

The Mexican Chocolate Cluster

The Microeconomics of Competitiveness

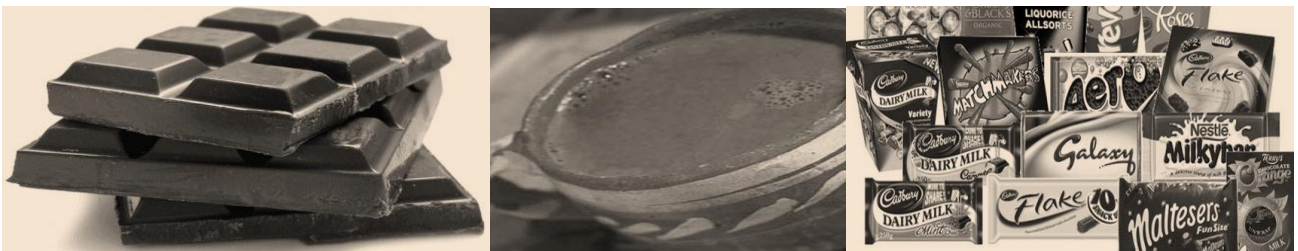
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I. Executive Summary

The Mexican chocolate cluster is taking off. In 2009, it received 3 percent of all incoming foreign direct investment. It grew exports to the U.S. by 63 percent, solidifying its position as its second-largest chocolate supplier and stealing market share from #1 and #3 players, Canada and Belgium. In the same year, Hershey's, which until recently produced in Mexico only for the local market, made it an important export platform. Major global processing company Barry Callebaut followed, locating their third largest cocoa processing plant next to Hershey's plant in Monterrey, Mexico.

The recent rush into Mexico can be attributed partly to the process of liberalization of trade between the U.S. and Mexico under NAFTA. Most importantly, a 2006 change in the rules of origin allowed duty-free trade of chocolate produced of non-NAFTA inputs. These changes, in addition to the availability of cheaper labor and lower-priced sugar in Mexico relative to the U.S. and Canada make it an attractive export platform. But can Mexico create a strong cluster and sustain a long-term competitive advantage as an exporter of chocolate? We believe that Mexico has many of the pre-conditions needed for cluster development, including a critical mass of existing companies, world-class multinational companies, a favorable location with unlimited access to the large and sophisticated U.S. demand, and some advantages in sugar.

However, the challenge for Mexico will be to develop lasting competitive advantages that are based on more than preferential trade access and cheaper factor inputs by improving the quality of local demand, developing cluster-specific and innovative human capital, using the chocolate cluster to drive improvements in the local cacao industry and develop a unique Mexican brand of chocolate. Taking full advantage of Mexico's potential will require coordinated actions by foreign and domestic firms, institutes for collaboration, and the government. In this memo we discuss the opportunities and the challenges of the Mexican chocolate cluster and conclude with a set of recommendations which should serve to position Mexico as a rising player in the global chocolate industry with a distinct competitive advantage.

II. Mexico Highlights

With a total area of 1,964,375 sq km, Mexico is almost three times the size of Texas. Its climate varies from tropical to desert. Among its natural resources the most important are petroleum, silver, copper, gold, lead, zinc, natural gas, and timber. As of 2009, Mexico was the 11th most populated country in the world, with a population of 111,211,789 (CIA World Factbook). Mexico's population is relatively young with a median age of 26.3 years, and 29 percent of the population is below 14 years of age. The population growth rate in 2009 was 1.13 percent and the life expectancy is 76 years (Ibid). Two thirds of the population is in working age (15-64 years old), and most people live in cities (77 percent). Mexico's income distribution remains highly unequal with a Gini coefficient stable at 48.1 from 1997-2005 (Human Development Indicators). Around 18.2 percent of the population lives below the national extreme poverty line and based on the Human Poverty Index, Mexico is ranked 23th among 135 countries in terms of extreme poverty levels.¹

Mexico was a Spanish colony until 1821. Its post independence history was characterized by economic instability. Although since the 1910 Mexican Revolution the country has formally been a presidential democracy with independent executive, legislative and judiciary powers, for 70 years it was ruled by the Institutional Revolutionary Party (PRI), which was defeated for the first time in 2000. The current president, Felipe Calderon (2006-2012) has been confronted with the difficult problems of rising violence and insecurity, the outbreak of the H1N1 flu virus, and the global financial crisis.

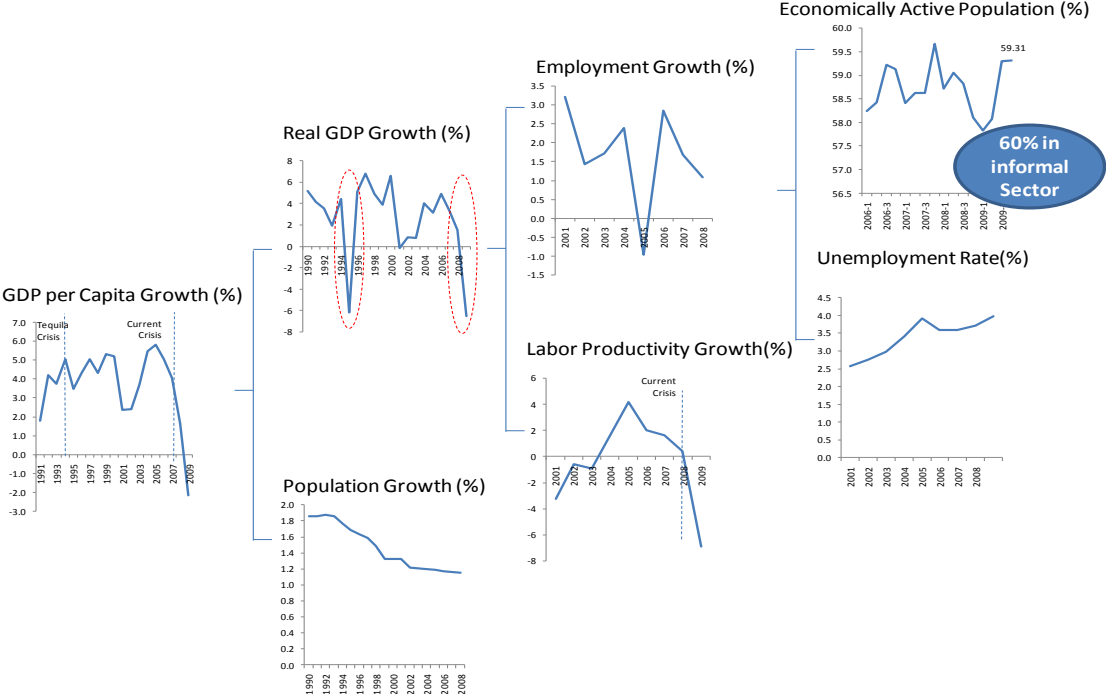
III. Mexico's economic performance

Performance summary: GDP per capita growth in Mexico has been stagnant in the last decade due to moderate employment growth a large informal sector (60 percent of the economically active population according to OECD), and low labor productivity (see Figure 1). These development have occurred against

¹ Mexico was ranked 53 by UNDP Overall Human Development Index in 2009. (<http://hdr.undp.org/en/statistics/>). The Human Development Index measures poverty based on living a long and healthy life, having access to education, and a decent standard of living.

a backdrop of improving *macroeconomic* development and moderate to poor microeconomic performance. Sound fiscal and monetary policies represent significant progress towards macroeconomic stability. Improved public debt management and financial sector soundness have been fostered by structural reforms and trade liberalization. However issues such as informality, low intensity of local competition, and market dominance by certain business groups have hindered the country's microeconomic development.

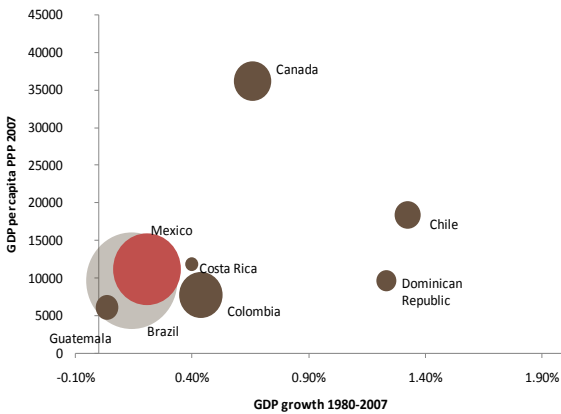
Figure 1. Economic Performance, Drivers of Real GDP per capita



Source: EIU, OECD, Central Bank of Mexico, INEGI.

