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Major Forces and Factors Shaping Global Markets: The Emerging Agricultural World

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The world is producing greater opportunity for more people than ever before in the history of mankind. The global agri-food system is dynamic, not static. In order to understand the future trends and potentials for utilizing and improving our agri-food system, it is critical to focus on forces that will improve both productivity and policy to meet the demands of the ever-changing global market. This paper identifies five major trends that will impact the global economy and create structural change in commodity markets.

Key Words: biotechnology, energy, environment, farm policy, food safety, information technology, infrastructure gaps, trade logistics

Agriculture is the most ancient and the most modern of all industries, for it is the key to life: the life of all plant, animal, and even mineral kingdoms. In order to understand the future trends and potentials for utilizing and improving our agri-food system, it is critical to focus on forces that will improve both productivity and policy to meet the demands of the ever-changing global market. The word “global” means viewing the agri-food system through the lens that encompasses the entire world of issues and players, technologies and policies, environmental challenges, and cultural tastes which drive both the supply and demand of markets. The “global” agri-food world is dynamic, not static. It is individual choices that drive food markets for the 300 million people who inhabit the United States, and more than 7 billion people who populate the world today.

While the agri-food sector is focused internally on productivity and innovation, external forces in the world impact the marketplace. Energy prices and supply shortfalls, and emerging market (particularly Chinese) economic growth have driven commodity prices to record high levels in recent years. Global security concerns have heightened since September 2001’s (“911”) terrorist attack on the U.S. World Trade Center and Pentagon; terrorists have bombed Bali, Madrid, London, and Riyadh. Conflict and insurgency are taking lives daily in Afghanistan and Iraq, with

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ongoing internal/civil conflicts in Bosnia and Kosovo, East Timor, and Sri Lanka. Political instability is matched by nature's instability. Natural disaster swept away unprecedented multitudes of people's lives across the Pacific in the Christmas Tsunami of 2004, and hurricanes in the U.S. Gulf broke the levees in New Orleans two years ago, putting the U.S. Gulf Coast under water. Earthquakes in Pakistan and Indonesia have taken tolls in the thousands, and drought and hunger remain a dreadful blight in parts of Sub-Saharan Africa, not to mention AIDS. The rapid spread across continents of diseases—SARS and then the Avian Flu—has heightened fears of global pandemics.

These devastating events will continue to impact commodity markets, even as they touch our collective humanity. However, there is another story in 2006 that is impacting the planet beneficially: the world is producing greater opportunity for more people than ever before in the history of mankind.

- We are living in the early days of the 21st century's Knowledge Revolution.
- We are living in an agricultural world of cutting-edge technologies that are curing diseases, calculating climate changes, cultivating crops, and connecting continents.

Driven by an unprecedented wave of information technology (IT) innovation, customers and competition are growing across continents. This is a unique moment in history when technological advances are transforming life on our planet—and even in the heavens above. Today, satellites launched into space link people in instant communication and enable industries to source raw materials and deliver products to markets with unprecedented choices in managing the global supply chain. This is our modern Knowledge Revolution.

Technology is not new. One hundred years ago, the world was in the throes of another “technological” revolution, driven by “steam” power in the Industrial Revolution. Steam powered barges and factories, and expanded agricultural trade. Steam-powered railroads crossed the U.S. continent, farming became mechanized, and refrigerated shipping for the first time made it possible for New Zealand to sell butter, cheese, and lamb to Europe. World trade boomed, supported by all these “high tech” breakthroughs, including global communications through the telegraph and telephone.

And, by the way, the original Model-T automobile was powered by ethanol ... and agriculture provided the inputs to the new plastics industry and other industrial uses; this stopped when oil flowed abundantly and cheaply into the world after WWI and displaced agricultural feed stocks to industry. So what we describe as “new uses” that are emerging today aren't new at all; they are just “re-emerging” in different forms from earlier technologies and production processes.

As we face today's competitive pressures, it is worth remembering that the very nature of markets is dynamic change. Political change, economic change, even social change such as women entering the work force and demand for prepared foods

rising—all impact the global customer base, demand for commodities, and market trends. Longer-term trends in the global political economy and technological advances are the overlay to short-term impacts like seasonal weather variability.

