ABSTRACT OF THESIS

DEMAND DETERMINANTS FOR U.S. EXPORTS OF PROCESSED FOODS TO EMERGING MARKET ECONOMIES

The objectives of this research are to examine the demand for processed foods by emerging markets and to assess demand determinants and potential import growth. Processed foods are the fastest growing segment of U.S. agricultural exports and hence it is imperative to understand the underlying factors behind this growth. Based on a "modified gravity model," we estimate U.S. exports of processed foods to 10 low and middle-income countries from 1980-2002 using fixed effects method. A classical linear regression model estimates U.S. exports to 60 low and middle-income countries. Results from the classical model indicate that population and income have a positive effect on the demand for processed foods by low and middle-income countries. As expected, exchange rates, tariffs and distance have an inverse relationship with U.S. exports. Empirical results from the fixed-effects model are similar, with the exception of population. The empirical results of this research imply that among emerging markets, middle-income countries that have open trade policies and are in relatively close proximity to the U.S. offer better opportunities for U.S. exports of processed foods.

KEYWORDS: Processed Foods, International Trade, Emerging Markets, Trade Regime, and Gravity Model.

Sanjeev Kumar
September 30, 2005

DEMAND DETERMINANTS FOR U.S. EXPORTS OF PROCESSED FOODS TO EMERGING MARKET ECONOMIES

By

Sanjeev Kumar

Director of Thesis:
Mary A. Marchant

Director of Graduate Studies
David Freshwater

September 30, 2005

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THESIS

Sanjeev Kumar

The Graduate School

University of Kentucky

2005

DEMAND DETERMINANTS FOR U.S. EXPORTS OF PROCESSED FOODS TO EMERGING MARKET ECONOMIES

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Agriculture
at the University of Kentucky

By

Sanjeev Kumar

Lexington, Kentucky

Director: Mary A. Marchant, Professor of Agricultural Economics

Lexington, Kentucky

2005

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FILES

Name	Type	Size
SanjeevKumar	PDF	675 KB

CHAPTER 1

INTRODUCTION

1.1 Introduction

The United States is the world's largest food exporting country and processed foods are the fastest growing sector for both U.S. agricultural exports and global food trade. Historically, bulk commodities accounted for the majority of U.S. agricultural exports. However, U.S. processed foods surpassed bulk goods in export value in 1991 (figure 1). The United States Department of Agriculture (USDA) ascribes this growth in processed food exports to growing demands in East Asia and North America, where incomes are rising, diets are diversifying, and, in the case of some East Asian markets, production capacity is constrained (USDA-ERS, 1997).

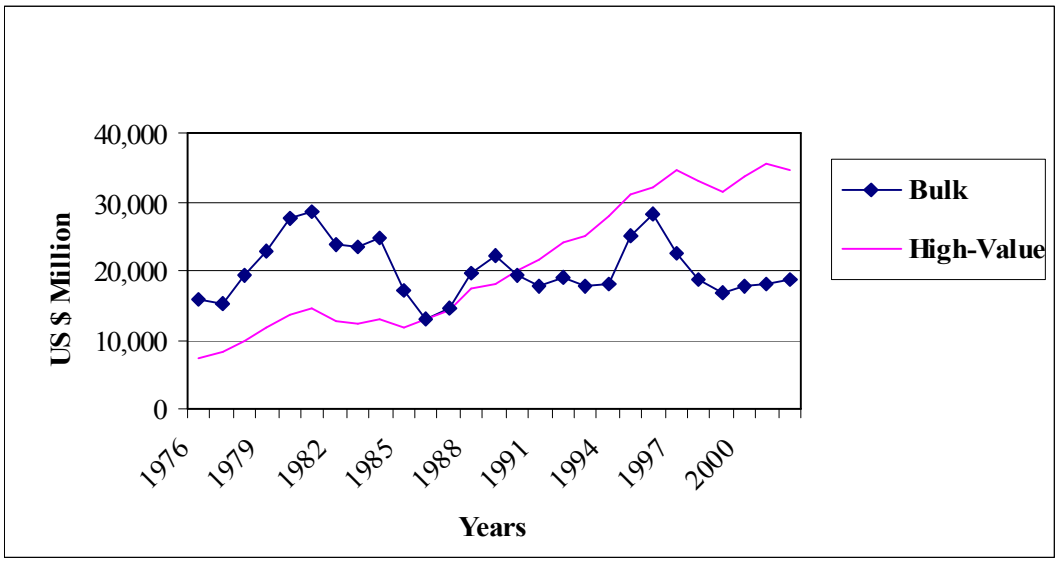
Additionally, USDA trade forecasts indicate a continuing shift toward processed high value products[1] (HVP) in the composition of agricultural trade. Bulk commodity exports comprised nearly 70 percent ($28 billion) of the total value of U.S. agricultural exports in 1980 but steadily declined to 35 percent ($19 billion) in 2002 (USDA-ERS, FATUS 2004). During the same period, processed foods' share of total agricultural exports climbed to 65 percent. Thus, processed food products[2] are the growth market for U.S. agricultural exports and this research seeks to assess factors that drive their growth. Previous research into the international agricultural trade and the competitiveness of U.S.

[1] High-value products can be categorized into three subgroups —raw, semi-processed, and processed HVPs.

[2] Examples of processed and consumer-ready foods used in this analysis include meats and meat products; poultry meats; dairy products; fats, oils, and greases; fresh fruits; dried, canned, and frozen fruits; fruit juice including frozen; nuts and nut preparations; fresh vegetables; frozen and canned vegetables; and oilseed products.

agricultural exports include that of Marchant, Cornell and Woo (2002), Marchant, Saghaian and Vickner (1999), and Munirathinam, Reed and Marchant.

Figure 1. Value of U.S. agricultural exports in million U.S. dollars for bulk and high value commodities, 1975-2000. (Bulk: wheat, rice, feed grains, soybeans and other oilseeds, cotton and linters, and tobacco; HVP: non-bulk commodities)

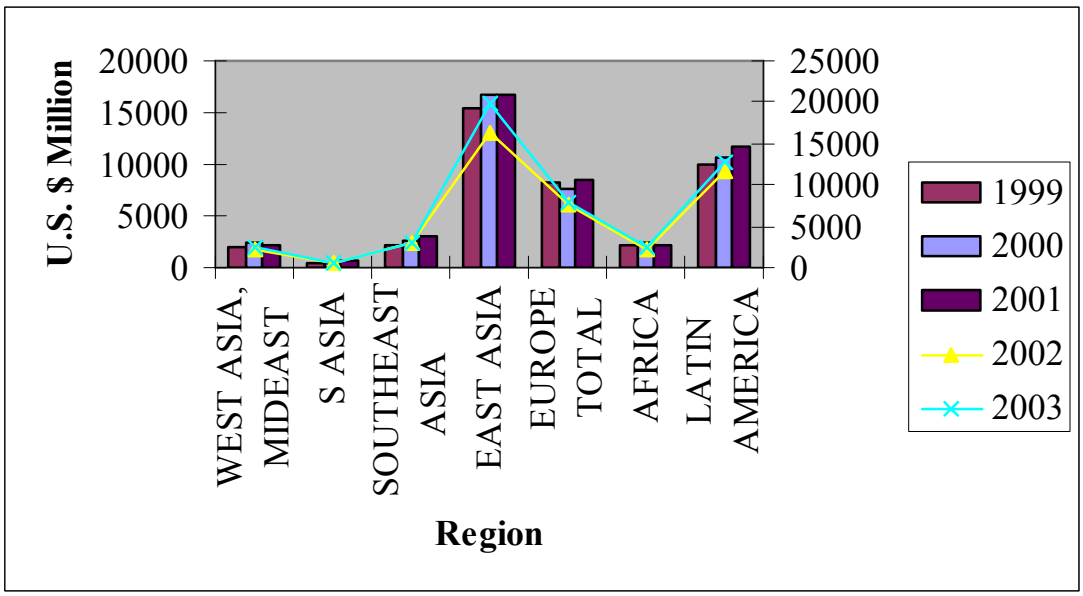


Source: USDA-ERS, FATUS, 2004

In terms of potential U.S. export markets, low and middle-income countries like China, India, Indonesia, Brazil, Mexico, Thailand, Turkey, Egypt, Argentina and Malaysia are among the most populous countries in the world, and many of their economies are among the fastest growing. Figure 2 describes U.S. agricultural exports by region. East Asia, followed by Latin America, is the largest market for U.S. agricultural exports. China, the world's largest food consumer (Ahmadi-Esfahani and Stanmore), Mexico, Thailand, Indonesia, Turkey and Egypt, also ranked among the top twelve markets for U.S. agricultural exports in 2003 (USDA-ERS, FATUS, 2003). Wilson and

Purushothaman predict that the combined economies of Brazil, Russia, China and India could be larger than the G-6 economies in less than 40 years.

Figure 2. U.S. agricultural exports in million U.S. dollars to seven world regions, 1999-2003



Source: USDA-ERS, FATUS, 2003

1.2 Recent Trends in Processed Food Trade

Global food consumption patterns are undergoing transformation due to higher incomes, urbanization, better consumer awareness of food quality and safety, and improved transportation facilities (Regmi). In developing countries, better retail facilities, paucity of time, and higher purchasing power among urban dwellers have changed eating habits and spurred demand for processed foods. In addition, the urban population in developing countries is expected to double to nearly 4 billion people by 2020 (Regmi and Dyck).

This population growth will create a huge potential market for U.S. exports of processed foods (Regmi).

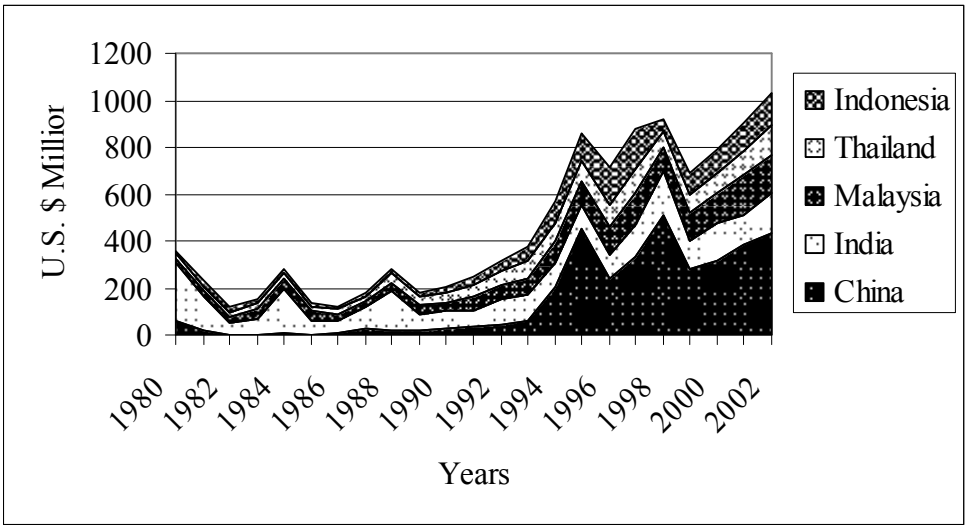
Consumers in middle-income and, especially, low-income countries spend a greater portion of their budget on staple food products (e.g. cereals) and are more responsive to changes in food prices and incomes (Gelhar and Coyle). However, this response differs across food items. For example, when prices and incomes change, consumers in low and middle-income countries make fewer adjustments to their staple food budgets relative to higher value food items (e.g. dairy and meat). Such changes have spurred global agricultural trade and altered its composition between bulk and processed foods.

1.3 Research Objectives

The overall objective of this research is to examine demand for processed foods by emerging market economies/low and middle-income countries, seeking to assess demand determinants and potential import growth for U.S. processed food exports. This research examines import demand in 60 low and middle-income countries, including key emerging market economies of Brazil, Argentina, Mexico, Thailand, Indonesia, Malaysia, China, India, Egypt and Turkey (figures 3a and 3b). In addition to income, size and distance (the usual gravity model variables), the impact of tariffs, level of urbanization, infrastructure and exchange rates on import demand for processed foods will be analyzed using two augmented gravity models. The first model estimates U.S.

exports to 60 low and middle-income countries and the second model estimates U.S. exports to ten emerging markets.[3]

Figure 3a. U.S. processed food exports in million U.S. dollars to five emerging Asian countries, 1980-2002.