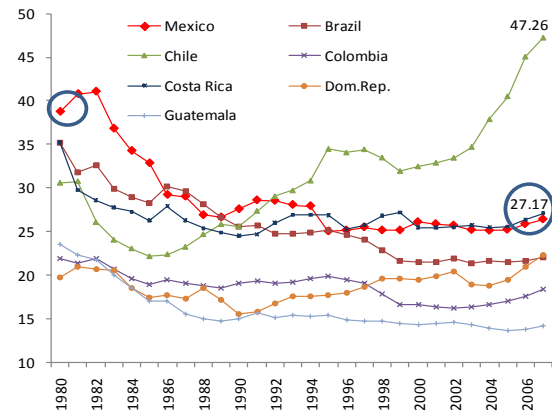
GDP and Growth: Comparing Mexico's GDP growth to that of Central American countries which also have a free trade agreement with the U.S., (Costa Rica, Guatemala and the Dominican Republic) and South American countries of similar levels of development (Colombia, Brazil, and Chile) we find that Mexican growth (2.57 percent from 2000-2008) has lagged behind the average for the group (4.5 percent from 2000-2008) (Penn Tables). Real GDP per capita relative to the U.S. has also substantially decreased. In 2007, Mexico's real per capita income was roughly one-fourth that of the US (Penn Tables).

Figure 2a. GDP Growth and GDP per capita



Source: Penn Tables

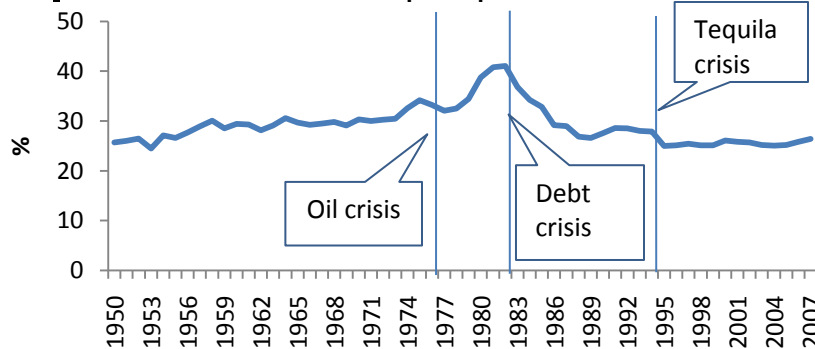
Figure 2b. Real GDP per Capita Relative to the United States



Source: Penn Tables

GDP growth has been highly volatile, due to recurring devastating crises such as the oil crises in the 1970s and the debt crisis in 1982, and the Mexican peso crisis in 1994. The most recent one was the global financial crisis in 2008 that hit the country very hard in terms of: i) GDP (-6.5 percent growth rate in 2009), ii) financial sector stability (interest rate spreads increased around 34 percent from 2006 to 2008), iii) current account balance (deteriorated from 1.7 percent of GDP in 2007 to 0.3 percent in 2009), iv) real exchange rate (depreciated 12 percent in 2009), and v) inflation which reached levels of 5.1 percent in 2009 when the official target is 3 percent) (Banco de Mexico).

Figure 3. Real Gross Domestic Product per capita Relative to the United States

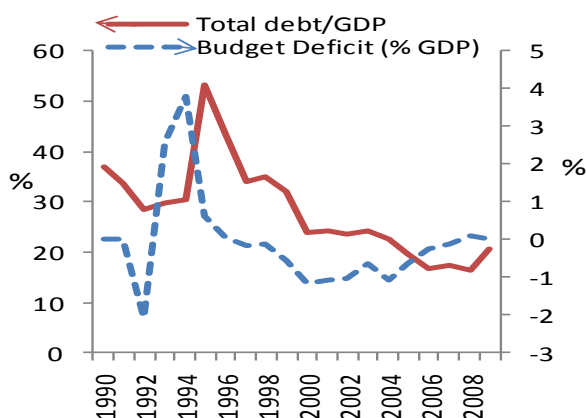


Source: Penn Tables

Macroeconomic performance: Mexico, like other countries in Latin America, has made significant advances in terms of macroeconomic stability. This has been achieved through fiscal discipline and sound monetary policy as well as an improving trade balance.

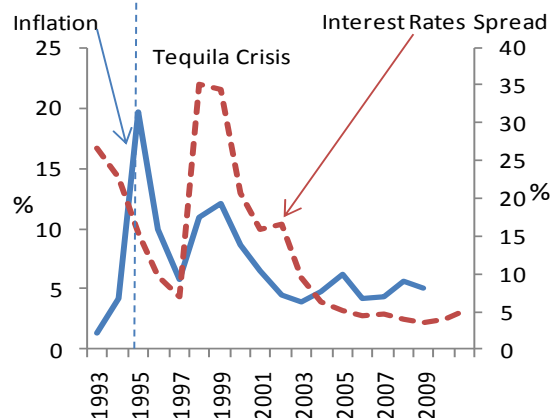
On the *fiscal* side, the government deficit has been reduced from 2.6 percent of GDP in 1993 to 0.8 percent in 2008 (EIU). Total public debt has been reduced from almost 30 percent of GDP in 1993, to 16.4 percent in 2008 (IFS). The current account has improved, as its deficit has dropped from 3.5 percent of GDP in 1998 to 1 percent in 2008 (EIU). *Monetary policy and financial market conditions* have improved as well. The government has worked to develop and stabilize financial markets. Domestic interest rates have decreased from an average of 28 percent in the 1990s to 9 percent and in the late 2000s, and government was able to issue 30 year bonds for the first time. Consequently, domestic investment has been on the rise. Inflation has significantly decreased from 20.4 percent in the 1990s to 5.2 percent in the 20'00s (Banco de Mexico) and inflation expectations have become stable at levels around 3.5 percent (ibid), a positive development for the business environment.

Figure 4a. Fiscal Discipline: Budget Deficit and Total Debt



Source: IFS (2009)

Figure 4b. Monetary Policy: CPC Annual Inflation and Interest Rate Spread (%)

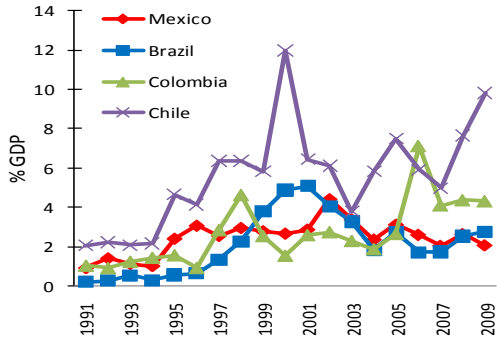


Source: IFS (2009)

In terms of the *external sector*, Mexico started opening up to the world economy in the 1980's after four decades of import substitution industrialization. In 1994 the country signed the North American Free Trade Agreement (NAFTA) with the U.S. and Canada, and trade with these countries has nearly tripled

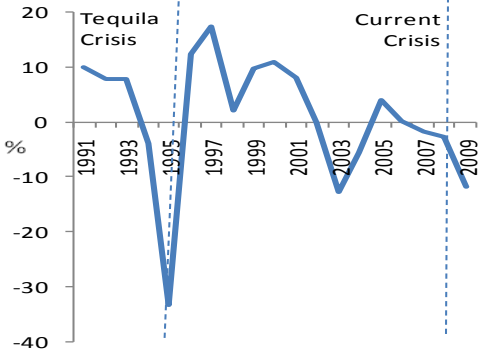
since. Mexico also has free trade agreements with over 50 countries, including agreements with Guatemala, Honduras, El Salvador, the European Free Trade Area, and Japan. This gives the country preferential access to more markets than China, India, Korea, and even the US (World Trade Law). 90 percent of its trade is conducted through these agreements (Banco de Mexico). In 1994 Mexico moved from a fixed to a flexible exchange rate regime. This introduced much needed stability and improved the environment for FDI providing more confidence in the exchange rate market. Net direct investment flows have almost doubled since 2000, from an average of \$8.5 billion during the 1990s to an average of \$17.4 billion during the 2000s (EIU). However, Mexico's inward FDI flows as a percentage of GDP are still low compared to other countries in the region.