It can be useful to analyze the forces impacting the markets in terms of “trends or events.” Every event has a short-term impact that may or may not change a longer-term trend. If it’s a short-term impact, such as a weather-related supply shortfall, production can and will likely recover in the next growing season. But if the “event” has a longer-term impact, such as a drop in global oil output or new technology like fiber optics, it then becomes a trend which creates structural change in commodity markets—and the overall economy. Five specific trends currently will underpin the market future:

- Agriculture’s markets are shifting, not only due to farm policy and trade negotiations.
- Consumer tastes and food products are changing, not only because of the “food police.”
- People and purchasing power are emerging, not only in China.
- Supply chains are growing as forces to move products in trade, not only negotiated agreements.
- Managing risks is increasingly the key to maximizing results, not only marketing and margins.

Agriculture’s Markets Are Shifting

Agricultural policy will be undergoing substantial shifts in the next decade, not only due to trade issues, WTO Doha negotiations, and bilateral trade disputes. What began first in the 1980s with European CAP reform and U.S. legislative changes, particularly in the 1995 farm bill, is moving resolutely if not rapidly toward an entirely new structure of farm income safety nets, as opposed to per unit commodity price supports. Remember that Dr. Fanning joined the Georgia Agricultural Extension Service in 1929—the year the U.S. Great Depression began with the stock market crash. It was the farm bills of the 1930s that established commodity price supports as a way of putting money into the hands of poor rural people—at that time more than 50% of the U.S. population lived in rural areas and around 33% were farmers (versus 3% today).

Factors Affecting U.S. 2007 Farm Policy

A mounting federal deficit will be one key factor shaping the 2007 farm bill, as well as the external pressure of trade rulings against U.S. commodity supports. Commodity groups are taking a fresh and more detailed look at farm revenue insurance for

a number of reasons. Farmers are growing grapes and producing wine now in America's corn and soybean belt—Iowa farmers are shifting to vineyards and setting up tasting rooms. Innovative agricultural producers are using CRP acres for attracting business in hunting pheasants in the Dakotas to serve a gourmet demand. Innovation in the lab and on farms is changing the scope of farming.

The concept of farm revenue insurance may have particular relevance given the heavy investments into ethanol and biofuel processing, with a range of not only program crops but nontraditional crops seeking to benefit from energy market growth. Two-thirds of America's farmers do not receive any direct financial support under the current farm bill.

Ethanol and Biofuels Impact Markets

Additionally, ethanol and biofuels are rapidly changing the face of agricultural and market structures. This year for the first time there will be more U.S. corn moving into ethanol production than into export markets. The new ethanol economy in the United States is having a profound impact on rural America. Rural incomes rose 2.8% in 2005—ahead of the growth of major metropolitan areas. There was more than a 1% increase in rural employment. Ethanol-producing mills are springing up all through the nation. A 100 million gallon a year ethanol plant requires 500 staff in the construction phase and 50 full-time operators—while supporting four to five times that many indirect employees. New U.S. plants are expected to add almost 3 billion gallons of annual capacity by 2009, taking the industry past the 7.5 billion gallon capacity mandated by last year's energy bill (and four years ahead of schedule).

Investment bankers are rushing to the rural heartland to try and buy up assets, like the land rush of the 19th century. Are we over-building? Will this be a boom, followed by a massive bust? The key bottlenecks to ethanol are really in the distributive chain ... there simply aren't enough filling stations that can provide E 85 flex fuel for cars on the road. Short crops and weather-related risk also create future market concern.

Biodiesel production is gaining ground as well in the United States, Canada, South America, and Southeast Asia. In question is where all the fats and oils will be sourced; will they come from soy, canola, or palm? Will there be a food versus fuel debate in the coming year, with global stocks of vegetable oils at their lowest level since 1975?

In Europe, biodiesel is on the march. A major Finnish oil refiner, Neste Oil, plans to become the world's largest biodiesel producer—starting with the opening of a 10,000 barrel/day biodiesel plant in Finland next year, in addition to similar capacities in Austria and France. The EU's mandated target is 5.75% of transport fuels from alternative fuels by 2010, and 20% by 2020. Currently around 80% of EU biodiesel comes from rapeseed. With EU production of around 15 mmt, the EU will have to import palm oil from Asia, or soy from South America, or animal fats to meet requirements.

