maintenance and repair. In September 2007, AERnnova announced a $135 million investment in Mexico. The first phase of the project consists of an $85 million investment to build two plants in the Aeronautical Park that together will generate more than 1,000 jobs. The plants will be inaugurated during the first quarter of 2008. Furthermore, Jabil Circuit, a U.S. electronics manufacturer, recently received certification, under the aerospace industry quality system standard AS9100, for its plant in Chihuahua, in northern Mexico.

And not only manufacturing is shifting to Mexico. Honeywell's aerospace division has invested $40 million in a systems integration lab in Baja California that will develop and test a wide range of aircraft subsystems. As of 2007, the company employed more than 200 engineers at the facility. In light of such events, Mexico is investing $50 million from 2007 to 2010 in talent development programs to supply factories and research facilities with capable personnel. For instance, the Instituto Politécnico Nacional, a public university, inaugurated in February 2008 an interdisciplinary center offering an aeronautical engineering major.

A Good Strategic Choice

Despite some challenges, such as energy costs that are higher and capital that is harder to access than in some other RDEs, Mexico offers tremendous potential for helping multinational companies capture global advantage, as recent investments abundantly testify. Not only Western but also Asian companies have indicated their confidence in Mexico by choosing the country as a beachhead for their forays into North American markets.

The lesson is that businesses that are both searching for new sourcing locations and interested in the North American market should give Mexico serious consideration. Although China has undeniable allure as a low-cost manufacturing site, Mexico's location and other advantages can more than offset the labor-cost differential for bulky goods and those requiring considerable managerial involvement. Furthermore, in the case of products requiring short, tightly scheduled supply chains (such as those with high volatility or short order cycles)—for which time is literally money—Mexico makes strategic sense. Thanks to its unique sweet spot, Mexico remains a genuinely competitive location in the global landscape.

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