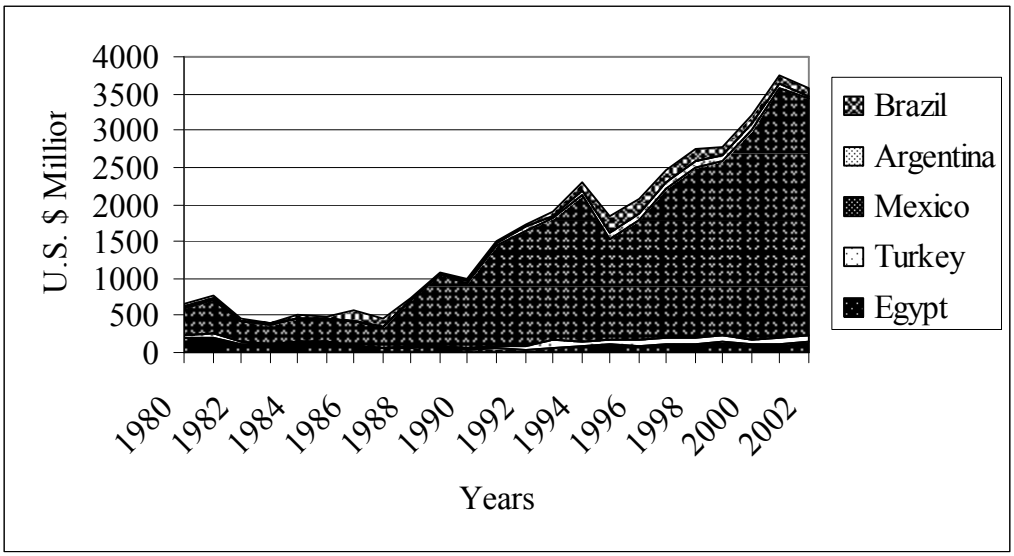


[3] *Definition of Low and Middle-Income countries*

Income group: Economies are divided according to 2002 Gross National Income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: *low income*, $735 or less; *lower middle income*, $736 - $2,935; *upper middle income*, $2,936 - $9,075; and *high income*, $9,076 or more (World Bank, *Data and Statistics*)

China	Lower-middle-income
India	Low-income
Indonesia	Low-income
Thailand	Lower-middle-income
Malaysia	Upper-middle-income
Egypt	Lower-middle-income
Turkey	Lower-middle-income
Brazil	Lower-middle-income
Argentina	Upper-middle-income
Mexico	Upper-middle-income

Figure 3b. U.S. processed food exports in million U.S. dollars to five emerging Latin American and Middle-Eastern countries, 1980-2002.



Source: USDA-ERS, FATUS, 2003

1.4 Thesis Structure

Chapter one describes the purpose of this research, the recent trends in global food trade, and research objectives. Chapter two provides a detailed description of global and U.S. agricultural trade, the changing structure of global food trade, changing food consumption patterns and the impact of tariffs. Chapter three provides a literature review on the gravity model used in international trade analyses. Chapter four expounds the and the impact of trade policies on exports of processed foods. Chapter five lays down the theoretical model and the methodology used in this research. Chapter six describes the data and their sources. Chapter seven discusses empirical results from the classical linear regression and fixed-effects models. Chapter eight summarizes the research and the empirical results. Appendix one lists important trade terms. Appendix two provides

country profiles for the ten key countries included in this research. It describes the trade policies of the ten countries with respect to processed foods. It analyzes laws and regulations that govern importation and distribution of processed foods in these markets. Finally, appendix three provides the data sets used in the estimation of the two models.

CHAPTER 2

GLOBAL TRADE IN PROCESSED FOODS

This chapter examines the changing patterns of global food consumption, focusing on emerging countries, and the recent trends in global food trade. First, international trade in agricultural products is discussed, followed by a trade analysis of processed foods. Then, factors that impact global food trade and food consumption patterns are further examined. Finally, the nature and effects of tariffs and the successes and failures of the Uruguay Round Agreement on Agriculture (URAA) are outlined. Tariffs have been found to impact international trade flows significantly. Lower tariffs and liberalized trade policies have a significant impact on U.S. exports of processed foods.

2.1 Overview

Changes in food consumption patterns impact global food markets. Such changes in one region impact production and trade in other regions (Gehlhar and Coyle). For example, if the demand for wheat increases in China, farmers in the U.S. will produce more wheat and export to China. Income growth in developing countries also raises demand for agricultural products and provides additional opportunities for U.S. agricultural exports. Hence, it is imperative to study the changing patterns and determinants of global food trade.

2.2 U.S. Agricultural Exports

U.S. agricultural exports to more than 130 countries were valued at over $53 billion in 2002 (USDA-ERS, FATUS, 2003). A small number of countries and commodities accounted for the majority of U.S. exports. Japan was the top export market, accounting

for nearly 18% of total U.S. exports (USDA-ERS, 2001). The E.U., Canada, Mexico, South Korea, Taiwan, Hong Kong, and China were the other major markets. The largest export item was meat products ($8.9 billion), followed by grains mill ($4 billion), fats and oils ($3.3 billion), and fruits and vegetables ($3.3 billion; USDA-ERS, 2003).

During 2002, U.S. exports of high-value food products (HVP) totaled nearly $34 billion (figure 4). Some of the important export items included red meat, poultry, fruits, nuts, vegetables, sugar products, oilseed products, juice, wine and other beverages. Processed HVPs (e.g. meats and grain products; figure 5) have led the growth in the total HVP exports over the past 25 years and alone accounted for 35 percent of total U.S. agricultural exports. Processed HVPs are likely to constitute the largest segment of U.S. agricultural exports and surpass bulk commodity exports (Whitton). Semi-processed HVPs (e.g. feeds, hides, and oilseed products) and raw HVPs (e.g. fruits and vegetables) have remained relatively unchanged. Asia surpassed Europe as the largest market for U.S. agricultural exports during the 1990s (Whitton).

2.3 Recent Trends in Global Processed Food Trade

Rapid growth in income and urbanization, lifestyle changes, and better infrastructure facilities have transformed food consumption patterns in many developing countries and resulted in the substitution of processed foods for traditional foods. This transformation has affected the composition of international trade in food and agricultural goods. Between 1975 and 1985, the value of global processed food trade increased by five percent per year, but grew at almost double that rate from 1985 to 1995. Processed foods' share of total global agricultural trade increased from 40 percent in 1965 to 50 percent in 1985 and to almost 60 percent in 2002 (Rae and Josling; also see figure 1).

Figure 4. U.S. high value product exports, 1976-2000.

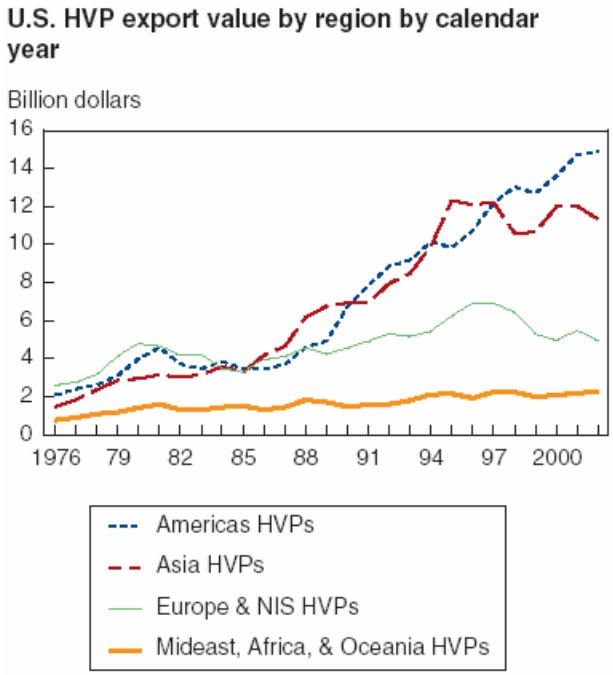
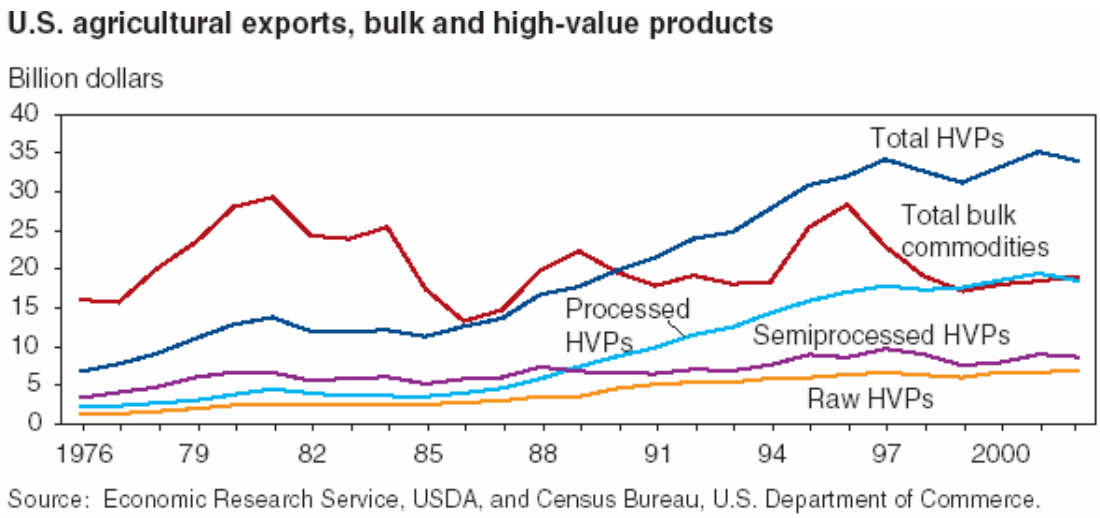


Figure 5. U.S. agricultural exports, bulk and high-value, in billion U.S. dollars, 1976-2002.



Processed and semi-processed food and agricultural products now comprise nearly two-thirds of total global agricultural trade (USDA-ERS, FATUS, 2004).

In 1985 processed foods comprised 55% of developed countries' total agricultural exports and 40% of that of the developing countries. However, in 1995, processed foods accounted for 66% of the total agricultural exports of developed countries and 56% of that of the developing countries, registering an impressive growth for both regions (Rae and Josling). The value of processed food exports from developed to developing countries is almost the same as the value of such exports from developing to developed countries.

2.4 Changing Structure of Global Processed Food Trade

As described in chapter 1, global food consumption patterns were transformed during the past decade due to various factors. Such changes have spurred global agricultural trade and altered its composition between bulk and processed foods. U.S. agricultural trade, which traditionally comprised largely bulk commodities, has not been unaffected by the changing patterns of global food trade (Gehlhar and Coyle). The growth in processed food imports by developed countries is more due to diversification of consumption towards foreign food products than higher per capita consumption and dietary changes.

According to Athokorala and Sen, a striking feature of consumer behavior today is an increasing "internationalization of food habits." Processed food items such as canned fruits and vegetables, cereals, and breakfast foods have become popular not only in the developed countries but also in large sections of the developing world. Some of the factors that have contributed to changing food habits are international migration, communication revolution and international tourism. Improvements in food technology,

transportation and refrigeration facilities have facilitated trade in food product (Athokorala and Sen). Thus, the consumption of processed foods has expanded not only in the developed countries but also in developing markets. This growth can be ascribed to income growth, better access and improved transportation facilities, among others. The research seeks to assess such factors that have contributed to the growth in processed food consumption.

2.5 Tariff and its Effects

High tariffs[4] are one of the major factors restricting global trade, including agricultural trade. Countries apply tariffs on a specific commodity or sector to protect domestic products against competition from imports. The global average tariff on agricultural products is much higher than that on manufactured items (Gibson, Wainio, Whitley, and Bohman). Tariffs have an impact on the importing country as well as on other countries. Tariffs alter the relative prices of imported and domestically produced goods and thus affect the volume of imports. Higher prices in the importing country lead to an increase in domestic supply and a decrease in domestic demand.

The effects of tariffs on domestic markets can also have spillover effects on world markets. If the country imposing the tariff is a large importer, then world prices will fall (Burfisher et al.). Thus tariffs have two effects: the distortions created within a country by higher domestic prices and the costs imposed on other countries by lost export sales and lower world prices. Large differences in average tariffs across countries allow farmers in some countries to benefit from tariff protection at the cost of farmers in other countries, who lose income due to lower prices resulting from those tariffs.

[4] Tariff is a duty imposed on products while entering a country.

4.4.1 Uruguay Round Agreement on Agriculture

Membership in the WTO is crucial in determining the tariff levels of importing countries. Two significant accomplishments of the WTO are the extension of trading concessions by member nations to one another and market access for agricultural goods by introducing "tariffication" (dell'Aquila, Sarker and Meilke). Identification of potentially lucrative markets for U.S. processed food exports depends crucially on the prospects of trade liberalization by WTO members.

The Uruguay Round Agreement on Agriculture (URAA), which concluded in 1994, put forth a set of rules that provided market access for agricultural goods. The major outcome of these negotiations was the introduction of "tariffication," which converted all agricultural non-tariff barriers (NTBs), such as variable import levies and import quotas, into bound tariffs (tariffs set at established rates). Tariffication led to a tariff-based system and initiated a series of tariff cuts over 10 years (Gibson, Wainio, Whitley, and Bohman).

The URAA calls for tariff cuts in equal installments over 6 years for developed countries and 10 years for developing countries beginning in 1995. Developing countries are required to reduce their average tariffs by 24 percent (36 percent for developed countries), with a minimum cut of 10 percent (15 percent for developed countries) in each commodity (Gibson, Wainio, Whitley, and Bohman). However, in the case of previously unbound tariffs or when converting NTBs to tariffs, many developing countries chose the option of offering tariff bindings with no reduction in tariff levels. Many developing countries actually apply tariffs at much lower rates than that agreed to in the URAA. Least developed countries were not required to reduce their tariffs,

although they still had to replace their NTBs with tariffs and bind all tariffs (Gibson, Wainio, Whitley, and Bohman).