Climate Concerns Benefit Farm Revenues

Whether the technology is ethanol or biofuels, anaerobic digesters (“brown energy,” i.e., converting manure into energy), or wind and solar energy, the very heart of this new agricultural and rural vitality is concern about the climate. The climate is *changing*—whether it is man-made CO₂-derived global warming, or from other forces within the earth, there is no disagreement that the mean temperature of our globe is rising.

This growing acceptance of climate change is creating new sources of agricultural revenues for agricultural producers and rural communities. In addition to those farmers producing crops for transportation fuels, the farm economy is additionally benefiting from carbon sequestration in farming operations. Producers are delivering offsets to CO₂ emissions in industries, as well as developing their own integrated operations to reduce emissions from livestock and waste.

One platform for this trading activity is the Chicago Climate Exchange (CCX)—North America’s only, and the world’s first, legally binding multi-sectoral, rules-based, and integrated greenhouse gas emission registry, reduction, and trading system. Farmers in Iowa and Nebraska and the Iowa Farm Bureau are members of CCX. The University of Iowa and University of Minnesota are CCX members; the Iowa Farm Bureau is an offset aggregator. Canadian agriculture is already benefiting from emissions trading on the CCX. Saskatchewan is enrolled in agriculture soil sequestration/no-till offsets; Alberta and Manitoba are to be offered soon.

And then there is wind. Wind farms are revitalizing rural communities, providing steady income through lease or royalty payments to farmers and other landowners. A reasonable estimate for income to a landowner from a single utility-scale turbine is about \$3,000/year. For a 250-acre farm, with income from wind at about \$55/acre, the annual income from a wind lease could be \$14,000 with no more than 2–3 acres removed from agricultural production.

Farmers can grow crops or raise cattle next to towers; and while wind farms may extend over a large geographical area, their actual “footprint” covers only a very small portion of the land. Wind is expanding as a clean energy source that can significantly enhance farm income and improve the environment—while adding off-farm employment opportunities and contributing to the tax base.

A Trend to Diversified Safety Nets

There is no doubt that with direct government subsidies falling, farmers are going to seek more diversified safety nets. And with demands for a wider variety of crops than traditional “program” crops and new supply chain demands, risk management will undoubtedly include broader insurance products. Both market-based insurance products and environmental payments will not be unique to U.S. policy development. The good news is that market-based products are being increasingly considered to provide commodity safety nets.

Emerging markets may have a key role to play as more interest begins to focus on ex ante risk management versus ex post responses (e.g., food aid for starving people). The EU and World Bank are developing a pilot global index facility which will include price, weather, and disaster insurance and reinsurance for developing countries. Importantly, and especially in the post-Kyoto world, environmental offsets will be required both in developed and developing countries. There is enormous need. This trade can be an equally important benefit for the developing world—a part of our common humanity faced with massive urbanization and huge polluted slums that are proliferating on a massive scale. There are an estimated 200,000 slums in the world; Nairobi's Lainai Saba slum, for example, has only 10 pit latrines for 40,000 residents. Improving living conditions for the masses of humanity surging into urban centers is going to be a key factor affecting future food markets in the emerging world.

Consumer Tastes and Food Products Are Changing

Consumer Demands, Consumer Concerns

While many in the developing world face hunger every day, citizens in the industrial world face obesity. Is it really trans fats from soybean oil and junk food demand that causes our population to add mega pounds, suffer from rising type-2 diabetes, and increases early deaths from heart failure? Or is it our modern, industrial life that has reduced our bodies' use of physical energy? The "couch potato" is the snapshot of our modern life. People don't even need to push a vacuum cleaner; a round robotic disc will do it for them. Children scale mountains in the "virtual" world on their computer screens, rather than having real wilderness experiences.

A dramatic change in consumer tastes is driving technological innovation and supply chain management. On the demand side, we have the new formula of modern life—technologies that reduce our need to do virtually any real physical labor, plus non-stop consumer advertising/marketing, plus our instant-gratification society which means feeding the food appetite 24/7.