Figure 5a. Inward FDI flows/GDP (%)



Source: EIU

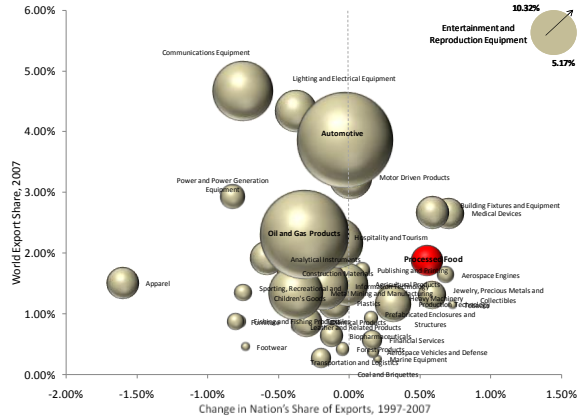
Figure 5b. Real Effective Exchange Rate (%)



Source: EIU

In terms of exports, Mexico is a relatively well- diversified economy. The biggest export cluster in Mexico is automotive followed by oil and gas products. The processed food cluster is smaller but one of the fastest growing. However most of the country's clusters haven't gained overall export share in the last ten years.

Figure 6. Mexico's Clusters: Nations Share Exports and Changes from 1997 to 2007.

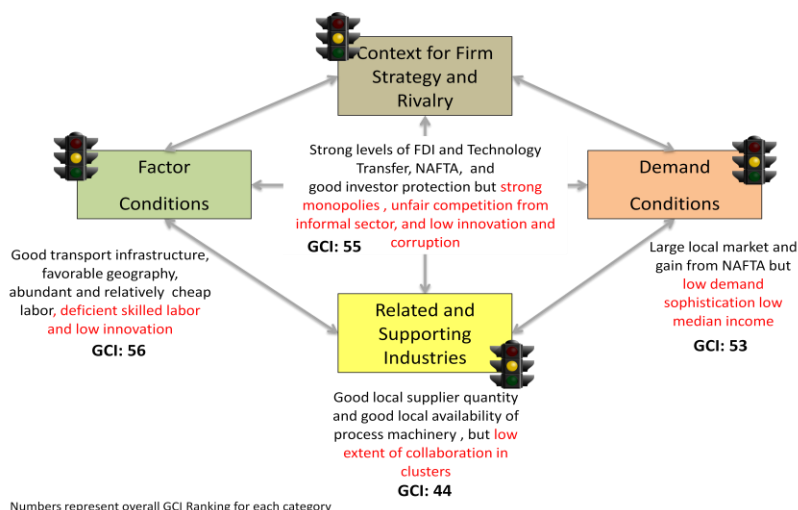


Source: International Cluster Competitiveness Project 2010

Mexico has a serious and growing problem of *insecurity*, which impacts the business environment, productivity, and FDI. The country ranks 127th out of 134 countries in organized crime (with higher numbers signifying a worse ranking), 125th in violence and 124th in low level of trust in the police (Mexico Competitiveness Report, 2009). The extreme violence is jeopardizing foreign investment in Mexico, and the Finance Minister, Agustín Carstens, has said that the deteriorating security alone is reducing gross domestic product annually by 1 percent (Bloomberg News, 2008).

Microeconomic performance: Mexico's economic performance has been stunted by poor microeconomic performance, particularly the *quality of national business environment*, which is negatively impacted by the presence of monopolies, informality, and low cluster development.

Figure 7. Country Diamond



Numbers represent overall GCI Ranking for each category

Factor conditions: Good infrastructure and low-cost labor have been important factor advantages, whereas deficient skilled labor and low innovation are relevant weaknesses. Mexico has well-developed infrastructure, with high road density (0.18 km per km sq. compared to Latin American average of 0.13 (IMD)). Labor supply is abundant and cheap, with labor cost per hour averaging \$2.02/hr versus \$24.90/hr in Canada and \$6.05/hr in Brazil (EIU, 2007). Nonetheless, growth in average employee compensation exceeds growth in labor productivity, which may be creating pressure on producer prices (OCDE Factbook 2009). Despite the fact that the government has instituted targeted education and training schemes in partnership with the private sector, Mexico's labor supply remains largely unskilled relative to developed countries, but still outperforms most of Central and South America. 14.9 percent of adults have obtained higher education, compared to 38.2 percent in Canada and 3.7 percent in Guatemala (Human Development Index, 2007).²

Context for Firm Strategy and Rivalry: Mixed results are observed in this regard. Low domestic competition is perpetuated by the presence of monopolies (mainly state owned enterprises) and a dense informal sector which encourages price-based competition, stifles innovation, and increases corruption. On the positive side, Mexico has benefitted from increased technological transfers and FDI, particularly since the signing of NAFTA (EIU).³

The electricity and telecom sectors are dominated by monopolies, resulting in high costs that are detrimental to business operations in all sectors. The price for electricity by industrial users in Mexico is higher than in developed countries and developing countries (IEA, 2008). According to the OCDE Communications Outlook 2009, Mexico is above the average OCDE price of telecom consumption basket

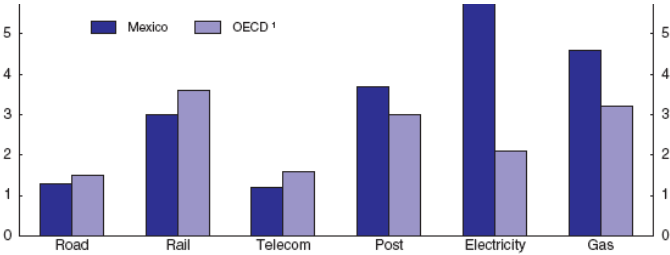
² The country's Education Index (at 0.88) is slightly better than the Latin American average (0.85) (Human Development Index, 2007).

³ Several government agencies currently work to promote foreign investment in Mexico, including the national development bank, the trade-development bank and ProMexico, the Mexican Government institution in charge of strengthening Mexico's participation in the international economy. Promexico supports exports and coordinates actions to attract foreign direct investment. It operates through a network of 25 offices throughout Mexico and more than 27 offices abroad.

and is the most expensive country for residential users and SME's (mobile phone and international long distance calls).

The informal sector of the Mexican economy accounts for 60 percent of the economically active population and around 25 percent of GDP (Source OECD). A lack of financial incentives for SMEs to scale up also means that many firms remain unregistered. This further complicates labor mobility to sectors or regions where productivity is higher, discourages the adoption of modern technologies and human capital investment and promotes the growth of a low-productivity informal sector. Furthermore, it results in reduced fiscal revenue, as companies in the informal sector do not pay taxes. A lack of overall innovation is partly a result of the informal economy, In addition, innovation is held back by heavy government regulation, low adoption of technology, and low levels of government R&D (Mexico Competitiveness Report, 2009).

Figure 8. Extent of restrictive regulation in network industries, 2003⁴



Source: Source OECD, International Regulation database and OECD estimates

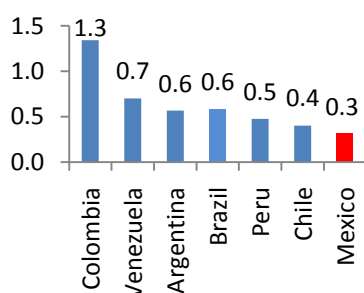
Demand Conditions: Mexico has the third largest domestic market in the Americas and its location and participation in NAFTA have further expanded the size of the potential market to both the U.S and Canada. However, Mexico's GDP per capita of USD8,753 still lags well behind developed economies and the domestic demand environment suffers from weak buyer sophistication, which has negative implications for the country moving into more developed (and higher value) clusters and products.

Related and Supporting Industries: Mexico has improved in terms of supporting and relating industries, as measured by the GCI index. The availability of latest technologies, good quantity and quality of local

⁴ The scale of indicators is 0-6, from least to most restrictive

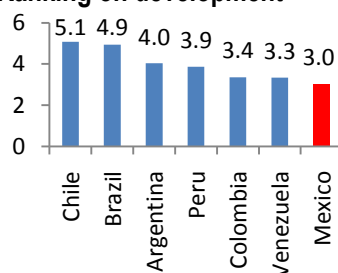
suppliers has been strengthened by the government who assists small firms in developing linkages with large firms, in particular through the Supplier Development Program (SDP).⁵ However there are some important weaknesses. Cluster collaboration levels are low, especially at the federal level (Porter et. al, 2010), although there are some good cluster initiatives at the state level in certain sectors.⁶ In terms of Technological Cooperation Development measured by IMD World Competitiveness, in 2007 Mexico ranked below most other Latin American countries (including Chile, Brazil, Peru and Colombia). Global strategies do not play a significant role in company productivity, and Mexico ranks below Chile, Brazil and Peru in terms of competitiveness in supplies, off-shoring and outsourcing (ibid) and the government has also not been successful at promoting access to Information and Communication Technology (Porter et. al, 2010).