WTO members also agreed to create tariff rate quotas (TRQs) to provide a minimum level of market access for products previously protected by NTBs. Under TRQs, "in-quota" imports are subject to relatively low tariffs and "over-quota" imports are subject to a higher tariff (Gibson, Wainio, Whitley, and Bohman). However, little was done to liberalize trade in agricultural goods and provide market access. The process of "tariffication" led to very high tariffs and few new trade opportunities were created. Similarly, out-of-quota tariffs for processed foods are still very high. The URAA did not reduce tariffs for processed products as much as for basic agricultural products (Rae and Josling). Under special circumstances, additional tariffs in the form of anti-dumping (AD), countervailing (CVD) or special safeguard (SSG) duties (e.g. import quotas) can be imposed in order to provide a level playing field to domestic products (Gibson, Wainio, Whitley, and Bohman).

Lower tariff rates and better market access for agricultural products in general and processed foods in particular will provide additional opportunities for U.S. exporters of processed foods. The impact of high tariffs on processed foods will be discussed in more detail in the next two chapters.

CHAPTER 3

LITERATURE REVIEW

This chapter discusses literature on one of the econometric models used in international trade analyses. First, the inception of gravity models is be traced and then a general form of a gravity model will be discussed. Thereafter, the contributions of various researchers towards the development of "modified" or "augmented" gravity models are presented. Pursuant to a discussion of various estimators and the rationale behind the choice of the estimator, the theoretical foundation of the gravity model is analyzed. This research builds upon the modified gravity model discussed in the literature in order to conduct an empirical analysis of the data collected on the U.S. exports of processed foods to emerging/low and middle countries.

3.1 Theory of Comparative Advantage

The Ricardian and Heckscher-Ohlin models of international trade are based on the theory of comparative advantage, which can predict the "pattern" of trade for more than two commodities but not the "volume" of trade for each commodity (Rauch, 1991). The degree of comparative advantage (disadvantage) does not determine the volume of a country's exports (imports). Rauch (1991) ascribes the failure of the theory of comparative advantage to determine the volume of trade to its prediction of a complete specialization of a country's production in its exportables. Thus, this theory rules out any domestic production in that country's importables, although that country may not suffer from a high degree of comparative disadvantage. According to Rauch (1991), and Eaton

and Kortum, the Heckscher-Ohlin model has generated relatively little empirical research.

3.2 Gravity Model

One of the most popular empirical models used to estimate international trade flows is the gravity model. This model, developed by Tinbergen in 1962 and Poyhonen in 1963, is the "workhorse for empirical studies of the pattern of trade" (Bayoumi and Eichengreen, p. 142) and the "standard empirical framework used to predict how countries match up in international trade" (Rauch, 1999, p.10). Frankel (1997) describes the gravity model as a popular method that approximates actual trade values with "remarkable regularity" and Feenstra, Markusen, and Rose call it one of the great successes in empirical economics.

The gravity model has been used in recent years to explain various types of international and inter-regional flows, including migration, commuting, customers, and international trade (Cheng and Wall). They call it a "baseline model to estimate the repercussions of policy issues, currency unions and various trade distortions." These factors are modeled as deviations from the volume of trade predicted by the baseline model and are proxied by dummy variables.

"Formal theoretical foundations" for the gravity model for empirical studies in international trade are provided in Anderson (1979), Krugman (1979), Helpman and Krugman, and Bergstrand, and are "now well-established" (Baier and Bergstrand). Gravity equations are log-linear, cross-sectional specifications that estimate nominal bilateral trade flows between two countries (Baier and Bergstrand). The gravity model asserts that "trade is generated by mass or *economic size (GDP)* and is inhibited by *distance*, which increases transportation and other transactions costs" (Bougheas,

Demetriades and Morgenroth). Impediments to trade include transportation costs, trade policies and cultural differences, among others (Fontagné and Pasteels).

Krugman (1995) states that gravity equations successfully explain the volume of trade between two countries using few variables like the gross domestic product (GDP) of the two trading countries and the distance between them. According to Krugman (1995), a typical gravity equation is expressed as follows

(1) $$T_{ij} = kY_i^{\alpha} Y_j^{\beta} D_{ij}^{-\gamma}$$

where T_{ij} is the volume of trade between countries i and j; Y_i and Y_j are their respective GDPs; D_{ij} is the distance between the two countries; and k is a parameter. According to Krugman (1995), and Frankel, Stein and Wei, distance typically has a strong effect on bilateral trade. According to Frankel, the standard gravity model predicts that countries having similar levels of output per capita will trade more than countries having disparity in their output levels.

Summary describes a general gravity model as

(2) $$T_{ij} = f(Y_i, Y_j, F_{ij})$$

where T is the value of trade flows from country i to country j, Y is the nominal gross domestic product of the respective countries and F is a vector of factors enhancing/ resisting trade. Empirical results from the model estimated indicate that GDP and distance were significant pure economic determinants of U.S. bilateral trade. Some political variables were significant enhancement factors Summary).

3.2.1 Modified Gravity Model

Other explanatory variables are often added to the basic gravity model, such as *population* as a measure of country size and dummies representing preferential trading agreements. According to Frankel, the effects of economic size (GDP) and population are independent. Bergstrand states that the general gravity model fails to take into consideration artificial (policy-induced tariff barriers) and natural impediments (geographic factors, such as transportation costs) to trade. The general model should, therefore, be modified to account for such factors that impact trade. Dummy variables representing country pairs are also added to a gravity model to account for a common language or common border. The coefficients for all these dummy variables are expected to be positive since neighboring countries and those sharing a common language are likely to trade more with each other. Likewise, membership in a trade block is expected to facilitate trade.

Fontagné and Pasteels, and Bergstrand modified their theoretical gravity models to evaluate the effect of regional trade integration and preferential arrangements. Baier and Bergstrand added variables representing trade barriers (e.g., transport costs and *tariffs*). *Exchange rates* are also included to proxy price and inflation (Bergstrand; Fontagné and Pasteels). Although the gravity model uses only distance to proxy transport costs, Bougheas, Demetriades and Morgenroth's theoretical model shows that transport costs depend not only on distance but also on the level of *public infrastructure*, which includes roads, ports and telecommunication networks. They add additional infrastructure variables, such as stocks of public capital and the length of motorway network, to capture the impact of public infrastructure on trade.

Baier and Bergstrand included trade barriers such as transport costs and *tariffs*. Bougheas, Demetriades, and Morgenroth added infrastructure to their model since transport costs are not only a function of distance but also roads, ports and telecommunication networks. According to Summary, in addition to a common resistance factor (distance) used in previous research, other resistance/enhancement factors that impact bilateral trade are economic (GDP) as well as non-economic (political factors such as arms transfers).

A modified gravity model, therefore, estimates bilateral trade using the two countries' GDPs, their population as a measure of the size of the markets, and both trade impediments and enhancement factors. Generally, a gravity equation estimates bilateral trade flows but it may also be used to estimate the determinants of trade (Fontagné and Pasteels). Likewise, this research seeks to estimate the determinants of the volume of U.S. exports using an augmented gravity model. In addition to income and distance, the impact of tariffs, infrastructure, urbanization and exchange rates on import demand for processed foods will be included.

3.2.2 Estimation Techniques

Interpretation of the gravity coefficients depends on the estimator (Egger). Egger investigated various estimation techniques to measure trade flows and found that the residual of the result is often interpreted as the difference between predicted and observed trade flows. He states that the traditional cross-sectional analysis is fraught with severe misspecification problems. Fixed-effects (and consistent random effects) estimates measure short-run parameters; whereas "between" model estimates measure long-run

parameters. If the estimation results in large systematic differences between the observed and in-sample predicted values, it indicates misspecification and parameter inconsistency.

According to Egger, consistent estimation is paramount and one should not draw conclusions based on simple ordinary least-squares (OLS) estimates. The cross-sectional, gravity equation should be estimated with a two-way, fixed or random exporter and importer effects panel data model. Egger recommends using the Hausman and Taylor model (HTM) or the first-order autocorrelation Hausman and Taylor model (HTM AR (1)). If this model is not consistent, then the fixed-effects model should be used.

3.2.3 Theoretical Foundation

A theoretical foundation for gravity models is provided in Bergstrand who used a general equilibrium model of world trade to derive a gravity equation. He examined the empirical success of gravity models in international trade analyses and concluded that notwithstanding the model' empirical success in explaining trade flows for nearly twenty years, the lack of strong theoretical foundations limits the predictive potentials of the model. He analyzed the assumptions underlying the theoretical foundations and derived a "generalized" gravity equation. He found that that the usual gravity models, which focus on GDP and distance in most studies, are based on certain restrictive assumptions. Bergstrand states that trade flows from one country to another are a function of a country-pair's resource availability for a given year as well as trade barriers and transport cost factors.

3.3 Determinants of Food Trade

3.3.1 Income

Coyle, Gehlhar, Hertel, Wang and Yu examined the major determinants of changes in the structure of global food trade and identified income growth, food expenditures, factors of production, transport costs, and trade policy changes as key economic factors that explain shifts in trade patterns. They concluded that growth in income impacts food consumption more than any other factor. Gehlhar and Coyle concluded that improved diet, resulting from income growth in developing countries, has contributed to changes in global trade patterns. However, the connection between changes in food consumption patterns and changes in world agricultural trade goes beyond income growth and dietary changes.

3.3.2. Population and the Level of Urbanization

The expected increase of 1.2 billion in world population by 2018, combined with rising income levels in developing countries, is likely to account for most of the increase in global food demand over this period (Regmi, Deepak, Seale and Bernstein). In addition, urbanization has had a significant impact on global food consumption patterns. Lifestyle changes are concomitant to rising levels of urbanization and result in greater emphasis on convenience and higher food consumption away from home. Paucity of time, higher purchasing power and access to processed foods, have radically transformed eating habits in urban areas. Moreover, urban population in developing countries is expected to double to nearly 4 billion by 2020 (Regmi) and significantly expand the current market for processed foods. With rising urbanization and increasing disposable income for urban consumers, demand for processed products is expected to increase in developing countries (Regmi and Dyck).

3.3.3 Transport Costs

Transport costs impact trade and vary by commodity (Gehlhar and Coyle). Transportation costs for processed foods are high due to the perishable nature of many of these commodities. A reduction in overall transportation costs stemming from improved technology will increase trade in processed foods (Regmi and Gelhar). Feenstra (1998) found that about two-fifths of trade growth relative to income is explained by the combined effect of declining transport costs and falling tariffs: the latter accounting for twice as much as the former. Transport costs are usually proxied by the distance between importing and exporting countries.

3.3.4 Exchange Rates

Exchange rates are also included to proxy inflation. Bergstrand derived a more generalized form of the gravity model by including exchange rates since they impact aggregate trade flows significantly. Empirical results from his model indicate that 40 percent of exchange rate variables among a list of country-pairs were statistically significant.

3.3.5 Trade Policy and Tariffs

3.3.5.1 Trade Policy

Krugman (1995) attributes the growth in world trade since 1950 to political causes. This growth is more a response to the removal of protectionist measures and lowering of tariffs that had restricted trade since 1913 than to the commonly held view of technology-led reductions in transportation costs. Baier and Bergstrand, and Feenstra (1998) also attribute the growth in international trade to liberalized trade policies.

According to Athukorala and Sen, inter-country differences in processed food export growth rates are influenced more by trade policy regime than by resource endowments. While resource availability is essential, exports of processed foods depend crucially on the "openness" of domestic trade policy.

3.3.5.2 Tariffs

High protection for agricultural commodities in the form of tariffs continues to be a barrier to world trade. The global average tariff on agricultural products is 62 percent (Gibson, Wainio, Whitley and Bohman) and accounts for 52 percent of the increase in world prices (Burfisher et. al). Although both developed and developing countries impose high tariffs, average agricultural tariffs in developing countries are much higher. Average commodity tariffs range from 50 to 91 percent, and the highest tariffs are imposed on tobacco, meats, dairy and sugar (Gibson, Wainio, Whitley and Bohman). Lowering of tariffs will make certain food items affordable in developing countries (Gehlhar and Coyle) and expand agricultural trade. With one of the lowest average tariffs (12 percent), U.S. agriculture stands to gain from tariff reductions (Gibson, Wainio, Whitley and Bohman).

In light of the above literature, tariff rates and trade policies appear to have a significant impact on international trade. Given their importance to a country's propensity to import, trade regimes assume much significance in determining the level of trade. The next chapter discusses trade regimes in detail.

CHAPTER 4

TRADE REGIMES

This chapter expounds on the impact of trade policy on international trade. Thereafter, attempts by researchers to quantify protectionism and provide an openness index are discussed. Finally the general structure of trade regimes of developing countries is outlined.