On the supply side, the market now has centralization of produce distribution, a rise in imports, and growing popularity of pre-cut and packaged fruits and vegetables, meats, and poultry that is raising new risks to accommodate new consumer demands. The 2006 outbreak of *E-coli* in California lettuce and spinach may be a sign of future challenges to the modern food safety system. Fruits and vegetables are now responsible for 12% of foodborne illness—a higher level than meat, poultry, or eggs. And more consumers today don't even know how to store and prepare foods at home.

The "food police" in New York City are banning "trans fats" from restaurants ... Wendy's and KFC are complying. A recent *New York Times* article was titled "New York City against the French Fry!" Seed companies are offering new varieties to farmers which are genetically modified to produce a soybean that doesn't contain trans fats when partially hydrogenated. Kellogg's is already using this new soybean

oil in its baked goods. In the states of Arkansas and California, children in primary school bring home report cards not only with their academic grades but also that include their BMI (body mass index)! Low-fat, low-sodium, low-carbohydrate, low-cholesterol, low-calorie foods have infiltrated our collective consciousness . . . what's left to eat?

Technology Drives Food Markets

In this modern world, the tale being told is not of Viking warriors invading the English coast for grain to feed their people when crops fail in the north country. *The modern 21st century food “wars” are wars against calories, food allergies, fats, aging, diseases, and bioterror.* It is not the technology of military weapons, but laboratory breakthroughs—IT, nanotech—to make us live longer, eat anything we want without gaining an ounce and have perfect bodies, and eternal life. At least that's what ads tell us to believe!

We have been told that fat is our “enemy”; but now, new laboratory tests tell us that “fat” may be a good friend. Scientists claim that fat matter with vegetables is necessary to make them more nutritious. It is fat that helps absorb lutein, beta carotene, lycopene, and vitamin E. The humble avocado has become the dieter's best friend. Other studies now reveal statistics that low-fat diets may not ward off cancer or heart disease.

Nutritional health benefits and additives are proliferating in the modern food supply—from nutraceutical fruit juices with fiber added to fortified yogurts. Dark chocolate is now good for health, while chocolate “tasting kits” and chocolate sommeliers are spreading across the marketplace! And red wine connoisseurs can rejoice. “Resveratrol”—a product in red wine—has reportedly extended the life of yeast cells by 70% (and prolonged the lives of short-lived fish by 50%). Resveratrol apparently mimics the effect of severe calorie restriction (CR) on longevity. Consumers would probably rather add red wine to their diet than starve to add years to their lives!

Consumers are demanding healthier foods, faster and more convenient foods. The industry responds to each new trend. And, the battle for the food dollar includes controversies over “genetically modified/engineered” products or GMOs which are raising productivity and opening new opportunities in agricultural innovation.

The food industry occupies a very big business space, only possible through IT that is driving agricultural productivity and innovation. Plant breeders of the traditional variety now have powerful IT that has decoded the genetic blueprint—and speeded up normal plant breeding through gene marker technology. It used to take a decade to develop marketable new seeds by traditional selective breeding—now it can take half that time or less. Even critics of “GMO” crops generally accept this new gene tech, since it brings in no “foreign” DNA, but works with native traits within a plant species. Seed companies are among the most high tech businesses, using super computers that link a plant trait to a subtle DNA variation. This advance has been referred to as the “second biotech revolution.”

Traditional biotech has moved rapidly to establish markets for input traits in food and feed crops that control weeds and insects—and can make plants more drought resistant. Output-based traits/benefits have been more difficult to refine and bring to market. In fact, EU regulators declined to approve the first drug produced in the milk of a genetically engineered animal—designed as a way of converting cows, goats, and rabbits ultimately into low-cost “pharmaceutical factories.”

And emerging into the marketplace is nanotechnology. “Nanotech” is not just electronics, energy, and medicine. Food is now engineered at the level of molecules. First-generation developments are already in markets: synthetic food colorings, frying oil preservatives, packaging coated with antimicrobial agents. Shrinking fat particles can reduce calories in ice cream; additive coatings can inhibit the melting of a favorite candy: M&Ms.

Consumers’ Demand for Organics and Social Responsibility

Demand for organic foods is on the rise as well. Analysts doubted that consumers would pay the big premium for organics, but the tremendous velocity of market growth has proven them wrong. In the United States, organic sales grew 15% last year—five times the growth rate of conventional packaged food. While only 2.5% of total market demand, organics are gaining mass appeal with supermarket private label as well as branded products. Organic products are expanding as well into wines and other high-value foods.