Figure 9a. Investment in telecommunications % of GDP



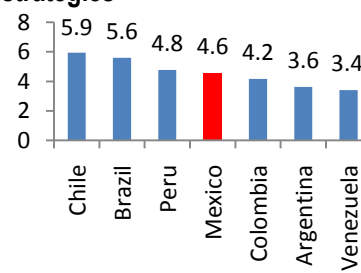
Source: IMD World Competitiveness 2009

Figure 9b. Technological Cooperation Ranking on development



Source: IMD World Competitiveness 2009

Figure 9c. Productivity of companies supported by global strategies⁷



Source: IMD World Competitiveness 2009

IV. Country Recommendations

Since the mid-1990s, Mexico has achieved some real improvements in macroeconomic stability, fiscal prudence, trade and FDI. The country has made significant strides in moving from a factor-based economy to an investment-driven economy. However, significant challenges in the business environment quality remain and the recent increases in violence are threatening development. Below we summarize the key remaining concerns and outline recommendations to address them.

⁵ Supported by the Ministry of Economy, the National Association of Manufacturers, and the UNDP (OECD 2007).

⁶ Baja California (wine), Coahuila (automotive), Guanajuato (footwear), Jalisco (electronics) and Queretaro (information technology) (Guzmán, J., 2008).

⁷ Ranking on supplies, offshoring, outsourcing.

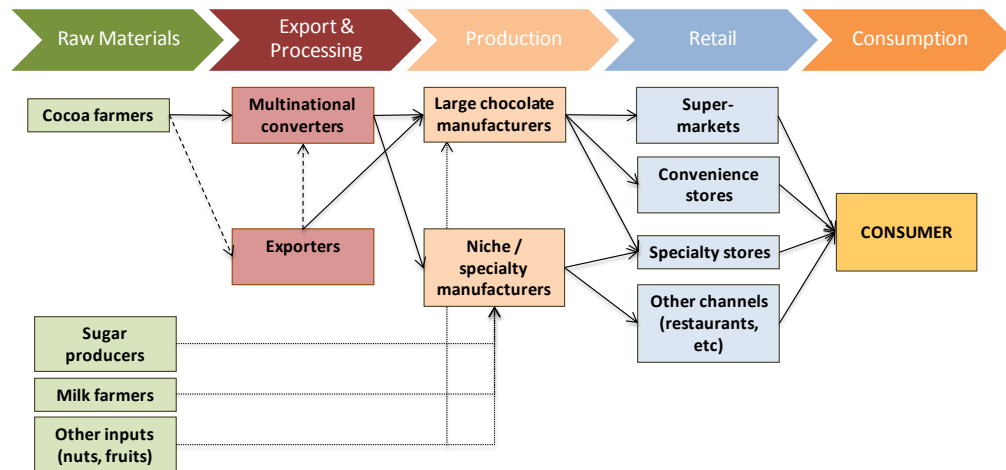
Issue	Recommendation
<i>Deteriorating Security</i>	<ul style="list-style-type: none"> • The Mexican government should apply best practices from Colombia given its recent and successful turnaround in security, specifically relating to drug-industry violence; • Substantial reform is needed in the criminal justice and the police systems, which are not trusted by Mexican citizens and regarded as inefficient and corrupt.
<i>Presence of monopolies and high informality</i>	<ul style="list-style-type: none"> • The government should encourage competition in the telecom and electricity sectors by removing current barriers to foreign and private investment and bolstering anti-monopoly legislation and its implementation; • The government should introduce incentives for informal entrepreneurs to become registered and eliminate barriers to formalization processes. A potential overseer of these initiatives could be CONACYT (National Council on Science and Technology); • The government should work to expand credit to small businesses by fostering entry and competition by financial intermediaries who are more flexible and willing to enter nontraditional markets.
<i>Increase Labor Productivity and Decrease Labor Market Rigidities</i>	<ul style="list-style-type: none"> • Existing government efforts to increase the quality of education through curriculum reform programs and performance evaluations should be scaled up and intensified; • Initiatives to improve the match between training and private sector needs should be scaled up; • The education system needs to be gradually depoliticized, particularly since the National Union of Education Workers (SNTE), the largest labor union in Latin America, has been blocking reforms that would increase the efficiency of government of spending and help ensure more equal access to education; • The government should increase efforts to strengthen top schools and top performers in order to empower those institutions and individuals that are likely to foster future innovation. This should lead to a process of “discovering the discoverers”, and help Mexico become an innovation-driven economy over time (Mexico Competitiveness Report 2009).
<i>Create a National Cluster Development Strategy</i>	<ul style="list-style-type: none"> • Intra-government collaboration should be increased, especially between the National Institute on Competitiveness (IMCO) representing the private sector, the Ministry of Economy and the state governments in order to develop a national cluster development policy. Greater interaction can be achieved through frequent panels, workshops, and national and international conferences on competitiveness where all the views of involved parties are considered.
<i>Enhance Innovation and R&D</i>	<ul style="list-style-type: none"> • Modify education system curricula to include a greater focus on creativity and innovation; • Create incentives to both the private sector and universities to develop research and development as well as to partner with one another to target research to business needs.

V. Global Chocolate Industry Trends

Chocolate is made using three main inputs: cocoa, sugar, and milk. Cocoa and sugar are typically sourced in warm, developing countries while milk is usually sourced near the production-point. The bulk of production for local markets tends to occur close to the end consumer due to vast differences in local tastes. Global exports

account for approximately 15 percent of the global retail value of chocolate, and largely originate in Western Europe and North America (Comtrade & Euromonitor 2010). Global consumption has also been focused in these regions, although China and India are seen as important drivers of future growth.

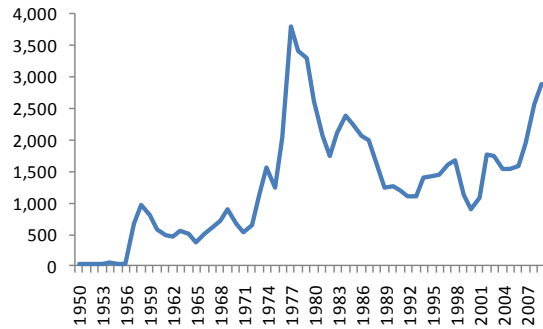
Figure 10. The Global Chocolate Value Chain



Source: Based on Gilbert, "Value Chain Analysis and Market Power in Commodity Processing with Application to the Cocoa and Coffee Sectors," 2006 and authors' research

Cocoa: Cocoa producing countries saw their best days in the 1970s and cocoa prices peaked at \$3,293/ton in 1979. This was followed by three decades of decline during which the participation of new growers in Asia led to excess supply in most years. However, cocoa prices rebounded sharply in 2007 in tandem with a global rise in commodity prices and outbreaks of pests among some producing countries, putting chocolate producers on high alert (IMF, 2009). Currently, approximately 90 percent of the world's cocoa is produced on smallholder or family subsistence farms in seven countries of which 64 percent is produced in West Africa (Ivory Coast, Ghana, Nigeria, Cameroon), 18 percent in Asia (Indonesia, Malaysia) and 7 percent in South America (Brazil, Ecuador) (Food and Agricultural Organization, 2008). Mexico produces 0.6 percent of the world's cocoa but is not an active exporter (FAO, 2008). Most of the crop is purchased by five multinational firms including Cargill, Archer Daniels Midland and Barry Callebaut who source and process more than half of the world's cocoa (International Cocoa Organization, 2005).

Figure 11. Cocoa bean prices (U.S. dollars per metric ton)



Source: IMF, 2010.

Sugar: Sugar prices also saw a recent spike. World sugar production for the 2009/10 marketing year was estimated at 153.3 million tons while consumption was 153.7 million tons – hence, sugar prices rose substantially – from 17.03 cents/lb in the first quarter of 2009 to 33.04 cents/lb in the first quarter of 2010 (USDA, 2009). The world's main sugar producers are Brazil, India, Thailand, and China (they account for 50 percent of world production and 59 percent of world exports, United States Department of Agriculture, 2009). Mexico is the world's sixth-largest sugar producer and a net exporter in most years. While the global sugar industry is highly protected through tariffs, since 2008 Mexico can export sugar duty free to the US under NAFTA (FAS, 2010).

Milk: The major global producers of milk are the EU, the U.S., Brazil, New Zealand, Argentina and Australia (USDA, 2009). Mexico produces more fluid milk than it consumes, however it has been importing increasing amounts of non fat dry milk, which is frequently used in chocolate production (ibid).

Chocolate Production: Although some producers of chocolate source and process cocoa directly, most purchase already processed cocoa, then combine it with sugar, milk and potentially other inputs (nuts, fruits, liquors) to create chocolate. The top ten multinational brands, among which are Mars, Kraft (which acquired Cadbury Schweppes in 2010), Nestlé, Hershey and Ferrero accounted for 54 percent of the global chocolate market share in 2008, up from 43 percent in 2001 (Euromonitor, 2009). Niche, gourmet and specialty chocolates and unbranded industrial-use chocolate account for the remainder of the market. Most of the multinational brands have locations throughout the

world to serve the various local needs. The world's main chocolate export locations are Italy, Switzerland, the U.K. the U.S. and Canada. In 2008, global chocolate exports accounted to \$27.1 billion, of which \$254.7 million was exported by Mexico (Comtrade, 2008).