4.1 Trade Policy

Athukorala and Sen examined the determinants of inter-country differences in processed food export growth rates and tested the hypothesis that such differences are influenced more by trade policy regime than by resource endowments. The authors added a dummy variable for "openness" (outward-oriented) of the policy regime and determined whether a more outward-oriented policy regime leads to a higher export growth rate by providing new trading opportunities in world markets. Athukorala and Sen concluded that, while resource availability is essential, exports of processed foods depend crucially on the "openness" of domestic trade policy. In the context of developing countries, domestic policy regime determines manufacturing export growth more than resource endowments, which are crucial to the growth in exports of primary products.

As stated in the previous chapter, Krugman (1995) attributes the growth in world trade since 1950 to the removal of protectionist measures and lowering of tariffs that had restricted trade since 1913. Baier and Bergstrand found that income growth contributed 67 percent, tariff-rate reductions 25 percent and transport-cost reductions eight percent to

the real growth of world merchandise trade among several OECD countries between the late 1950s and late 1980s.

4.2 Openness Index

Clearly, tariff rates and trade policies have a significant impact on a country's propensity to import. Trade regimes are significant in identifying the most lucrative future markets for U.S. exports of processed foods. Construction of a viable comparative openness index has been the subject of much research and controversy. Most studies on openness that use a trade-regime indicator, measure it inadequately and "openness in the sense of lack of trade restrictions is often confused with macroeconomic aspects of the policy regime" (Rodrik, p. 2941).

It is difficult to quantify protectionism owing to different rates applied to various commodities (Krugman, 1995) and the complex nature of commercial policies. A range of variables including tariffs, licenses, quotas, prohibitions, and exchange controls affect international trade, contributing to the complex nature of commercial policy (Edwards). Attempts to measure trade orientation by a single indicator is flawed. Comparative measures of openness have also been controversial. While South Korea is an open and outward-oriented economy for many, for others it is semi-closed and government-controlled.

Early cross-country comparative research used trade dependency ratios and the rate of growth of exports as proxies for openness (Edwards). But, such indicators for openness suffer from severe limitations and may "not necessarily be related to policy- a country can distort trade heavily and still have a high trade dependency ratio" (p.3).

Some researchers have used "observed values of variables associated with trade restrictiveness as indicators of openness" (Edwards). Such variables include tariff averages, average coverage of quantitative restrictions, and collected tariff ratios, which is the ratio of tariff revenues to imports. Anderson and Neary state that welfare-equivalent "average tariff" can be used as an openness index when tariffs are the only form of protection. This index changes in response to a trade reform and the resulting change is equivalent to the weighted average of change in domestic prices (Edwards). According to Edwards, Wolf constructed trade orientation indexes as the "distance between actual trade and the trade predicted by the 'true' model in the absence of distortions" (p. 6).

Sachs and Warner conducted a comprehensive study of the process of global integration and assessed its effects on the economic growth of reforming countries. Sachs and Warner used cross-country indicators of *trade openness* or liberalization to classify a country's orientation to the global economy as "open" or "closed" and determined the year of its trade liberalization, if at all. However, Edwards points out that this categorization of a trade regime as "open" or "closed" is a binary classification, which does not account for varying degrees of government intervention.

4.3 Structure of Trade Regimes

Trade policies of the ten countries examined in this research have been constructed from the perspective of processed foods and will be discussed in detail in the appendix on country profiles. The general structure followed is as follows.

A. Import Tariffs

Tariffs are perhaps the most important form of trade barrier. Import tariff rates are of two types: general tariff and minimum tariff, i.e., most-favored-nation. Imports from an exporting country are assessed at the minimum tariff rate if that country has been accorded the most-favored-nation status by the importing country. The WTO has outlawed import quotas and other quantitative restrictions. Import licensing has also been outlawed.

B. Labeling and Marking Requirements

Food labeling laws require that all packaged food products must bear labels clearly stating the type of food, brand name, trademark, ingredients, date of production and sell-by date. In addition, the manufacturer's name and address or the country of origin and the name and address of the importer and seller lawfully registered should also be included. Labels should also include legal units of measurements. Specifications, grade quantity, net weight, name and quantity of major ingredients should also be indicated, depending on the nature of the product. Warning symbols or explanations must be attached to easily damaged or potentially dangerous goods. Certain countries impose onerous inspection standards and import documentation requirements. Quality and safety certification often requires extensive investigation and is time-consuming process.

C. Treaties

Membership of international treaties and conventions are crucial to protection of intellectual property, enforcement of foreign arbitral awards, and general business interests. Membership of the WTO, World Intellectual Property Organization (WIPO) and such other treaties facilitate international trade. Membership of the WTO is the most

significant of them all. In addition to stipulating lower tariffs, it also sets out dispute settlement mechanisms to facilitate trade among member states. A well-developed intellectual property regime and strict enforcement of intellectual property rights is vital to foreign trade. Infringement of trademarks and copyrights adversely impacts business interests.

CHAPTER 5

METHODOLOGY

5.1 Theoretical Model

As discussed in the literature review, the gravity model is one of the most popular approaches to estimate international trade flows. This research employs a variation of the cross-sectional gravity equation discussed in the previous chapter to model the relationship between U.S. exports of processed foods and the variables that determine demand for such foods. Following Frankel (1997) and Bergstrand, variables other than the "usual gravity variables" have been included in order to capture the impact of infrastructure, trade regime and urbanization on import demand for U.S. exports.

Since a gravity model is bilateral, exports depend on the income and size of both the exporting and importing countries. Thus, interactive terms are introduced. Following Egger's endowment-based trade model, the interaction of economy size and income of the trading countries was measured by three variables: the bilateral sum of factor income (GDP_{ijt}), relative country size (SZ_{ijt}) and differences in relative factor endowments (FR_{ijt}). Egger formulated the Heckscher-Olin determinants as

(1) $lnGDP_{ijt} = \log (GDP_{it} + GDP_{jt})$

(2) $lnSZ_{ijt} = \log \left(1 - \left(\frac{GDP_{it}}{GDP_{it} + GDP_{jt}}\right)^2 - \left(\frac{GDP_{jt}}{GDP_{it} + GDP_{jt}}\right)^2\right)$

(3) $lnFR_{ijt} = \log\left(\frac{GDP_{it}}{N_{it}}\right) - \log\left(\frac{GDP_{jt}}{N_{jt}}\right)$

where GDP_{ijt} is the sum of the gross domestic products of the exporting and importing countries *i* and *j* respectively in time *t*; SZ_{ijt} is the relative size of the exporting and

importing countries *i* and *j* respectively in time *t*; FR_{ijt} is the relative factor endowments of the exporting and importing countries *i* and *j* respectively in time *t*; and N_{it} and N_{jt} are the population of the exporting and importing countries *i* and *j* respectively in time *t*. Thus, the theoretical gravity model in this research includes these three interactive variables – GDP, SZ and FR.

(4) $$EXP^{US}_{jt} = f\,(SZ_{ijt}\ GDP_{ijt},\ FR_{ijt},\ ER_{jt}\ DIS_{ij},\ TRAD_{jt},\ URB_{jt}\ INFR_{jt}) + \varepsilon_{ijt}$$

where previous definitions hold and *EXP* is the U.S. (country *i*) exports of processed foods to importing country *j* in time *t*, *ER* is the exchange rate of importing country *j* in local currency per U.S. dollar; *DIS* is the distance between the U.S. and importing country *j*; *TRAD* is the trade regime of importing country *j*; *URB* is the level of urbanization in importing country *j*; *INFR* is the state of infrastructure in importing country *j*; and ε is a stochastic error term. This model was estimated using both classical linear regression and fixed-effects methods.

5.1.1 The Classical Linear Regression Model

Equation (4) is estimated as a classical regression model using ordinary least squares (OLS). Following Baier and Bergstrand, and Frankel, equation (4) is estimated using a natural log specification: all variables are transformed into natural log except for the trade variable, which is binary.

(5) $$ln\ EXP^{US}_{jt} = \beta_0 + \beta_1 lnSZ_{ijt} + \beta_2 lnGDP_{ijt} + \beta_3 lnFR_{ijt} + \beta_4 lnER_{jt} + \beta_5 lnDIS_{ij} + \beta_6 TRAD_{jt} + \beta_7 lnURB_{jt} + \beta_8 lnINFR_{jt} + \varepsilon_{ijt}$$

where earlier definitions hold. Since our focus is on U.S. exports of processed foods, in this model *i* equals the United States.

5.1.2 The Fixed Effects Model

Equation (4) is modified to allow for estimation using a panel data model for fixed-effects. The "fixed-effects" model is also known as the least squares dummy variable (LSDV) model or the covariance model. The panel data set used here includes 10 countries with 23 years of data per country. The error terms satisfy all assumptions of the classical linear regression model (Greene). Note that equation (6) differs from (5) in that a country dummy is added to indicate the j^{th} country. Specifically, the variable D{j} is equal to 1 if country j and is 0 otherwise). Using dummy variables, the LSDV model includes a unique intercept for each country that captures differences in the conditional mean value of the dependent variable across countries. The variable *INFR* is dropped due to lack of data. Earlier subscript definitions hold except that there are now j = 1….10 importing countries and t = 1..23 years. The fixed effects model is expressed as follows

$$(6) \qquad lnEXP_{ijt} = \alpha_{1.}d_{1jt} + \alpha_{2.}d_{2jt} + \ldots\ldots + \alpha_{10.}d_{10jt} + \beta_1 SZ_{jt} + \beta_2 GDP_{jt} + \beta_3 FR_{jt} + \beta_4 lnER_{jt} + \beta_5 lnDIS_j + \beta_6 TRAD_{jt} + \beta_7 lnURB_{jt} + \varepsilon_{jt}$$

where earlier definitions hold and d_{jit}s are country dummies, equal to 1 if $j = i$, 0 otherwise.

5.2 Hypotheses

Using equations (5) and (6), the following hypotheses are tested:

1) Relative size is positively related to country *i*'s imports of U.S. processed foods;

2) Income is positively related to country *i*'s imports of U.S. processed foods;

3) Differences in factor endowments are positively related to country *i*'s imports of U.S. processed foods;

4) Exchange rates are negatively related to country *i*'s imports of U.S. processed foods (i.e., an appreciation of the U.S. dollar causes a decrease in demand for U.S. exports of processed foods by the importing country);

5) Distance is negatively related to country *i*'s imports of U.S. processed foods;

6) Open trade regime is positively related to country *i*'s imports of U.S. processed foods. Alternatively, tariffs are inversely related to exports;

7) Higher level of urbanization is positively related to country *i*'s imports of U.S. processed foods; and

8) Better infrastructure is positively related to country *i*'s imports of U.S. processed foods.

CHAPTER 6

DATA DESCRIPTION AND SOURCES

6.1 Data Sources

Two different data sets, based upon availability, were used in this research: a 60-country data set for years 1998 and 2003 and a 10-country data set from 1980 to 2002. Data on U.S. exports of processed foods to 60 developing countries for 1998 and 2003 were obtained from the USDA's Foreign Agricultural Service website. Data on U.S. exports of processed foods from 1989 to 2002 for ten emerging market economies (China, India, Indonesia, Brazil, Mexico, Thailand, Turkey, Egypt, Argentina and Malaysia) were also obtained from the USDA's Foreign Agricultural Service website. Earlier data (1980-1988) were obtained by a personal request to the USDA's Economic Research Service.

Data on GDP and population for the 60 developing countries were obtained from the *World Economic Outlook Database* September 2004, International Monetary Fund (IMF). Data on exchange rates for the 60 countries (identified below in table 2) were obtained from the Penn World Table, Center for International Comparisons, the University of Pennsylvania (Heston, Summers and Aten). Macroeconomic data on GDP, population and exchange rates for the 10 emerging countries were obtained from the USDA-ERS website. Following Fontagné and Pasteels, nominal GDP at current exchange rates was used to proxy income of the importing country. Data on infrastructure (fixed and mobile telephones) for the 60 countries were obtained from the World Bank's *World Development Indicators 2005* website. Since similar data for the ten emerging countries for the period examined is not available, infrastructure was dropped as a variable in the 10 country model.

Consumer profiles for each importing country's purchases of processed foods are best constructed upon the following factors: size of urban population, consumer tastes and preferences, and perceptiveness to Western foods. Country profiles provided in appendix one discusses consumer tastes and preferences in detail. The level of urbanization within each country was used to proxy consumer profiles. Data on the levels of urbanization for the 10 emerging markets as well as 60 developing countries were compiled from the United Nations' website. The shortest navigable distance between a prominent U.S. port and a major port in the importing country, e.g., Miami and Rio de Janeiro (Brazil), was measured in nautical miles (see www.distances.com). Table 1 summarizes all independent and dependent variables used in the analysis.

The variable representing trade regime (TRAD) for each of the countries is best constructed on the basis of a country's import policy and tariff structure. Data on agricultural tariff rates (a comprehensive measure of market access) for the 60 developing countries were obtained from the Centre d'Etudes Prospectives et d'Informations Internationales' (CEPII) Market Access Maps (MAcMap) website (Bouet, Fontagne, Mimouni and Pichot) and are reported in table 2. MAcMap is a database that measures market access to 223 exporting countries into 137 importing countries at the level of the tariff lines for the year 1999.