Animal agriculture—dairy, poultry, eggs, beef—is bowing to the natural food trend. A number of dairy companies are now refusing milk from cows treated with genetically engineered growth hormones. A *New York Times* 2006 headline one day on the front business page said: “Which Cows Do You Trust?” Free-range, cage-free chickens and eggs take up an increasing amount of supermarket shelf space. The whole-foods market is rolling out a new line of meats labeled “animal compassionate”—meaning animals are treated humanely until they are slaughtered. Chefs at famous restaurants are now custom-breeding their own meat and poultry, clamoring for new varieties.

It is not only how foods are produced and how well foods will improve health, well-being, and physical vitality that is important to selective consumers today in the industrial world. This is even more of an issue to the younger generation that looks at food and other consumer products through a more “global” lens, identifying products with labor practices, environmental standards, and social responsibility. Cause marketing is in vogue and changing product demand. Major news media report that it is important to serve “Idealism for Breakfast” (*New York Times*, Dining-In section). Does the cereal you eat: (a) save a gorilla, (b) save your heart, or (c) save civilization? If not, then you are not getting the nutrition you need!

Food Choice Reigns in Rich Countries

The lucky ones—the few who can be this selective, who have this wide range of choices—live in the industrial countries. The mass urban societies in the industrial

world are only a tip of the global population iceberg in clamoring for food products. All the people of North America, Europe, Japan, Australia, and New Zealand combined, however, still account for less than 10% of the world's food consumers.

People and Purchasing Power Are Emerging

The key factor to consider in analyzing trends in agricultural and food markets is where demand will be growing. This means the emerging markets are the core of future trends, where a huge migration of people from rural to urban areas is swelling the ranks of middle-class food markets. These new urban dwellers are going to be the most important customers! *It is necessary to follow your customers and know your customers. This is the emerging market today and the dominant market by 2025.*

Population and Purchasing Power

Population is burgeoning in the developing world. More than 95% of the 1.6 billion people entering our planet between now and 2025 will be in the developing world. More than 40% of people today in these countries are younger than 15 years of age; this is a particular issue in the Islamic world—a world of 1 billion plus people—with the Middle East and North African countries experiencing the highest population growth rates.

By 2050, the industrial countries will have only 10% of world population, and purchasing power will also be shifting to the emerging countries. The 2.5 billion people living in low-income economies have an average annual income of \$430 per capita (countries from Sub-Saharan Africa to India and Pakistan), with some economies as low as \$80. For the 2.7 billion people living in middle-income economies—including Argentina, Brazil, Mexico, and China—the average is \$1,860 per capita. And for the 960 million fortunate people like ourselves, who live in high-income economies, national income averages around \$26,510 per person.

In 2001, the U.S. GDP was 10 times greater than the combined economic output of *all* low-income countries. In less than 25 years, Asia's share of global GDP will reach 50%; China will be the largest economy in the world by 2030, measured on a purchasing power parity basis. Latin America's share of GDP will rise by 3%–4%; Europe's share will decline substantially due to demographics.

Emerging Markets Are Rapidly Urbanizing

People are voting with their feet, and seeking opportunities by moving into cities at a rapid pace. By 2030, the urban population in emerging countries will be four times larger than that of industrial countries. Emerging economies, led by China, already have more urban consumers than high-income economies. Half the world's population today now lives in cities; more than 30% of Latin Americans live in urban

centers of more than 1 million. In China, 20 million people/year are moving to cities—and that's the official count; half the country is urban. In India, less than 30% of the population has moved to urban centers.

In most emerging economies, as much as 60%–80% of GDP is in the capital city; in Russia, 80% of all bank deposits are in Moscow. Income equals food demand, and cities like Mexico City and Shanghai reflect the tremendous income: population ratios that have led to dynamic growth in food demand. Migration from rural to urban centers means bigger markets for agricultural products because it is in the cities that incomes are growing faster and people have access to basic infrastructure services—water, power, telecommunications, IT, and transportation—for their personal use and for businesses to operate. That's why mega cities are proliferating—I call them hypermarkets, the “Wal-Marts” of the world—with upwards of 20 million people in one major marketplace. Cities of 10–20 million are springing up as well. Why are people moving to these mega cities? Because they can't improve their lives staying at home in the countryside. The share of total national wealth (GDP) in these emerging markets in the capital city often is upwards of 70%.