Chocolate Consumption: In 2009, \$88.3 billion worth of chocolate was consumed in the world (Euromonitor, 2010). The market experienced 9 percent average annual growth during 2005-2008 but declined 3 percent in 2009 (ibid). Europe and North America accounted for 40 percent and 21 percent of the total consumption, respectively not only because they have large population but also because their intensity of consumption is highest.⁸ Growth in the market is expected to come from increasing incomes and consumption in developing regions of the world (especially India and China) and from increasing sophistication of demand in developed regions. The newest trend in chocolate is a shift towards certified single origin and organic chocolate, high cocoa content chocolate, and fair trade chocolate (ICCO, 2006).

VI. Overview of the Mexican Chocolate Cluster

Cluster History: The Aztecs of Mexico are thought to have cultivated cacao trees for more than three centuries prior to the arrival of the Spanish, using the beans both as currency and for the production of a spiced drink called chocolatl. The bean was first commercialized in Europe in 1528 as a beverage. Subsequent process innovations, including the introduction of milk into chocolate (by Englishman Nicholas Sanders), the separation of cacao beans into butter and liquid through pressing (by the Dutchman Van Houten), and the solidification of chocolate into tablets (by the Swiss Daniel Peter of Vevey) led to the chocolate tablets as we know them today (Beckett, 1999). The product was not produced as such in Mexico until the late 1800s.

Driven by the large domestic demand, a relatively large chocolate industry developed in Mexico during the 20th century. Along with large local manufacturing firms like Ricolino (part of Grupo Bimbo), Chocolates Turin, and La Corona, the most important international chocolate manufacturers set up

⁸ Globally, chocolate consumption is highest in the U.K, Switzerland, and Ireland who consume more than 9 kg/capita annually compared to a global average of 2.5 kg /capita. U.S. average annual consumption is 5.0 kg/capita. However, the size of the population makes the U.S. the largest single chocolate market.

operations in the country as a part of their global business strategy, usually by acquiring already established domestic companies (Euromonitor, 2009). The pioneer Nestlé, which opened its first plant in Ocotlán in the state of Jalisco in 1935,⁹ was followed by Hershey's (1969).¹⁰ In the 70s the industry's development suffered a setback because of price controls for table and powder chocolate and because of a highly inefficient system of quotas for inputs (cocoa, sugar, and milk). With the opening of the economy and the relaxation of price controls in the 1980s (FDQ, 2008) there began to be competition from products brought in from abroad. Effem/Mars entered in 1986¹¹ and Ferrero in 1992,¹² and Hershey's and other international brands were then able to use their own name and products.

Cluster Map, Scale and Location: As of 2009, Mexican chocolate was produced by 70 large and medium firms, and around 250 small firms with 10 or less workers, employing approximately 7,200 people in total (INEGI). Multinational companies— MNCs produce around two thirds of the total production and the remaining third is controlled by Mexican entrepreneurs (Euromonitor, 2009). The cluster's recent economic performance has been impressive. After continuous growth since 2005 (with a CAGR of 5.7 percent in nominal and 1.5 percent in real terms) the Mexican chocolate sales reached a peak of 924 million dollars in 2008. In 2009, although the cluster continued to grow in nominal terms, it decreased in real terms to 897 million as an effect of a global economic downturn (Euromonitor, 2009).¹³

The Mexican Chocolate Cluster, schematically shown in Figure 4, involves participants from all components of the value chain. The key players are the chocolate *manufacturers*, which can be divided into large, industrial producers (both MNCs and local firms) and the smaller companies that typically produce artisanal or semi-artisanal chocolate for geographic or quality niches.

⁹ <http://www.nestle.com.mx>, accessed on April 5, 2010.

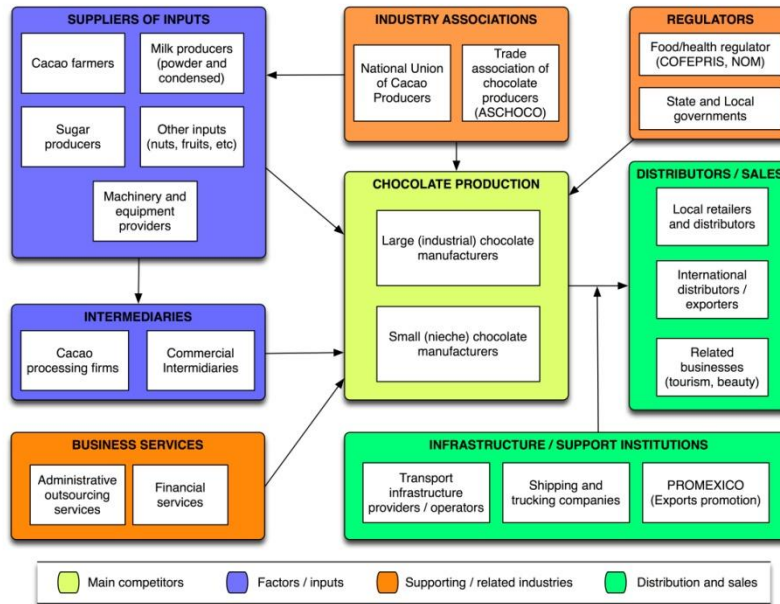
¹⁰ <http://www.hersheys.com.mx/>, accessed on April 4, 2010.

¹¹ <http://www.mars.com/global/who-we-are/where-we-operate/mexico.aspx>, accessed on April 25, 2010.

¹² <http://www.ferrero.com.mx>, accessed on April 25, 2010.

¹³ Figures are expressed in constant USD from 2009.

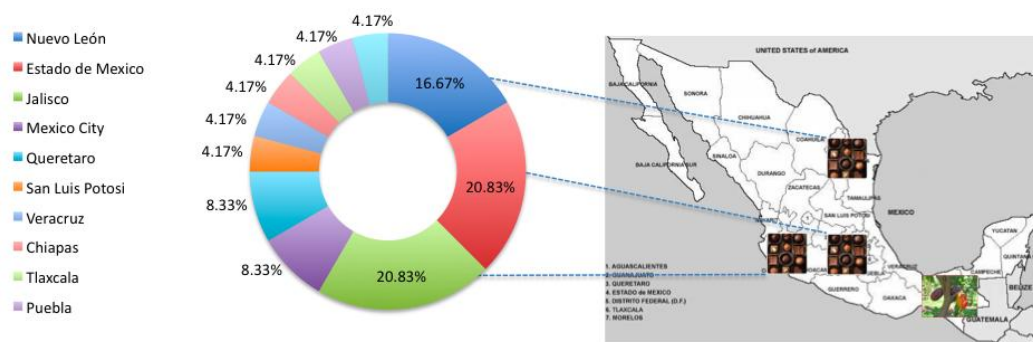
Figure 12. Cluster Map



Source: Euromonitor 2009, interviews performed by team members.

The cluster is geographically located in the corners of the triangle formed by the main cities of the country: Mexico City, Monterrey, and Guadalajara, as shown in Figure 5. This allows for easy access to the domestic and foreign markets and facilitates direct interaction among actors of the cluster. The distances are 4 hours by road between Guadalajara and Mexico city, 9 hours between Guadalajara and Monterrey (located close to the border with the United States), and 9 hours between Mexico City and

Figure 13. Location of chocolate and cocoa producers in Mexico



Source: Euromonitor 2009, interviews. Map obtained from: <http://mexico-herps.com/Habitats/>

Monterrey. By air the flight times are 1 hour, 1.5 hours, and 1.5 hours respectively. All major air transport providers operate to these destinations, and there are frequencies connecting them every half hour.¹⁴

Sourcing of Inputs: Virtually all the important inputs for chocolate can be sourced in Mexico, but not always in the amounts and quality required by the major manufacturers, who still import a portion of their raw materials. The main input, cocoa, is produced solely in the southern states of Tabasco and Chiapas (see Figure 13), and is the main source of income for 37,000 people (Gonzalez, 2005). With 2.5 percent of the global cocoa production, Mexico is the 11th largest producer in the world; however the current levels of production are not enough to serve domestic demand. About 40 percent of the cocoa consumed in Mexico (both industrially and for other purposes) is imported (SIAP). In addition to the damages suffered by about half of the plantations due to the Moniliasis plague since 2005, deficient quality (due to inadequate primary processing) and high costs of production make the Mexican producers not competitive in the international cocoa export market (Gonzalez, 2005). In order to protect local producers, the Mexican government has put in place a quota system by virtue of which chocolate manufacturers are forced to buy the local production (at whatever quality and price available), and can import cocoa only when local supply is absorbed (Ibid).