Unfortunately, similar data on tariff rates for each of the ten emerging countries over the period examined are not available. Instead, a method proposed by Sachs and Warner to measure trade liberalization is used. They categorized a trade regime as "closed" if at least one of the following was true:

1) Non-tariff barriers cover 40% or more of trade;

2) Average tariff rates of 40% or more;

3) A black market exchange rate that is depreciated by 20% or more relative to the official exchange rate;

4) A socialist economy as classified by Kornai; and

5) A state monopoly of major exports, defined by a score of 4 on the export-marketing index in a 1994 World Bank study (Husain and Faruquee, p. 238).

Table 1. Summary of Variables used in Export Analysis

Variable	Unit of Measurement	Source
Dependent Variable		
Exports	Value of U.S. exports (millions of U.S. dollars)	USDA-FATUS
Explanatory Variables		
Population	Millions of people	USDA-ERS/IMF
GDP	Nominal GDP (millions of U.S. dollars)	USDA-ERS/IMF
Exchange Rate	Nominal Exchange Rates	USDA-ERS/ Penn World Table
Infrastructure	Number of fixed and cellular phones per thousand people	IMF
Distance	Shortest navigable distance between the U.S. and importing country in nautical miles	www.distances.com
Level of Urbanization	Percentage of Population that lives in Urban areas	UN Population Data
Trade Regime	1=Open 0=Closed	Sachs-Warner/

Table 2. Market Access Map (MAcMap) tariff rates in percent for the 60 countries for the year 1999.

Country	MacMap aggregate tariffs (%)	Country	MacMap aggregate tariffs (%)
Algeria	24.72	Lebanon	11.75
Angola	28.10	Malaysia	2.50
Argentina	12.00	Mexico	5.00
Azerbaijan	8.11	Moldova	8.11
Bangladesh	21.10	Morocco	40.90
Bolivia	12.86	Nicaragua	15.00
Brazil	10.90	Nigeria	28.10
Bulgaria	16.50	Oman	11.75
Cambodia	-	Pakistan	14.99
Chile	7.00	Panama	15.00
China	24.70	Paraguay	13.90
Colombia	15.20	Peru	16.20
Costa Rica	15.00	Philippines	10.90
Czech Republic	12.90	Poland	39.40
Ecuador	12.86	Qatar	11.75
Egypt	24.72	Romania	23.10
El Salvador	15.00	Russia	11.40
Estonia	10.90	Saudi Arabia	11.75
Georgia	8.11	South Africa	22.80
Ghana	28.10	Sri Lanka	18.40
Guatemala	15.00	Thailand	21.30
Guyana	13.90	Trinidad and Tobago	15.00
Hungary	24.70	Turkey	39.20
India	58.10	Uganda	11.60
Indonesia	8.00	Ukraine	8.11
Jamaica	15.00	United Arab Emirates	11.75
Kazakhstan	8.11	Uruguay	11.50
Kenya	28.10	Venezuela	15.00
Kuwait	11.75	Vietnam	26.70
Latvia	13.00	Zimbabwe	24.90

Source: MacMap

Table 3 reports the results of Sachs and Warner for each of the ten countries used in this research. Note that their results were established in 1994. Also note that the average tariff levied by each of the ten countries is not identical. Indonesia, Thailand and Malaysia are not as "open" as the U.S., but they are more liberalized than most developing countries (Sachs and Warner). Given that each of the ten countries is now a member of the WTO, it is assumed that the "open" economies remained so through the end of our sample period. Egypt and China, which were "closed" as of 1994, are assigned a "closed" trade regime for the entire period of our study.

Table 3. Identification of trade regime using the Sachs-Warner method, and the year of trade liberalization.

Country	Trade Policy	Year Opened
China	Closed	Never Open
India	Open	1994
Indonesia	Open	1970
Thailand	Open	Always Open
Malaysia	Open	1963
Egypt	Closed	Never Open
Turkey	Open	1989
Brazil	Open	1991
Argentina	Open	1991
Mexico	Open	1986

6.2 Data Description

6.2.1 U.S. Exports

Values of U.S. exports of processed and consumer-ready foods to each importing country for 1980-2002 are stated in U.S. dollars, compiled on a calendar year basis. Examples of processed and consumer-ready foods used in this analysis include meats and meat products; poultry meats; dairy products; fats, oils, and grease; fresh fruits; dried, canned, and frozen fruits; fruit juice including frozen; nuts and nut preparations; fresh vegetables; frozen and canned vegetables; and oilseed products.

6.2.2 Population

Population is measured in millions of people.

6.2.3 Gross Domestic Product

Data on GDP is measured in millions of U.S. dollars.

6.2.4 Exchange Rates

Data on annual nominal exchange rates was measured in number of local currency per U.S. dollar.

6.2.5 Distance

Distance between the U.S. and the importing country was measured in nautical miles as the shortest navigable distance between a U.S. port and a prominent port of the importing country. The source was www.distances.com.

6.2.6 Trade Regime

Trade regime for each of the ten countries was constructed on the basis of its import policy and tariff structure. Data and other information for this purpose came mainly from

the USDA-FAS annual country exporter guides. However, due to the unavailability of data on tariff rates for processed foods for each of the ten countries for 1980-2002, and since tariff rates alone do not adequately measure a trade regime, the Sachs-Warner method discussed above is employed.

6.2.7 Level of Urbanization

Consumer profiles for processed foods were constructed after analyzing various factors: percentage of urban population, percentage of women employed, age structure, consumer taste and preferences, and perceptiveness to western foods. Data and descriptive articles used for this process came from the USDA-FAS annual country exporter guides. Country profiles provided in appendix one contains information on consumer profiles. However, since this process lacks a standard scale of measurement, the level of urbanization (percentage of urban population) is used to proxy consumer profile. Data on the level of urbanization were compiled from the *World Urbanization Prospects*, United Nations Population Division.

6.2.8 Infrastructure

The number of fixed and cellular telephones lines per thousand people is used to proxy infrastructure. These data were compiled from the World Bank's *World Development Indicators 2005* website.

CHAPTER 7

EMPITICAL RESULTS

This chapter discusses the empirical results from both the classical linear regression and fixed-effects models. Following Frankel (1997), we estimate the gravity model using ordinary least-squares (OLS) regression analysis. Frankel (1997) states that trade data usually contain enough information to obtain relatively reliable estimates of the effects of country size, proximity and other variables in the gravity model.

7.1. The Classical Linear Regression Model (60 countries)

Equation (5) is estimated as a classical regression model using OLS. The data used in this model are arranged into two-period, cross-section (N=60 countries and T=2 years, 1998 and 2003; NT=120). Following Baier and Bergstrand, and Frankel, equation (5) is estimated using natural log specification.

Equation (5) was estimated using the STATA software (www.stata.com). Multicollinearity was of low degree among the variables. The White test detected cross-sectional heteroskedasticity. This equation was then re-estimated using feasible generalized least-squares (FGLS) regression (Greene; Kmenta). Estimation results are shown below. Figures in parentheses represent *t*-values.

$$(7) \qquad \underset{}{lnEXP_{ijt}} = \underset{(4.13)}{-363.77} + \underset{(5.93)}{0.56 lnSZ_{it}} + \underset{(2.35)}{13.28 lnGDP_{it}} \underset{(-0.53)}{-0.10 lnFR} \underset{(-1.23)}{- 0.04 lnER_{it}} -$$

$$\underset{(-8.72)}{- 0.80 lnDIS_{i}} \underset{(-3.47)}{- 0.51 TRAD_{it}} + \underset{(1.42)}{0.26 lnINFR} \underset{(-3.38)}{-1.21 lnURB_{it}} + \varepsilon_{it}$$

Empirical results reported in table 4 indicate that six of eight parameter estimates have the expected signs. The exceptions include urbanization and factor endowments;

however, the parameter estimate for factor endowments is insignificant. Relative size, distance, trade regime (e.g., tariffs) and urbanization are statistically significant at the 1% level and income at the 5% level. Relative size, income and infrastructure have a positive effect on import demand for U.S. processed foods as expected, whereas distance, tariff rates (TRAD) and exchange rates have a negative impact as expected.

Table 4. Empirical results from the classical model of U.S. exports of processed foods to 60 developing countries, 1998 and 2003

Variable	Parameter Estimate	Std. Error	*t*-value
Intercept	-363.77**	2.95	4.13
Relative Size (SZ)	0.56***	0.09	5.93
Income (GDP)	13.28**	5.64	2.35
Factor Endowment (FR)	-0.10	0.18	-0.53
Exchange Rates (ER)	-0.04	0.03	-1.23
Distance (DIS)	-0.80***	0.09	-8.72
Trade Regime (TRAD)	-0.51***	0.14	-3.47
Infrastructure (INFR)	0.26	0.18	1.42
Urbanization (URB)	-1.21***	0.35	-3.38
Model Diagnostics	0.54		

Note: *** is 1% significance level; ** is 5% significance level. All coefficients represent elasticities.

Since the parameter estimates represent elasticities, 1% increase in the relative size of the two countries increases U.S. exports by 0.56%. A 1% increase in the bilateral sum of factor income increases U.S. exports by 13.28%. A 1% increase in factor

endowments differences leads to a 0.1% decrease in U.S. exports. A decline in the value of a local currency by 1% decreases import demand by 0.04%. As distance gets shorter by 1%, U.S. exports increase by 0.8%. A 1% increase in tariff rates leads to a 0.51% increase in imports.

The level of urbanization decreases U.S. exports by $1,210,000. This finding is counter to hypothesis 7 that a higher level of urbanization is positively related to U.S. exports. Careful review of the data indicates that large counties with large landmasses also have large populations although they are classified as rural, e.g., China and Mexico. These countries receive more exports than countries classified as urban.

The above results provide useful information for U.S. exporters of processed foods. While countries having high growth rates of population and income are certainly more lucrative potential markets than others, the real potential for export growth lies in those countries that are liberalizing their trade policies and are in close proximity to the United States such as Mexico.

7.2 The Fixed Effects Model (10 countries)

Equation (6) was estimated using SAS (SAS OnlineDoc, v. 8). The data were corrected for autocorrelation and cross-sectional heteroscedasticity using standard FGLS procedures. The results are shown below. Figures in parentheses represent *t*-values.

$$(8) \qquad lnEXP_{ijt} = D_{jt} + \underset{(2.91)}{0.45}lnSZ_{jt} + \underset{(11.06)}{0.96}lnGDP_{jt} + \underset{(1.43)}{0.19}lnFR_{jt} \underset{(-4.53)}{-0.23}lnER_{jt}$$

$$\underset{(-4.27)}{-0.93}lnDIS_j \underset{(-2.18)}{-0.41}TRAD_{jt} + \underset{(0.93)}{0.33}lnURB_{jt} + \varepsilon_{jt}$$

Empirical results shown in table 5 indicate the parameter estimates for 7 of the 10 fixed effects dummy variables are statistically different from 0 with 90% confidence or better. The *F*-test for group effects (Ho: $d_1 = d_2 = \cdots\cdots = d_{10} = 0$) indicates that country-effects are present and that U.S. exports of processed foods to these 10 importing countries vary due to country differences. Behavioral differences between individual countries may be attributed to differences in consumer preferences, cultural habits and retail facilities, among others.

Coefficients for size, income, exchange rates and distance are significant at the 1% level and trade regime at the 5% level. Urbanization and factor endowments are not statistically significant. All variables have correct signs except for trade regime. The unexpected sign for trade regime may indicate that the binary 'open' or "closed" classification is not a good measure of the trade regimes of the countries analyzed in this research. The "open" or "closed" classification does not account for the varying degrees of openness. Also, China is accorded a "closed" trade regime for the entire dataset since it continues to be classified as a socialist economy even though its economy has opened significantly in recent years. Income, relative size, differences in factor endowments and the level of urbanization have a positive effect on import demand of U.S. processed food exports.

A 1% increase in the relative size of the two countries increases U.S. exports by 0.45%. A 1% increase in bilateral sum of income increases imports by 0.96%. A 1% increase in factor endowment differences leads to a 0.19% increase in imports. Exchange rates have a negative impact on import demand. A 1% decline in the value of the local currency decreases imports by 0.23%. The opening of a hitherto closed trade regime

Table 5. Empirical results from the fixed effects model of U.S. exports of processed foods to 10 emerging economies, 1980-2002.

Variable	Parameter Estimate	Std. Error	*t*-value
Relative Size (SZ)	0.45***	0.15	2.91
Income (GDP)	0.96***	0.08	11.06
Factor Endowment (FR)	0.19	0.13	1.43
Exchange Rate (ER)	-0.23***	0.05	-4.53
Trade Regime (TRAD)	-0.41**	0.18	-2.18
Distance (DIS)	-0.93***	0.22	-4.27
Urbanization (URB)	0.33	0.36	0.93
Estimated Fixed Effects			
China	4569129***	1355807	-3.37
India	-2828129*	1530544	-1.85
Malaysia	-4050317*	2094548	-1.93
Thailand	-4092188	3774905	-1.08
Indonesia	363663	2177266	-0.17
Turkey	1917571	2269746	0.84
Egypt	3715999***	1314381	-2.83
Mexico	6760823***	2515887	-2.69
Argentina	7750148***	1462310	-5.30
Brazil	6776052***	1532660	-4.42
Model Diagnostics			
Adjusted R^2	0.84		

Notes: *** is 1% significance level, ** is 5% significance level, * is 10% significance level. All coefficients represent elasticities.

leads to a 0.41 unit decrease in the mean of imports. As distance gets shorter by 1%, imports increase by 0.93%. A 1% increase in the level of urbanization increases imports by 0.33%. From the perspective of U.S. exporters of processed foods, the results of this model reinforce the findings of the classical model, except for trade regime, which has an unexpected sign.