Hypermarkets and Supermarkets

Just look at the emerging population centers that could be viewed in food marketing terms: “hypermarkets” (cities with over 20 million people), “supermarkets” (cities of 10–20 million), “markets” (1–10 million), and “convenience stores” (under 1 million). Ten years from now, there will be nearly 360 million people occupying the 22 largest cities in the world with populations over 10 million (table 1). Eleven will be in Asia and four in Latin America. Only Paris will make the cut in Europe. New York and Los Angeles will keep the United States on the map. If a business is trying to tap a 16 million person consumer market, will the company choose a country—The Netherlands—or a city, like Calcutta, India?

What risks, opportunities, supply chain, and marketing considerations do agribusiness companies consider in these strategies? If you are McDonald's, what does it mean to your business strategy? Can you operate in Bogota and Bangkok and Beijing the same way that you do in Boston? What's different about the products and service demanded in Athens, Georgia versus Athens, Greece?

Supply Chains Move Products in Trade

Supply chains move products around the world and directly to consumers. Physical and financial infrastructures are ranked as very high priorities for both creating an investment climate and delivering services in the emerging markets. And these services must be supported by good governance.

Basic infrastructure (roads, power, rail, ports, water/sanitation, telecommunications, financial services) is the backbone of a functioning economy and supply chain. What drives markets is the logistics chain—whether producing, processing,

Table 1. Cities with over 10 Million Inhabitants in 2015

Hypermarkets		Supermarkets	
City	Population (millions)	City	Population (millions)
Tokyo, Japan	36.2	Sao Paulo, Brazil	19.9
Mumbai (Bombay), India	22.6	New York City, USA	19.7
Delhi, India	20.9	Dhaka, Bangladesh	17.9
Mexico City, Mexico	20.6	Jakarta, Indonesia	17.4
		Lagos, Nigeria	17.0
		Calcutta, India	16.7
		Karachi, Pakistan	16.1
		Buenos Aires, Argentina	14.5
		Cairo, Egypt	13.1
		Los Angeles, USA	12.9
		Shanghai, China	12.6
		Manila, Philippines	12.6
		Rio de Janeiro, Brazil	12.3
		Istanbul, Turkey	11.3
		Osaka, Japan	11.3
		Beijing, China	11.0
		Moscow, Russia	10.9
		Paris, France	10.0

or marketing. In Asia alone, 71% of the population lack sanitation and 6 in 10 lack safe water.

It is popular to speak of the “digital divide”—the technological deficit, where there is a long way to go as well. Even India, which is the master of outsourcing and a competitive global IT services center, has huge gaps in technological capacities across this vast nation. Only 16 people per thousand are internet users (figure 1). Technology infrastructure gaps are only one aspect of the tremendous infrastructure impediments in the emerging world.

Transportation Bars Trade

Transportation investments to link countries to global markets always come before rural-to-urban linkages. This can create serious barriers for sourcing in a country which has inadequate interior transport, or corruption in the internal corridors. It costs 300% more to ship a container from Mombassa to Kampala (Uganda) than from Europe to Mombassa! Fragmented geographies create more barriers than costs, particularly if they are monopoly rents from local oligarchs. In the Philippines, the