Competitiveness is also a concern in other major inputs like sugar and milk. Mexico is the sixth largest producer of sugar worldwide, with an industry that accounted for 2.3 percent of the country's manufactures and employed 34,400 people. Although the sugar cluster is far from its potential due to a history of harmful government intervention and very powerful unions, sugar is regularly available in the country at prices frequently smaller than in the USA (INEGI, SIAP). In terms of milk, Mexico's imports remain higher than its exports in a context of high international prices,¹⁵ driven mainly by a steep increase in Chinese consumption (FIRA). Other inputs like nuts and fruits are more readily available in the local

¹⁴ <http://www.sct.gob.mx/>, accessed on April 27, 2010.

¹⁵ Mexico produces more fluid milk than it consumes, however it has been importing increasing amounts of non fat dry milk, which is frequently used in chocolate production (USDA-FAS).

markets at competitive prices, but they constitute only a relatively small share of the costs of chocolate production in the country.¹⁶

Processing and Intermediaries: Intermediaries have become an important link between input providers and manufacturers in recent years. While small chocolate factories source from large urban wholesale centers like Mexico City's "Central de Abastos", industrial manufacturers increasingly purchase already made chocolate from the industry leader Barry Callebaut (operating in Mexico since January 2009) and other minor intermediate producers.

Related and Supporting Industries: There are two major institutions for collaboration in the cluster: the Association of Chocolate Producers (ASCHOCO) and the National Union of Cacao Producers. While the first has engaged in some competitiveness-promoting activities such as the organization of fairs and promoting access to new markets,¹⁷ the second mostly focused in lobbying the government for preferential treatment to cacao producers (Gonzalez, 2005). In terms of other related and supporting industries, there is an active participation of regulatory agencies in the cluster: in addition to the Ministries of Agriculture and Economy, who regulate the main input markets, the most important agency is the Food and Health Regulatory Agency COFEPRIS.¹⁸ The government's exports promotion agency PROMEXICO has not played a major role in the cluster's recent development, but has included chocolate as one of its priority products to promote in the next decade.¹⁹

Domestic Consumer Market:²⁰ For most of the industry's history, Mexican chocolate manufacturers have focused on serving the local consumers. As of 2009, the market was controlled mostly by the foreign companies Nestlé (18 percent), Hershey's (15 percent), Effem/Mars (14 percent), and Ferrero (13 percent), with the largest domestic manufacturer (Ricolino) holding a market share of only 6 percent of total sales.

¹⁶ Interview with Ingrid Gonzalez, Hershey's former employee.

¹⁷ ASCHOCO played a major role in the decision of the Mexican government to seek and achieve a modification of the rules of origin for cacao in the NAFTA treaty, which has had a huge impact in the cluster's recent development.

¹⁸ Stands for "Comisión Federal para la Protección de Riesgos Sanitarios": <http://www.cofepris.gob.mx>

¹⁹ <http://www.promexico.gob.mx/>

²⁰ This section is based on interview with Hershey's and Que Pasa's representatives, and figures from Euromonitor 2009.

Although no substantive changes have been observed recently, on average, all large international manufacturers gained market share between 2004 and 2008 at the expense of the traditional local producers, and currently control two thirds of the total sales of the cluster (Euromonitor, 2009).

Domestic demand for chocolate is divided in two very different markets. More than 90 percent of the total sales come from low-cost products, where producers compete on prices. Here, the most successful players are the ones with the best-developed distribution channels. The remaining sales (less than 10 percent) come from very high quality high-end chocolate. In the low-cost market, there have not been major increases in value-added over the last few years. The growth in sales value tracks almost exactly the growth in sales volume in all of the cluster's major products. This is likely to change in the near future, following Barry Callebaut's opening of one of its largest "Innovation and R&D Centers" along with its Nuevo Leon factory in Mexico in 2009. Conversely, in the high-value market there are several success stories of research and innovation coming from small local chocolate producers, like Que Bo! (profiled in Box 1), which has developed over 70 new chocolate flavors since its creation in 2006. Regional names like Oaxaca Chocolate enjoy widespread recognition in the domestic market,²¹ and traditional hot Mexican chocolate –which is consumed on a daily basis in a few states in central and Southern Mexico–, has started to gain international reputation in recent years.²²

NAFTA and the Export Market: In 2006, Annex 401 (on rules of origin) of the North American Free Trade Agreement (effective since 1994) was amended,²³ allowing all chocolate produced in Mexico, including that using 100 percent imported cocoa, to freely access the US market. This brought an important boost of investment in the cluster, and an increase in its exports. In 2009, the cluster received a total of 370 million in FDI, coming mostly from two large investments located in Nuevo Leon: Hershey's new 300 million plant

²¹ <http://www.planeta.com/ecotravel/mexico/oaxaca/chocolateoax.html>, accessed on May 2, 2010.

²² <http://whatscookingamerica.net/Beverage/HotChocolate.htm>

²³ "One hundred percent non-NAFTA cocoa beans, paste, butter, and unsweetened powder may be used to make bulk chocolate and chocolate candy for retail sale." Amendment to NAFTA Annex 401 on Rules of Origin July 1, 2006.

conceived to serve the US market, and the Barry Callebaut's new industrial chocolate²⁴ factory, intended to supply initially for Hershey's and subsequently for other international and domestic manufacturers. As a result of these developments, in 2009 Mexico's chocolate exports finally outweighed its imports, with most of the exported products coming from MNC's factories located in Nuevo Leon (see Box 2). It also became the second largest exporter of chocolate to the USA, and number 15th in the world (USITC).

Box 1

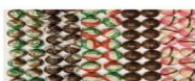
Company Profile: Que Bo!

QUE BO!

Niche- focused small company, specialized in high-value chocolate for the domestic market

An innovative value proposition

- ✓ 100% Mexican
- ✓ "Healthy" and organic chocolates, with no sugar, animal fats or artificial elements
- ✓ Unique flavors and constant innovation
- ✓ Championing the development of a new culture of chocolate in Mexico



Market success

- ✓ Opened two franchises in Mexico City and one in Guadalajara
- ✓ Contracts with companies like Saks Fifth Avenue and Louis Vuitton for customized chocolates
- ✓ Chef regularly featured in local media

Innovation and cluster development

- ✓ Has developed and patented over 70 chocolate flavors
- ✓ Runs chocolate manufacturing workshops, seeking to expand the supply of high-quality hand-made chocolate
- ✓ Organizes regular chocolate testing events, focused on consumers' education



Que Bo! at a glance

- Based in Mexico City and Guadalajara
- Created in 2006 by a Mexican chef educated in Europe
- 18 employees in main shop/factory (Mexico City)
- Annual sales USD 380,000 (2009)

In their own words

"Our goal is to reposition Mexico, the birthplace of chocolate, in today's chocolate world"
José Ramón Castillo
 Creator of Que Bo!

"The future of our business looks bright: we expect to continue to grow in the upcoming years"
Que Bo's Operations Manager

Box 2

Company Profile: Hershey's Mexico

HERSHEY'S

Pennsylvania-based MNC, leader both in the domestic and the export markets

A long presence in the Mexican market

- ✓ First investment in Mexico in 1969
- ✓ Strategy: acquiring well-established local companies
- ✓ Started using international Hershey's brand in 1992
- ✓ R&D and marketing mostly done at headquarters



Consolidating their leading position

- ✓ In Mexico focus is on low-cost, more than on brand differentiation
- ✓ Competitive advantage based on distribution network
- ✓ Recently introduced products previously not sold in Mexico
- ✓ Stable share of local market of about 15%

Producing for the US Market

- ✓ Factory in Nuevo Leon opened in 2009 to serve the US market
- ✓ Investment of USD 300 mm
- ✓ Strategy: to leverage Mexico's better labor costs and government's support
- ✓ Attracted large intermediate-products manufacturers (Barry Callebaut)



Hershey's Mexico at a glance

- Major plants in Jalisco (local market) and Nuevo Leon (US market)
- Employs over 1,200 people
- Annual sales USD 175 mm, only in local market (2008)

In their own words

"(Our Nuevo Leon plant) is going to play a key role in our company's long-term success"
David J. West
 Executive Vice-President, Hershey's International

"Mexico's huge population makes the local market a priority"
Hershey's sales manager