Thus it appears that there are many economic and demographic trends that are moving in favor of increased U.S. processed food exports. Some important markets are becoming more open (China in particular), most countries are becoming more urbanized and it is likely that the U.S. dollar will depreciate against many currencies in the future.

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CHAPTER 8

SUMMARY AND CONCLUSIONS

The United States is the world's largest food exporter and processed foods are the fastest growing sector for both U.S. agricultural exports and global food trade. U.S. processed foods surpassed bulk goods in export value in 1991. In terms of potential U.S. export markets, low and middle-income countries are the growth markets.

The overall objective of this research was to examine demand for processed foods by low and middle-income countries, seeking to assess demand determinants and potential import growth for U.S. processed food exports. This research examined the determinants of U.S. exports of processed foods to 10 emerging markets from 1980-2002 and to 60 developing countries for 1998 and 2003 using an augmented gravity model. The ten low and middle-income countries analyzed included China, India, Indonesia, Brazil, Mexico, Thailand, Turkey, Egypt, Argentina and Malaysia.

The literature review identified income, population, exchange rates, distance, infrastructure, consumer tastes and preferences and, trade regimes as key variables that impact import demand for processed foods. Global food consumption patterns have been transformed tremendously during the past decade owing to rising urbanization, demographic shifts, higher incomes, improved transportation facilities, and consumer awareness of food quality and safety (Regmi). In developing countries, better retail facilities, paucity of time and higher purchasing power among the urban dwellers have radically changed eating habits and spurred demand for processed foods. Exports of processed foods depend crucially on the "openness" of domestic trade policy. High

protection for agricultural commodities in the form of tariffs continues to be a barrier to world trade.

The literature review also identified the gravity model as one of the most popular models used in international trade analysis. This model estimates the value of bilateral trade flows using distance and the product of the GDPs of the exporting and importing countries. The general gravity model fails to account for artificial (policy-induced tariff barriers) and natural impediments (geographic factors, such as transportation costs) to trade. The general model should, therefore, be modified to account for such other factors. A modified gravity model estimates bilateral trade using GDPs, population as a measure of the size of the market and both trade impediments and enhancement factors.

This research employed a modified gravity model to analyze U.S. processed food exports to the ten emerging markets. In addition to population, income and distance, the usual gravity variables, exchange rates, trade regime and the level of urbanization were added to the gravity model.

Empirical results from the 60-country, classical linear regression analysis indicate that, consistent with our hypotheses, GDP, relative size and infrastructure positively impact U.S. exports of processed foods. As expected, exchange rates, higher tariffs and distance were found to negatively impact U.S. exports. However, differences in factor endowments and level of urbanization have unexpected signs. Contrary to our hypotheses, both variables negatively impact exports although factor endowments are not statistically significant. These empirical results are consistent with the findings of Coyle, et al. and Regmi, et al. Empirical results from the fixed-effects model are similar to that of the classical linear regression model, except for trade regime which has an unexpected

sign and urbanization and factor endowments which have correct signs. Group-effects are present for all 10 countries, of which five are statistically significant at the 1% level and two at the 10% level. This indicates that, due to behavioral differences, the relationship between U.S. exports of processed foods and import demand in each of the 10 countries vary.

Food processing companies, therefore, need to have different strategies for different growing markets. The empirical results of this research imply that among emerging markets, middle-income countries that have open trade policies and are in relatively close proximity to the U.S. offer better opportunities for U.S. exports of processed foods.

The U.S. is currently conducting free trade negotiations with select countries, which will allow U.S. food processors to export more of their products. Free trade provides greater market access and encourages companies to make larger marketing investments. A potential free trade agreement with Brazil and Argentina, like NAFTA with Mexico, will certainly increase their imports of U.S. processed foods. Brazil is already projected to substantially increase its imports of U.S. processed foods over the next decade. WTO negotiations, which lower all trade barriers, can also help U.S. food processors. Success in the Doha Round, which would provide better access for and lower tariffs on processed foods, would substantially increase the projected exports for all countries.

APPENDIX ONE

IMPORTANT TRADE TERMS

Applied tariff rates. The actual tariff rate charged at the border by an importing country, sometimes differing from the bound rate. The rate is allowable under the rules of the WTO if it is at or below the bound rate.

Bound tariff rates. Tariff rates resulting from GATT negotiations or accessions that are incorporated as part of a country's schedule of concessions. If a GATT contracting party raises a tariff above the bound rate, the affected countries have the right to retaliate.

In-quota tariff. The tariff applied on imports withinthe quota. The in-quota tariff is less than the overquota tariff.

Market access. The extent to which a country permits imports. A variety of tariff and non-tariff trade barriers can be used to limit the entry of foreign products.

Most-Favored-Nation (MFN) status. An agreement between countries to extend the same trading privileges to each other that they extend to any other country.

Non-tariff trade barriers. Regulations used by governments to restrict imports from, and exports to, other countries, including embargoes, import quotas, and technical barriers to trade.

Over-quota tariff. The tariff applied on imports in excess of the quota volume. The over-quota tariff is greater than the in-quota tariff.

Sanitary and phytosanitary (SPS) measures. Technical barriers designed for the protection of human health or the control of animal and plant pests and diseases.

Tariff. A tax imposed on commodity imports by a government. A tariff may be a fixed charge per unit of product imported (specific tariff), a fixed percentage of value (ad valorem tariff), or some combination of both.

Tariff-rate quota. Quantitative limit (quota) on imported goods, over which higher tariff rates is applied. A lower tariff rate applies to any imports below the quota amount.

Tariffication. The process of converting non-tariff trade barriers to bound tariffs. This is done under the UR agreement in order to improve the transparency of existing agricultural trade barriers and facilitate their proposed reduction.

Source: USDA-ERS, Profiles of Tariffs in Global Agricultural Markets, Agricultural Economic Report No. 796, 2001.

APPENDIX TWO

COUNTRY PROFILES

This appendix provides country profiles for the ten countries that were the focus of this research. Key macroeconomic indicators such as exchange rates and per capita income are provided followed by a detailed discussion of each country's trade regime and consumer profile.

CHINA

China is the world's most populous country and also the largest consumer of food (Ahmadi-Esfahani and. Stanmore). Incomes have quadrupled since the early 1980s but the average income is still only $950 per capita (USDA-ERS, 2002). However, it is one of the fastest growing markets in the world with tremendous potential for growth. Since the opening of Chinese markets to food imports in the early 1980s, the structure of the Chinese food markets has changed considerably. Removal of government intervention in the food sector has given consumers greater freedom and choices in their consumption decisions (Ahmadi-Esfahani and. Stanmore).

Import Policy

The Chinese government regulated agricultural trade in the past through state trading enterprises, licensing requirements, tariffs, sanitary and phytosanitary (SPS) requirements, and internal market controls (USDA-FAS, 2000). Though China's import regime has been liberalized considerably in the last 20 years, many barriers to trade remained in the years leading up to its accession to the World Trade

Key Figures

Population: 1,284,303,705 (July 2002 est.)

Age structure:
0-14 years: 24.3% (male 163,821,081; female 148,855,387)
15-64 years: 68.4% (male 452,354,428; female 426,055,713)
65 years and over: 7.3% (male 43,834,528; female 49,382,568) (2002 est.)

Population growth rate: 0.87% (2002 est.)

GDP: purchasing power parity - $5.56 trillion (2001 est.)

GDP - real growth rate: 7.3% (official estimate) (2001 est.)

GDP - per capita: purchasing power parity - $4,300 (2001 est.)

Population below poverty line: 10% (2001 est.)

Household income or consumption by percentage share:
lowest 10%: 2.4%
highest 10%: 30.4% (1998)

Inflation rate (consumer prices): 0.8% (2001 est.)

Agriculture - products: rice, wheat, potatoes, peanuts, tea, cotton, oilseed; pork; fish

Exports: $262.1 billion (f.o.b., 2001 est.) $194.9 billion (f.o.b., 1999)

Exports - commodities: machinery and equipment; textiles and clothing, footwear, toys and sporting goods; mineral fuels

Exports - partners: US 21%, Hong Kong 18%, Japan 17%, South Korea, Germany, Netherlands, UK, Singapore, Taiwan (2000)

Imports: $236.2 billion (f.o.b., 2001 est.) $165.8 billion (c.i.f., 1999)

Imports - commodities: machinery and equipment, plastics, chemicals, iron and steel, mineral fuels

Imports - partners: Japan 18%, Taiwan 11%, South Korea 10%, US 10% Germany, Hong Kong, Russia, Malaysia (2000)

Exchange rates: Yuan per US$1 - 8.2767 (January 2002)

Source: CIA World Factbook, 2003

Organization (USTR, 2002).

Tariffs

U.S. exports are subject to the minimum tariff rate as per the provisions of the reciprocal preferential tariff agreement with China (US Dept. of State). Information on import tariffs is now being published more frequently, removing some degree of uncertainty among traders.

Accession to the World Trade Organization

China's accession to the WTO on December 11, 2001, was an important step towards opening of China's market to U.S. agricultural goods. Substantial changes are in the offing (USDA-FAS, 2000). China is now committed to the reduction of tariff and non-tariff barriers over five years following its membership and opening up of hitherto closed sectors of the economy to foreign businesses, such as distribution (USDA-FAS, 2001). WTO provisions require China to lower tariffs, weaken state trading monopolies, make import license and quota allocation procedures more transparent, and publish trade regulations that will remove uncertainty for foreign traders (USDA-FAS, 2000).

China's fulfillment of its WTO obligations will result in annual tariff reductions that will lower average agricultural tariffs to 17 percent by 2004 (Gale, 2002). On priority agricultural products, tariffs will fall from an average of 31.5 percent to 14.4 percent by three years after accession (US Dept. of State). Processed foods and beverages were subject to 29 percent duty in 2000 (USDA-FAS, 2000). China's WTO accession is expected to increase U.S. agricultural exports to that country by at least $2 billion a year

by 2005 (USDA-FAS, 2000). Exports of beef, poultry, pork and cheese stand to gain the most.

Import Quotas

The WTO has outlawed quotas and other quantitative restrictions on imports. China has been eliminating them over the past few years and this process will continue with its accession to the WTO over a "several year phase-in period" (US Dept. of State).

Import Documentation

Necessary documents include the bill of landing, invoice, shipping list, sales contract and customs declaration form, among others (US Dept. of State).

Labeling, packaging and Inspection Requirements

All products sold in China must be labeled in the Chinese language, in addition to a foreign language. Labels on all non-bulk, packaged food products, imported or locally produced, must clearly state the type of food, brand name, trademark, manufacturer's name and address (or, the country of origin and the name and address of the importer and seller, if imported), ingredients, net weight, and production and sell-by dates. Easily damaged or potentially dangerous goods must carry warning symbols or explanations in Chinese. Imported (but not domestic) food items such as candy, wine, nuts, canned food and cheese to be affixed with a sticker documenting the product's safety (Baker and McKenzie, 1998).

Chinese law mandates inspection of certain goods with respect to product quality, technical specifications, quantity, weight, packaging and safety requirements prior to their importation, sale, or use in China (US Dept. of State). Laws mandate that all foods containing genetically modified organisms (GMO) be properly labeled and the importer obtain a GMO safety certificate. However, many of the regulations are ambiguous and enforcement is lacking (USDA-FAS, 2001).

Legal Framework

Laws and regulations in China are general and vague in nature, allowing Chinese courts flexibility in its application. This results in inconsistency and uncertainty for foreign companies. Local government agencies are also empowered with rulemaking authority, which often results in contradictory regulations. Procedures to appeal regulatory decisions are not enunciated (US Dept. of State).

Transparency

As per the provisions of the 1992 U.S.-China bilateral market access MoU, China agreed to publish all relevant laws, rules, regulations and policies governing foreign trade that were not then published. Most government ministries now publish digests of their regulations (US Dept. of State).

Distribution and Sales

China's distribution system is complicated and archaic, especially in southern China where most imports arrive (USDA-FAS, 2001). Under most circumstances, foreign firms

cannot directly sell imports in China (US Dept. of State). China will have to gradually eliminate distribution restrictions in order to comply with its WTO obligations. Grey market is rampant in southern China and food and beverages are brought from Hong Kong (USDA-FAS, 2001).

Infrastructure

Infrastructure in China lags behind world standards though major overhauls in port, road and railway sectors are underway. Coastal cities, especially on the southeastern coast, have better infrastructure and higher incomes.

Warehouse and Transportation

China's cold storage warehouses are primitive by international standards. Transport in general is inefficient and slow. Temperature controlled transportation is rare. However, several international shipping and logistics companies have invested in the distribution system. The newly laid highways, connecting major ports and cities, have improved transportation (Burke and Wingard).