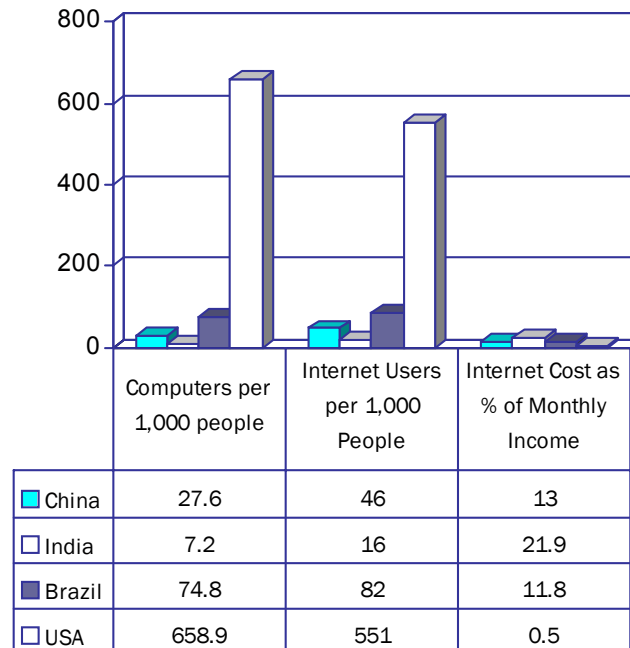


Figure 1. Technological deficit among selected countries

cost of shipping corn from Mindanao to Manila is greater than from the U.S. Gulf to Manila. This adds up to raising interior rural-to-urban supply chain costs, reducing farmers' incomes and opportunities to market nationally and internationally.

Infrastructure Limits the Market of the Americas

The Western Hemisphere will have one billion consumers by 2015, two-thirds in South America. This should mean a very powerful integrated market, but Latin America is facing major infrastructure problems. In the 1980s, Latin America had more roads, electric generating capacity, and telephones per worker than the East Asian "Tigers." By 2000, the reverse was true. China and Vietnam have been investing more than 7% of annual GDP in infrastructure; Latin America would need to invest 4%–6% of GDP annually for 20 years to reach South Korea's level of productive investment. Supply chain infrastructure costs in Latin America on average account for 35% of total manufacturing costs versus 20% in industrial countries.

Meeting basic infrastructure financing requirements annually in emerging markets is estimated at \$500 billion (of which \$250 billion is estimated in Asia alone). Unreliable power accounts for 10% of the cost of sales in India. In Latin America, less than one-third of the national road networks are rated in "good" condition.

Mobile phones have empowered people in these countries, but even in South Asia only six in 1,000 people have access. These infrastructure gaps are caused in part by poorly functioning financial markets which also affect the supply chain. Most emerging markets—even those countries which have investment grade—have poorly developed domestic capital markets (both short- and long-term capital). There is a clear connection of infrastructure gaps to agricultural market growth: supply chains, not trade agreements, move real products into real trade. *Effective supply chains are a key priority for the entry of emerging countries into the world's trading system as functioning trade platforms.*

Trade Logistics Raise Costs

Trade logistics specifically can impede business, like inefficient port operations. It may take an average of three days to clear customs for a sea cargo in the industrial countries, and around five days in East Asia, according to a World Bank study. And the time nearly doubles (nine days) in Latin America, while Africa and South Asia are even less efficient, with more than 10 days required to clear customs. Analysts calculated that the longest time it took to clear a vessel was nine days in Shanghai versus 21 days in Indian ports.

World Bank analysts a few years ago developed a model to determine what would happen to trade in 75 developing countries if they raised their own trade logistics performance half way to the global average capacity. The study included factors like port efficiency, customs environment, regulatory transparency, and trade processing services (IT, electronic documentation). The most striking gains were achieved by improving trade processing and port efficiency. Those countries were estimated to realize a one-time gain of \$377 billion (figure 2)!

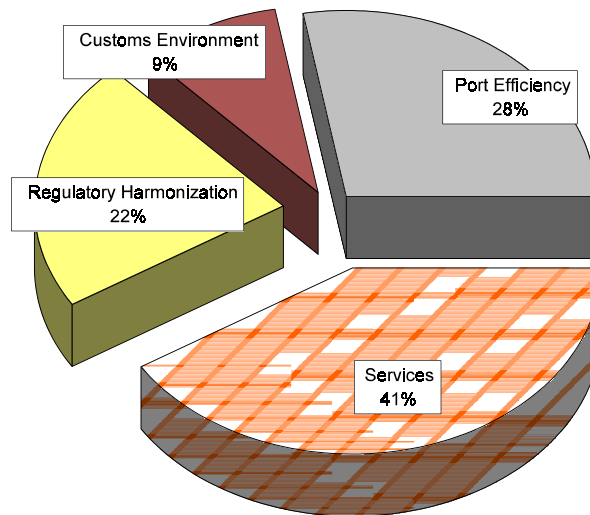
Food Safety in Emerging Markets

These logistics issues pertain to all goods and services. Sanitary and phytosanitary (SPS) management presents specific problems and challenges to food and agricultural markets. Businesses must meet agri-food standards, not only to protect their own brands, but to counter consumer concerns today. Both industrial countries and emerging markets will be paying more to get full traceability into the food chain—from radio frequency ID tags and retinal scanners for live animals to improved fruit and vegetable labeling. Emerging markets won't be an important part of the agri-food trading systems until and unless they dedicate more and better resources to building sound regulations and transparent enforcement, and effective IT in the food production system.