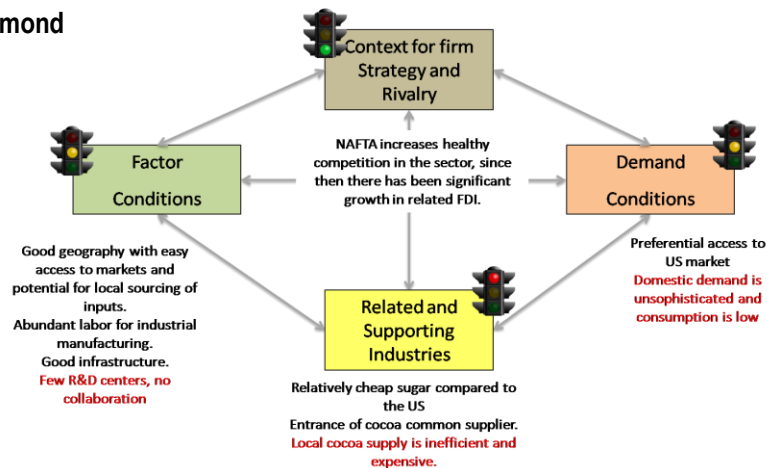
Source: Hershey's Mexico, interviews and firm's website

²⁴ Barry Callebaut's plant does not manufacture consumer products; it only produces chocolate for large industrial costumers according to the formulas provided by them. With an annual capacity of 100,000 tones, Mexico's factory is the third largest of this firm worldwide (Partos 2009).

VII. The Mexican Chocolate Cluster Diamond

The competitiveness of the Chocolate Cluster in Mexico is based on privileged access to the US market and low cost of inputs, basically labor and sugar relative to the US. These are not permanent sources of competitive advantage, as Central America, through CAFTA, could become a competitor in that market. The cluster has to find a distinctive value proposition, based on its history of chocolate and become a part of the current trend for high quality, high cocoa content, nutritional chocolate.

Figure 14. Cluster Diamond



Factor Conditions: Factor conditions for the chocolate cluster in Mexico are good, but they are not a permanent source of competitiveness for the cluster. There is a need to invest in training and innovation to have a more unique and more permanent competitive advantage.

The Mexican chocolate cluster is conveniently located with easy access to domestic and to international markets, namely the US and Latin America. The country also has the appropriate weather conditions for cacao and sugar production, which is a potential advantage for the cluster. However, this is also true in Central America. With the signing of CAFTA, they could be in the same favorable situation as Mexico.

Mexico has an abundant workforce, experienced in manufacturing (INEGI, 2010). Industrial chocolate preparation does not require overly sophisticated skills, which allows for easy training and

sourcing of workers²⁵. Boutique chocolate making, on the other hand, requires very specialized training, as everything is done artisanally. Most of the time training is done in-house and employee rotation is low²⁶.

Infrastructure in the country is good, particularly the roads and airports that connect the cluster to its main selling points (EIU Country Forecast, 2009). From Guadalajara to Monterrey and to Mexico City there are 4-lane highways that allow for fast movement of goods. The 3 largest airports in the country are also located in these three cities. In addition, Guadalajara is close to one of the main ports in the country, Lazaro Cardenas.²⁷

Even though there are isolated examples of research and innovation in chocolate²⁸, there is no strong relationship between the cluster and public institutions that do research. All market and product research is done privately, either in-house or in collaboration with suppliers. In the case of small chocolate makers, they are constantly innovating for newer products and fillings, as this is how they compete. In the case of multinational manufacturers, most of the research is done in headquarters and other specialized facilities outside of Mexico. Nevertheless, the arrival of Barry Callebaut to the country in 2009 and the opening of one of its *Innovation Centers* is an important step towards more collaboration in research. However, the firm only opened in Mexico an Applications Laboratory and Pilot Line, where R&D teams work in close cooperation with industrial customers to develop individual solutions or tailor-made innovations²⁹. Missing are the Innovations and Applied R&D Department and Chocolate Academy that could provide more knowledge and skills to the cluster.

²⁵ Gonzalez McCarthy, 2010 Interview

²⁶ Castillo, 2010. Interview

²⁷ This port is fully-equipped to support industrial and commercial activities and is the only port in Mexico with an access channel of 18 meters depth and a turning basin with 16.5 meters depth. It can receive the largest vessels (to 165 thousand tons) and all types of cargo. http://www.worldportsource.com/ports/MEX_Puerto_de_Lazaro_Cardenas_264.php

²⁸ For an interesting example of Biochemical Engineering students creating medicinal chocolate products, see Fregoso (2009)

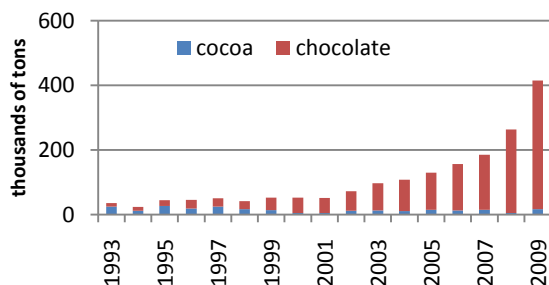
²⁹ <http://www.barry-callebaut.com/locations?country=1286>

Context for Firm Strategy and Rivalry: NAFTA has brought about beneficial changes for the growth of the cluster, but it may not be a permanent source of competitiveness if the Mexican cluster cannot provide a distinctive brand.

Since the signing of NAFTA, and with the change in Rules of Origin in 2005, the Mexican market has become increasingly liberalized and open to competition. As a barrier-free export platform it has allowed international players to benefit from competitive advantages in the country, such as low wages. The average wage for a candy maker in Mexico is \$0.56 per hour, as compared to \$14.04 in the United States. The annual health care cost of a Mexican worker is \$360, compared to \$2,400 for an American worker. Rent per square foot is \$4 in Mexico, compared to \$10 in the United States. (International Trade Administration, 2006).

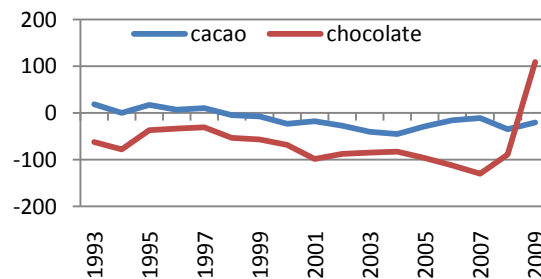
As a result, FDI in the Mexican chocolate cluster has increased significantly in recent years (Morales, 2009) and exports of chocolate from Mexico to the U.S. have almost tripled, growing from \$124.4 million in 2006 to \$347.3 million in 2009 (Figure XX). During this same time, U.S. imports from its other major supplying countries (Canada, Belgium, Switzerland) have decreased (USITC, 2009). As can be seen in Figure XX In 2009 for the first time Mexican chocolate exports surpassed chocolate imports into the country (INEGI, 2010).

Figure 15a. Mexican exports of chocolate and cocoa 1993-2009



Source: BIE. INEGI.

Figure 15b. Trade balance for chocolate and cacao in Mexico



Source: BIE. INEGI.

Entrance of FDI has also brought with it advanced management techniques and modernization of production processes.

Demand Conditions: Access to the US market because of NAFTA is the driving force behind the growth of the cluster. Even though domestic demand has a lot of potential, it is still highly seasonal and unsophisticated. Dark chocolate consumption, regarded as a measure of consumer sophistication (Bennett Clark, 2001), is less than 5 percent of total consumption (Euromonitor, 2009). Nonetheless, promotion of recent discoveries of health benefits of dark chocolate (Cleveland Clinic, 2010) has the potential of improving demand conditions for the cluster.

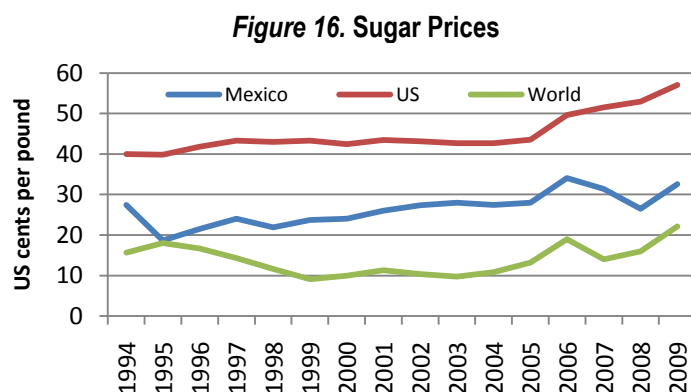
In general Mexican consumers like traditional flavors and brands³⁰ and have low levels of consumption. Mexicans eat, on average, 0.7 kg of chocolate per year, compared to the world average of 2.5 kg annually or to the Swiss who consume 9.7 kg of chocolate per year (Euromonitor, 2010).