Shipping costs to China, which have dropped in recent years, are still high compared to international rates. Transportation and logistics costs comprise one-fifth of the retail price, which is high compared to western standards (Gilmour and Gale).

Food Retail Sector

The food retail sector underwent remarkable transformation and growth during the 1980s and 1990s owing to rising consumer demand. Shanghai alone accounted for $7.2 billion in retail food sales in 1998 (USDA-FAS, 1999). However, imported foods generally have less than 5 percent share of retail shelf space. Most retail stores are not permitted to import food products (USDA-FAS, 1999).

The organized food retail sector in China comprises hypermarkets (Carrefour, Wal-Mart), supermarkets and convenience stores (7-11). Hypermarkets are making forays into high growth areas such as Guangzhou, Beijing and Shanghai (USDA-FAS, 2002). Thanks to foreign investment of nearly $ 4.4 billion till 1996, new and innovative stores are fast replacing Shanghai traditional food markets (USDA-AgExporter, 1998). However, traditional food stores and "wet markets" are still popular among many consumers, especially in smaller cities and rural areas (USDA-FAS, 1999).

Outlook

Per capita expenditure on food items is 42 percent of income (USDA-FAS, 2001). Convenience-oriented and high-quality foods are becoming increasingly popular across eastern China. However, there is little awareness of U.S. food products and brands beyond the large cities. In addition, Chinese consumers are extremely price-sensitive (USDA-FAS, 2001).

Increasing urbanization and rising incomes are likely to increase demand for processed foods, particularly meat, fish, vegetable oils, and dairy products, and change

the composition of food consumption in China (Gale). The relatively affluent resident of Shanghai has an annual income in purchasing power parity (PPP) of US$10,000-$40,000. According to an estimate, if China continues to grow at the present rate for a few more years, the growing middle class in China's coastal, urban provinces could reach 500 million by the year 2005 (USDA-AgExporter, 1997).

A recent nationwide survey indicated that the number of households purchasing frozen foods had jumped from 13 percent in 1994 to 38 percent in 1997 (USDA-AgExporter, 1998). The Guangdong food and beverage retail sales were estimated at $6.56 billion in 2001 (USDA-FAS, 2002) and are expected to increase over the years. Changing lifestyles has brought about a demand for home refrigeration. Though only 7 percent of urban families owned a fridge in the 1980s, now an estimated 96 percent of the urban population own refrigerators (Burke and Wingard).

However, China's imports of processed foods are modest. Penetration of imported foods in the Chinese retail markets (5 percent) is low by any standard (USDA-FAS, 2001).

BRAZIL

Brazil is the largest economy in South America. Prior to the Plano Real in mid-1994, the economy reeled under extremely high inflation rates (1,000 percent in 1994). Since then, inflation has been brought under control (7.7 percent in 2001; CIA). Depreciation of its currency over the past five years has severely affected Brazil's imports (USDA-FAS, 2003).

Import Policy

Brazil had initiated trade liberalization prior to the conclusion of the Uruguay Round. Bound tariff rates had been slashed and most non-tariff barriers to trade had been eliminated. These measures have facilitated the implementation of its WTO commitments (US Dept. of Commerce).

Tariffs

In 2002, Brazil's average applied tariff was 11.8 percent and applied tariff rates did not exceed 35 percent (USTR, 2003). The MERCOSUR (Brazil, Argentina, Paraguay and Uruguay) Common External Tariff (CET), which came into effect in 1995, currently covers 9,626 tariff items, with tariffs ranging between 0 and 21.5 percent. Full and associate members of the MERCOSUR enjoy preferential import tariffs. The CET is a significant barrier to U.S. exports of agricultural products (USTR, 2003). Brazil does not need to undertake major changes to fulfill its WTO commitments on agriculture. Since 1990, it has eased import prohibitions and eliminated non-tariff barriers. Import tariffs on commodities and foods have been substantially reduced. Duties vary between 10 and 15

Key Figures:

Population: 176,029,560 (2002 est.)
Age structure:
0-14 years: 28% (male 25,140,954; female 24,199,276)
15-64 years: 66.4% (male 57,424,151; female 59,409,928)
65 years and over: 5.6% (male 3,992,017; female 5,863,234) (2002 est.)

Population growth rate: 0.87% (2002 est.)

Urban Population- 70%

GDP: purchasing power parity - $1.34 trillion (2001 est.) $1.057 trillion

GDP - real growth rate: 1.9% (2001 est.)

GDP - per capita: purchasing power parity - $7,400 (2000 est.)

Population below poverty line: 22% (1998 est.)

Inflation rate (consumer prices): 7.7% (2001)

Labor force: 74 million (1997 est.)

Agriculture - products: coffee, soybeans, wheat, rice, corn, sugarcane, cocoa, citrus; beef

Exports: $57.8 billion (f.o.b., 2001 est.) $46.9 billion (f.o.b., 1999)

Exports - commodities: manufactures, iron ore, soybeans, footwear, coffee, autos

Exports - partners: US 24.4%, Argentina 11.2%, Germany 8.7%, Japan 5.5%, Italy 3.9%, Netherlands (2001)

Imports: $57.7 billion (f.o.b., 2001)

Imports - commodities: machinery and equipment, chemical products, oil, electricity, autos and auto parts

Imports - partners: US 23.2%, Argentina 11.2%, Germany 8.7%, Japan 5.5%, Italy 3.9% (2001)

Exchange rates: Reals (R$) per US$1 - 2.378 (January 2002)

Source: CIA World Factbook, 2003

percentfor most bulk agricultural goods and 15 and 25 percent for processed foods (USDA-FAS, 2002).

Import Procedures

Brazil possesses all necessary import channels: agents, distributors, brokers, wholesalers, specialty import houses, trading companies, and subsidiaries and branches of foreign firms. Registration is required to import and distribute food products in Brazil (USDA-FAS, 2002). Many products are subject to non-automatic licenses. Imported processed foods and food supplement products are subject to product registrations with the Ministry of Health (USTR, 2002).

Standards, Testing and Certification

All products of "animal origin" (meat, poultry etc.) must be safe for human consumption and be accurately labeled. Producers of meat- domestic and foreign- must register with the designated agency. In case of imports, the exporting country's inspection system must be "equivalent" to the Brazilian system. Importation of wine, beer, distilled spirits and juices require registration and are subject to inspection prior to clearance at the customs (USDA-FAS, 2002).

As a member of the WTO, Brazil is bound by the SPS Agreement and CODEX principles (USDA-FAS, 2002). However, despite much progress, SPS measures constitute significant barriers in many cases. Brazil introduced additional SPS, quality and safety approvals from various government bodies for products subject to non-automatic licenses (USTR, 2002). Imports of poultry products from the U.S. are

prohibited on grounds of lack of reciprocity. Importation of beef produced with growth hormones is banned. However, Brazil has allowed beef imports from the U.S. on a waiver basis since 1991 (USTR, 2002).

Most imported food products are exempt from registration with the National Agency of Sanitary Surveillance (ANVISA). Registration procedures are the same for domestic and imported food products. Tests are conducted periodically on domestic and imported food products to check whether they meet the specifications listed on their labels (USDA-FAS, 2002).

In case of imports of processed meats and dairy products, the foreign processing plant must be registered. Importers should also pre-register foreign labels relating to such products (USDA-FAS, 2002). Laws mandate that all U.S. exports of meat, seafood, fish and dairy products be processed in a plant under supervision of a U.S. federal agency. State supervised or uninspected facilities cannot be registered. Fresh fruits and vegetables require a phytosanitary certificate while frozen fruits and vegetables are exempt. The Brazilian Consumer Code protects consumer interests against adulterated food products, incorrect or misleading labels, and other food related concerns (USDA-FAS, 2002).

All genetically modified organisms (GMO) food products, which have gained acceptance among Brazilian consumers, must obtain technical approval before importation and a 4 percent limit on GMO is allowed in packaged food products. Both domestic and imported organic products must have the words “organic product” written on the label and the details of the certifying organization (USDA-FAS, 2002).

Labeling Requirements

All domestic and imported food and beverage products must provide correct, precise and easily readable information in *Portuguese*. Local distributors of U.S. food products generally affix a label in Portuguese on the product with information on weight, date of production/expiration etc. Labels should also carry details of the local importer. Labels should also specify nutritional contents (USDA-FAS, 2002).

Intellectual Property Rights

Brazil is a signatory to the Paris and Berne conventions on intellectual property rights. Brazil's intellectual property regulations were revised under the TRIPS Agreement (Trade Policy Review, 1996). The statutes relating to IPR are now at par with western standards. Enforcement, however, is inadequate (USDA-FAS, 2002).

Outlook

Because of the prevailing economic conditions, purchases of consumer-ready products have fallen and local products have become more popular in the category of staple-type processed products. Higher prices owing to a weak currency have constricted the consumer base for imported products to the high-end, whose population is between 5-8 millions (USDA-FAS, 2003). Demand for processed foods is concentrated by and large in Sao Paulo and, to lesser extent, Rio de Janeiro, Fortaleza and Salvador (USDA-FAS, 2002).

INDIA

India is the second most populous country in the world. Economic reforms were introduced in early 1990s and since then it has made much headway in many areas. These reforms helped the country achieve a growth rate of 6-7 percent annually since 1993.

Trade Policy

India introduced wide ranging economic reforms and trade liberalization in the early 1990s, and the economy has since opened up to foreign investment and trade considerably. However, customs duties on some products such as consumer goods are still high and constitute significant impediments to U.S. exports (US Dept. of State). In April 2001, import licensing and all quantitative restrictions (QRs) on most imports were scrapped in compliance with WTO commitments. Importation of a large number of agricultural and consumer goods no longer requires a license. In 2003, almost all goods were placed under the Open General License (OGL) allowing their unrestricted importation without any permit or license. However, India continues to use other non-tariff barriers (USTR, 2003).

Tariffs

Tariffs have been lowered considerably in the past decade. Peak "basic" tariff rate was lowered from 30 percent to 25 percent in 2003. But, these rates do not apply to agricultural and dairy products, rendering market access for these products as difficult as ever. Import tariffs on most consumer food products vary between 35.2 and 56.8 percent (USDA-FAS, 2002).

Key Figures

Population: 1,045,845,226 (July 2002 est.)

Age structure:
-*14 years:* 32.7% (male 175,858,386; female 165,724,901)
15-64 years: 62.6% (male 338,957,463; female 316,063,497)
65 years and over: 4.7% (male 24,975,465; female 24,265,514) (2002 est.)

Population growth rate: 1.51% (2002 est.)

GDP: purchasing power parity - $2.5 trillion (2001 est.)

GDP - real growth rate: 5% (2001 est.)

GDP - per capita: purchasing power parity - $2,500 (2001 est.)

Population below poverty line: 25% (2001 est.)

Household income or consumption by percentage share:
lowest 10%: 3.5%
highest 10%: 33.5% (1997)

Inflation rate (consumer prices): 3.5% (2000 est.)

Agricultural products: rice, wheat, oilseed, cotton, jute, tea, sugarcane, potatoes; cattle, water buffalo, sheep, goats, poultry; fish

Exports: $44.5 billion (f.o.b., 2001)

Exports - commodities: textile goods, gems and jewelry, engineering goods, chemicals, leather manufactures

Exports - partners: US 22.8%, Hong Kong 5.8%, Japan 5.3%, UK 5.3%, Germany 4.6% (2000)

Imports: $53.8 billion (f.o.b., 2001)

Imports - commodities: crude oil, machinery, gems, fertilizer, chemicals

Imports - partners: Benelux 8.5%, US 8%, UK 6.2%, Japan 5.7%, Saudi Arabia 4.6% (2000)

Exchange rate – Indian Rupee

Source: CIA World FactBook, 2003

In addition to customs duties, imports are also subject to a number of additional duties. Since 1998, a "special additional duty" (SAD) of 4 percent has been levied on imports, ostensibly to level the playing field for domestic producers who pay a sales tax of an equivalent rate. This duty is assessed on the value of imports, including customs duties, thereby increasing the effective tariff rate (USTR, 2003). Countervailing duty on liquor, wine, and beer was reduced for premium brands in 2003 (USDA-FAS, 2003).

Food Laws

Although trade laws have been liberalized, India's food laws are still onerous and archaic. Food safety laws, enunciated by the Prevention of Food Adulteration Act of 1954 (PFA), are outdated and sometimes more stringent than international standards (Dept. of State, Bureau of Economic and Business Affairs, 2001). The PFA deals primarily with adulteration of basic food commodities – the Indian diet comprises almost entirely bulk commodities - and is not very expansive with regard to processed foods. It lays out regulations for packaging, labeling and retailing (USDA-FAS, 2000). However, PFA regulations grant equal treatment of domestic and imported products. India is undertaking efforts to harmonize its laws to international standards.

Import Procedures and Documentation

Economic reforms have failed to streamline India's customs process, which is still cumbersome and non-transparent. Documentation requirements and procedural delays are frequent due to the complex structure of tariffs and product-specific regulations. A new 8-digit custom classification system was introduced in 2003 (USTR, 2003). Importers are

required to present an import declaration, a sales invoice and, freight and insurance certificates to secure customs clearance (US Dept. of State).