Managing Risks to Maximize Results

Building new emerging markets will require improving the governance infrastructure as well as the physical infrastructure. We must improve real investment

Sources of Trade Expansion



Source: Wilson, Mann, and Otsuki (2004).

Figure 2. An estimated \$377 billion gain in efficiency in 75 developing countries

climate performance throughout the yet-to-emerge countries, and overcome capacity gaps in the middle-income countries. Governance is key: it is political will.

The costs of unreliable infrastructure, the problems of crime, corruption, poor regulatory systems, and contract enforcement add more than 25% to the cost of sales in developing/emerging countries today. Governance matters. The World Bank has surveyed (through Investment Climate Surveys) more than 30,000 companies operating in 53 developing/emerging countries with a range of more than 80 questions to identify bottlenecks in infrastructure, financial services access, corruption, and reported problems with policy predictability.

Governance failures translate into cost of sales. This isn't just an issue for foreign direct investment, but the real economic impacts on people. More than 90% of those firms surveyed were local entrepreneurs, many in the informal economy accounting for more than half of all output in emerging markets today. Rules and regulations either discourage or encourage businesses to establish and grow, or for people to be poor or wealthy.

The United States ranks third out of 155 countries surveyed by the World Bank this year (The World Bank, 2007) on the ease of doing business—behind Singapore and New Zealand. Mexico ranks 43, and Indonesia 135. *Why?* Let's take examples of the days required to start a business: 151 in Indonesia, 58 in Mexico, only 8 in Singapore. In Mexico, 37 procedures are required to enforce a contract, with 400

days or longer to move through the legal system. Ethiopia ranks 96—one of the poorest countries in the world, with consistent food shortages and 70 million people struggling to live. In Ethiopia, an entrepreneur wishing to start a business must deposit a sum of money worth 18 years average per capita income in a bank account which is then frozen!

Governance on its own is critical, but it is also enormously important in the way it supports services to build its human resources: education, health, and technological competence are among the most important components to consider. Skill shortages and labor regulation are ranked as serious investment concerns by more than 30% of investors in Brazil, China, and Algeria, for example.

When companies effectively incorporate these factors into planning for business development (marketing, sourcing, investment), they will both minimize their risks and maximize results from “smart” engagement. The promise of markets and people who are able to emerge into the full abundance of the global economy will only materialize when well-intentioned people in the world understand that development is “business.” It is in all of our interest to assure that real business can empower a private sector in emerging nations across the globe, and it starts with creating dynamic and efficient food and agriculture markets. *Our collective agri-food industry goal and the key to world economic growth is clear: to create another one billion middle-class consumers by 2015.*

Conclusion

I began my remarks talking about the dawn of the 20th century. Today, at the dawn of the 21st century, we are more interdependent than ever before in history; and that should give us greater appreciation of the role we *all* play in the welfare of others at far distant points in the globe.

Competition isn’t new and it isn’t going to go away. It is competition that is our best friend. Competition makes us uncomfortable. Yet it makes us innovate and look at new ways of producing, processing, and marketing products, and at new places to sell them. In this new millennium:

- We will be feeding the largest population of the world a wide range of diversified food products more cheaply and efficiently than ever before in the history of mankind.
- We will be advancing biotechnology innovation that will better conserve our scarce resources of land and water, and will transform crops into not only food and clothing but medicine and manufacturing inputs.
- We will be transforming renewable crops into the widest possible variety of energy uses; we will be recovering power from our crops and livestock wastes to run our farm and agri-processing operations in fully integrated power grids.

We in the agri-food sector have a unique responsibility to those with whom we share this great planet. With our full engagement, we can *lead* in serving a growing world of opportunity that brings the benefits of modern agriculture to all who share our common destiny.

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