In terms of demand conditions, the real driving force behind the Mexican chocolate cluster is access to the US market, the largest single chocolate market in the world with very high and sophisticated demand (Euromonitor, 2010). The US has an annual per capita consumption of 5.58 kg, and US retail value of chocolate accounts for 24.4 percent of all global sales (ICCO, 2010). Lately the US market has been growing into organic and high quality chocolate. The market for premium chocolate has seen 20 percent annual growth since 2001. This is opposed to the overall chocolate market, which has seen only a 3.9 percent rise (Yara, 2006). Mexico has the potential to uniquely serve this niche market through its plantation of certified organic cocoa, the second largest in the world (Euromonitor, 2010).

Related and Supporting Industries: The cluster's advantage is in the relatively lower cost of sugar and the recent arrival of a top notch common supplier of cocoa are sources of competitiveness for the cluster. Nevertheless, these advantages are countered by cumbersome restrictions and protection in cocoa that increase production prices across the board.

³⁰ Gonzalez McCarthy, 2010.

Even though Mexico is not an efficient producer of sugar, its prices are relatively better than in the US, as can be seen on figure 17. According to the International Trade Administration (2006), a reason why US firms, such as Hershey's, have moved south of the border has been because of lower production costs, particularly sugar.



Source: USDA, 2010

A potential competitive advantage of the cluster could be local cocoa availability. But because of politicized associations, the sector has been highly protected from outside competition, especially before 2005. Today it is still protected, with quotas and 15 percent tariffs for any imports outside the 3:1 ratio of foreign to domestic purchases (Estrada, 2009). In addition, cocoa production in Mexico is low and has been declining. Small plots of land, and an untreated bout of monoliiasis plague have led to the destruction of almost half the production capacity (USAID, 2005). Firms like Nestlé Mexico that have traditionally sourced domestically are not able to meet their input needs today. Most large producers of chocolate are forced to import cocoa beans or paste under the restrictive government conditions. However, Barry Callebaut has managed to circumvent these constraints, which can mean better sourcing options for Mexican firms.³¹

Institutes for collaboration in the cluster have been effective at bringing together the players and providing general benefits, either through policies or opportunities for growth. However, further efforts are needed to provide Mexican chocolate with a unique brand. The Association for Mexican Chocolate

³¹ Vargas, G (2010)

Producers, ASCHOCO, was founded in 1936 with the objective of obtaining cheap and competitive raw material for its members. Over time the Association has been involved in the free trade agreements as they relate to chocolate and it was an important actor in the NAFTA Rules of Origin change of 2005. They are also involved in the creation of official and national norms (Revista Ejecutivos, 2009).

In addition they are part of larger international networks of confectioners and candy makers, such as the International Confectionery Association (ICA) that “facilitates, coordinates and communicates international scientific, regulatory and public affairs information between our members while representing the interests of the confectionery industry in a collaborative and responsible manner”,³² or the Food Processing Suppliers Association (FPSA) that helps processors find manufacturing solutions to critical issues in their business through collaboration.³³

ASCHOCO organizes fairs and events to promote chocolate in the domestic market. The most important one is *The Chocolate Experience*, where big and small producers participate to showcase their products, to provide or receive specialized training (e.g. chocolate sculpture), and to promote the health benefits of chocolate.³⁴

Another important IFC is ProMexico. Its role is to promote Mexican products and attract FDI. In 2010 it has identified chocolate as a priority for international promotion, especially in the US, Canada and some Latin American countries (Brazil, El Salvador, and Peru) (ProMexico, 2010). In order to do this they operate through Mexican embassies and consulates to promote the products. ProMexico also helps producers attend international fairs (such as *International Sweets and Biscuit Fair* in Germany, *All Candy* in Chicago, Ill., and *Salon International de l’Alimentation* (SIAL) in Canada). Through these fairs producers can show their products and also become more aware of consumers tastes abroad as well as innovations in inputs and processes (ProMexico, 2009).

³² <http://www.international-confectionery.com/>

³³ <http://www.fpsa.org/>

³⁴ In 2009 the Expo received more than 10,000 visitors in 2 days. <http://thechocolateexperience.com.mx/>

VIII. Recommendations

In order to fully realize the potential of the Mexican chocolate cluster we recommend taking steps to create a distinctive brand, improve skills and innovation in the cluster, capitalize on organic chocolate potential, and improve supply of inputs and stimulate local demand. All actors in the cluster should be involved in these actions to develop a unique value proposition.

1. Stimulate the local demand, seeking to increase the intensity and sophistication of local consumption	
	<p>Expand quality of information to buyers.</p> <ul style="list-style-type: none"> • Promote ideas of “historic” Mexican chocolate (“the birthplace of chocolate”), “unique” Mexican chocolate (special flavors such as Oaxaca hot chocolate) and, “Mexico-origin” certified chocolate (such as Turin’s tequila-filled chocolates). (ASCHOCO, ProMexico) • Promote the health benefits of dark chocolate to raise the local interest in chocolate as a consumer good. We recommend pursuing targeted marketing campaigns and establishing a Chocolate consumer magazine in order to pass these messages on to the consumer. (ASCHOCO)
2. Increase the availability of skilled/specialized human capital	
	<p>Mexico has good availability of unskilled low-cost labor but due to deficiencies in higher education, it has a shortage of skilled and specialized professionals required for high-value chocolate production.</p> <ul style="list-style-type: none"> • Engage in productive conversations with industry leader Barry Callebaut to seek to attract to Mexico one of Barry Callebaut’s “chocolate academies”. These currently exist in twelve countries around the globe and are used as teaching and training centers for artisans and professionals. (ASCHOCO, ProMexico) • The government of Mexico should promote international scholarships for students interested in studying the art of chocolate-making. The local market offers high payoffs to such specialized skills, as can be seen from the example of one of the companies featured in this report, <i>Que Bo!</i>, whose founder started the company after studying chocolate-making in Europe. (ASCHOCO, Ministry of Education, CONACYT) • Craft a link between the private sector players involved in chocolate and universities. Still-scarce but promising academic research on chocolate can be enhanced by such partnerships. We recommend that private sector producers, through ASCHOCO, team up with universities on joint ventures to commercialize some of the innovations and market them as unique Mexican products.
3. Improve access to high-quality supply of cacao, both by improving efficiency and quality of domestic supply and access to other international sources	
	<p>Availability of local cacao inputs can become a unique competitive advantage for Mexico through some reform and greater inter-industry collaboration.</p> <ul style="list-style-type: none"> • Provide technical assistance and access to credit to farmers in order to replant plots with higher quality varieties resistant to Monoliasis plague. (Ministry of Agriculture) • Invite experts from other countries through to provide technical assistance to the farmer to introduce international technology and best practices in cocoa growing (from Brazil for bulk producers and from Ecuador for specialized producers). Particularly for centralizing first stage processing (fermentation and drying). (Ministry of Agriculture) • Take advantage of opportunity to grow footprint in high value markets (Mexico has the world 2nd largest certified organic cocoa plantation) by working closely with the cacao growers in order to be the key channel of communication, inform cacao producers of the needs for organic cocoa and other high value-add cocoa (fair trade certified, single origin, etc.). (ASCHOCO) • Set up dialogue and negotiation tables with the ministries of Trade and of Agriculture, association of cocoa producers, cocoa processors and with the association of chocolate producers (ASCHOCO) to find a

	compromise solution that will gradually liberalize trade restrictions on cocoa while providing support to the local growers in the interim period.
4. Create a distinctive brand	
	<ul style="list-style-type: none"> • Broaden Mexico's export platform to more highly differentiated products in order to develop a viable long-term chocolate cluster. (ProMexico) • Develop a Mexico-origin certification for chocolate. ASCHOCO and the government must work together to develop and certify certain standards of quality in cocoa and production, that meet the product, safety, health and environmental standards of the U.S. and E.U. This will stimulate the exports of smaller Mexican chocolate producers both to these developed markets as well as to the less developed nearby markets of central and Latin America. (ASCHOCO, COFEPRIS, Ministry of Health, Ministry of Economy) • Create competitive advantage in two product lines with high potential for growth: Organic chocolate and Mexican hot chocolate. The potential for organic chocolate stems from limited international supply of such cocoa and fast-growing international demand for organic products. Mexico is well-positioned to develop a vertically integrated organic chocolate production chain and use it to create and export organic chocolates. Mexican hot chocolate is already recognized by consumers abroad, and the cluster should capitalize on that. (ASCHOCO)

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