Testing, Certification and Packaging

India generally follows international standards on testing and certification, which do not constitute a significant barrier to trade. All food products require a certificate from the port health authority for conformity to PFA standards in order to obtain clearance. However, limited testing-facilities at the ports hamper timely and proper testing and goods brought in by frequent and reputed importers undergo only visual inspection for certification. But, new importers often face considerable delays (USDA-FAS, 2000).

Labeling

Labels on all products must be printed in either English or Hindi, and provide consumers with information on the manufacturer, importer, list of ingredients, weight or volume in metric units, production and expiration dates, and the maximum retail price, among others (USDA-FAS, 2000). New labeling regulations require all pre-packaged food products to bear a symbol and color code if they contain non-vegetarian ingredients (USDA-FAS, 2002). Imports of GMOs are negligible and their labeling has not received much attention in India (Dept. of State).

Sanitary and Phytosanitary (SPS) Restrictions

India's SPS measures, which are restrictive and non-transparent, do not conform to international standards or the WTO SPS Agreement. All imported food products must

undergo compulsory detention and laboratory testing, which are not required of domestic products. Regulations pertaining to the importation of biotech products are neither clear nor transparent and do not appear to be scientifically sound (USTR, 2003).

Intellectual Property

India has enacted various laws and statutes for the protection of intellectual property but enforcement does not measure up to international standards. India is, however, committed to improved protection for trademarks, including national treatment for trademarks owned by foreign companies (USTR, 2003). Enforcement of trademark laws is improving with both the courts and law enforcement agencies taking a firmer stand against infringement. Trademark protection was reinforced with the passage of a new Trademark Bill in 1999 that codified existing court decisions on the use and protection of foreign trademarks (Dept. of State). In 2002, patent laws were amended in partial fulfillment of the Uruguay Round commitments (USTR, 2003). In 1998, India joined the Paris Convention and the Patent Cooperative Treaty.

Infrastructure

Infrastructure facilities in India are underdeveloped even by Asian standards. Ports, transportation, cold storage and warehouse and food retailing need urgent attention.

Transportation, Ports and Power

India's road network is the third largest in the world but only 52,000 kilometers of national highway can sustain high-speed traffic. According to government estimates, road

traffic will account for 70 percent of goods traffic by 2005 (Dept. of State). The National Highway Authority of India has undertaken an ambitious $11.6 billion, 8,000 miles of expressways project, which links the major cities and is expected to be completed by 2007. Refrigerated transport facilities are grossly inadequate.

Despite handling 90 percent of its international trade, India's ports lack modern facilities and are ill equipped to handle the flows, which are projected to reach 530 million tons by 2007 (Dept. of State).

Inadequate and erratic power supply has a telling impact on refrigeration at home, retail outlets, and warehouses. During the fiscal year 2000-01, the overall power shortage was 6.2 percent and the peak power shortage was 12.4 percent (Dept. of State).

Food Retail Stores

Food and beverage retailing in India is estimated at $133 billion and is growing at 3-5 percent annually (USDA-FAS, 2002). The organized retail industry is expected to grow from $1.08 billion in 2000 to $6.5 billion by 2005 (Dept. of State). However, food retailing is still in its nascent stage, without any major national chain. There are 3-4 million small grocery or convenience stores where most food products are sold (USDA-FAS, 2002).

Food retailing is much more developed in southern India. While an overwhelming percentage of the food items sold in South Indian supermarkets are produced locally, recent changes in India's import policy have facilitated import of foreign products. 15-20 percent of the urban population frequents such supermarkets (USDA-FAS, 2002).

Foreign direct investment is not allowed in the retailing sector and international retail chains such as Shoprite, Marks and Spencer and Metro AG have entered the market through the cash-and-carry format (USDA-FAS, 2002). Entry of leading food retail chains like Carrefour, Casino and Ahold of Netherlands is on the cards (Dept. of State).

Distribution

Foreign companies can either open a branch office or a subsidiary in order to do business. It can also hire the services of a local distributor. The distribution channel has expanded in the last decade with more than 4 million retail distribution outlets operating in the country (Dept. of State).

Outlook

The potential market size in India depends on the type and price of the product. It may vary from 100 million to 150 million consumers (Dept. of State). While the annual per capita income is merely $480, income in "purchasing power parity" (PPP) terms is $2,500 (CIA). Approximately 8 percent of the population, or 80 million people, have a per-capita income of more than $3,500. Some 2 percent of the population, amounting to 20 million, has an income of over $13,000. This segment is most likely to purchase imported food items on a regular basis (Dept. of State).

Indians spend 55 percent of their consumption expenditure on food, mainly on basic items (USDA-FAS, 2002). Many Indians are vegetarian for religious reasons and have a strong penchant for fresh and traditional food. Meat is consumed on a regular basis only by a small segment of the population due to high prices and vegetarian habits.

Moreover, taste preferences in India differ from region to region and this diversity presents a major challenge to food retailers.

Due to low purchasing power and lack of home refrigeration facilities, most Indians shop on a daily basis at small convenience shops, wet markets and roadside vendors, purchasing different products at different places. Women do most of the shopping and make most purchasing decisions (USDA-FAS, 2002). Convenience appliances such as microwaves and ovens are rare even in cities.

THAILAND

Thailand is the second largest economy in Southeast Asia and is currently the 16th largest export market for U.S. agricultural products. The economy continued on the course to recovery during 2002, expanding about 5.3 percent, spurred by higher domestic spending and exports. U.S. exports of consumer-oriented foods were valued at $80 million in 2002, a growth of 22 percent over the previous year (USDA-FAS, 2003).

Import Policy

Food Laws

The Food Act of 1979 regulates the food industry in Thailand. Agricultural products are classified as controlled or non-controlled on the basis of their competitiveness with respect to imports. Importation of specifically controlled foods, comprising many processed foods, requires registration and a license. Importation of general food products, including meat and ready-to-eat food products, require import licenses and labeling approval. Licenses are issued pursuant to laboratory tests confirming safety of the product. Importation of adulterated, impure, and substandard food is prohibited. Imported food products are subject to random inspection and laboratory tests to ensure their compliance with national food standards. All imported agricultural products, except processed foods, require a phytosanitary certificate issued from the country of origin (USDA-FAS, 2000).

Key Figures

Population: 62,354,402 (July 2002)

Age structure:
-*14 years:* 23.3% (male 7,404,227; female 7,121,083)
15-64 years: 69.9% (male 21,469,186; female 22,090,520)
65 years and over: 6.8% (male 1,868,632; female 2,400,754) (2002 est.)

GDP: purchasing power parity - $410 billion (2001 est.)

GDP - real growth rate: 1.4% (2001 est.)

GDP - per capita: purchasing power parity - $6,600 (2001 est.)

Per Capita Gross Domestic Product (U.S. $) $2,525 (1998 est.)

Per Capita Food Expenditures (U.S. $) $800 (1998)

Consumer Ready Food Product Imports (Million US$) $700 (1998)

Population below poverty line: 12.5% (1998 est.)

Household income or consumption by percentage share:
lowest 10%: 2.8%
highest 10%: 32.4% (1998)

Inflation rate (consumer prices): 1.6% (2001)

Agriculture - products: rice, cassava (tapioca), rubber, corn, sugarcane, soybeans

Exports: $65.3 billion (f.o.b., 2001 est.) $58.5 billion (f.o.b., 1999 est.)

Exports - commodities: computers, transistors, seafood, clothing, rice

Exports - partners: US 23%, Japan 14%, Singapore 8%, China 6% (2000)

Imports: $62.3 billion (f.o.b., 2001 est.) $45 billion (f.o.b., 1999 est.)

Imports - commodities: capital goods, intermediate goods and raw materials.

Imports - partners: Japan 24%, US 11%, Singapore 10%, Malaysia 6% (2000)

Exchange rates: Baht (B) per US$1 - 43.982 (January 2002)

Source: CIA FactBook, 2003

Tariffs

Although Thailand has lowered tariffs in compliance with its WTO commitments, its high tariffs remain a major impediment to U.S. exports. Import tariffs on consumer-ready food products are the highest in the ASEAN region, ranging between 30 and 60 percent (USDA-FAS, 2003). Tariffs on meats, fresh fruits and vegetables are also high. Even after tariff reduction of 33 to 50 percent under the WTO provisions, duties on most items will remain in the range of 30 to 40 percent by the year 2004 (US Dept. of Commerce, 2002). If Thailand's tariffs and non-tariff barriers are substantially reduced and the economy regains its pre-crisis strength, annual U.S. agricultural exports are estimated to reach $1 billion (USDA-FAS, 2003).

Labeling

Labeling requirements depend on the purpose of the importation. Frozen, fresh, and processed foods imported for sale in the country must have labels printed in the Thai language, which can be affixed on the original labels. Failure to comply with labeling regulations may result in product seizure at the customs. Manufacturers of food products importing food ingredients for industrial use and food service outlets are exempt from local labeling regulations (USDA-FAS, 2000).

Labels should include information on the product's brand, net contents in metric system, date of manufacture and expiration, ingredients, manufacturer, registration number, and storage instructions, among others. Food products that make nutritional claims are required to include nutritional information on their labels. Specialty foods are

subject to specific labeling requirements. Packaged and processed foods ready for cooking and consumption require special labeling (USDA-FAS, 2000).

Custom Duties

All importers must present relevant documents to obtain clearance at the port of entry. These documents include an invoice, packing list, import declaration and bill of lading. Tariff duties and business taxes have to be paid after documents are found to be in order. Prepackaged food products require additional inspections, such as a phytosanitary certificate (USDA-FAS, 2000).

Intellectual Property

Foreign patents are not recognized in Thailand and enjoy no protection against infringement. Patents need to be registered in Thailand to receive any protection. Foreign companies that enter into a licensing agreement with a Thai company can have their patent rights enforced by law. Trademarks that are similar or identical to an already registered mark cannot be registered. The law also provides for revocation of a trademark if it can be proved that that trademark cannot be legally registered (USDA-FAS, 2000).

Infrastructure and Retail Facilities

Packaging and shelf life present formidable challenges to exporters. Cold storage facilities and controlled- temperature delivery trucks are few in Thailand, a tropical country with hot and humid climate. Therefore, packaging of food items merits extra attention (USDA-FAS, 2000).

However, food retailing in Thailand has witnessed a spurt of activity after 1995, with the entry of major European retailers, including France's Carrefour, Britain's Tesco, and Ahold of the Netherlands. Sales at organized retail stores account for a small proportion of total retail sales, presenting huge opportunities for growth.

MEXICO

Mexico is a mid-sized country with a population of around 100 million. It is a free market economy that grew at 5.5 percent annually during the late 1990s (USDA-FAS, 2003). Rising incomes and falling tariffs under NAFTA have had an unparalleled impact on U.S.-Mexico trade. Bilateral trade grew from $81 billion in 1993 to $233 billion in 2002. Two-thirds of Mexico's overall imports and 74 percent of Mexico's agricultural imports came from the United States. Mexico continues to be an attractive market and provides easy access for U.S. agricultural exports (USDA-FAS, 2003). Mexico is currently pursuing trade agreements with other Latin American countries and has signed a free trade agreement with the European Union (CIA).

Import Policy

Tariffs

Import duties on almost U.S. products were lowered to zero by 2003. Most of the eligible products under NAFTA are now allowed duty-free and unrestricted entry into Mexico (USDA-FAS. 2003).

Food Laws

Mexico's regulations for imported food products are based on a fixed coding system. Standards are either mandatory (NOM) or voluntary (NMX). Phytosanitary and other technical barriers, and labeling requirements can sometimes cause delays at the point of entry owing to frequently changing import regulations (USDA-FAS, 2003).

Key Figures

Population: 103,400,165 (July 2002 est.)

Age structure:
14 years: 32.8% (male 17,310,230; female 16,630,935)
15-64 years: 62.7% (male 31,552,877; female 33,246,668)
65 years and over: 4.5% (male 2,069,826; female 2,589,629) (2002 est.)

Per Capita Food Expenditures (U.S. $)- 1,620

Consumer-Ready Food Product Imports (Million U.S.$)- 995

GDP: purchasing power parity - $920 billion (2001 est.)

GDP - real growth rate: -0.3% (2001 est.)

GDP - per capita: purchasing power parity - $9000 (2001 est.)

Population below poverty line: 40% (2001 est.) 27% (1998 est.)

Household income or consumption by percentage share:
lowest 10%: 1.6%
highest 10%: 41.1% (2001)

Inflation rate (consumer prices): 6.5% (2001 est.)

Agriculture - products: corn, wheat, soybeans, rice, beans, cotton, coffee, fruits.

Exports: $159 billion (f.o.b., 2001)

Exports - commodities: manufactured goods, oil and oil products, silver, fruits, vegetables, coffee, cotton

Exports - partners: US 88.4%, Canada 2% (2001 est.)

Imports: $168 billion (f.o.b., 2001)

Imports - commodities: metal-working machines, steel mill products, agricultural machinery, electrical equipment, car parts for assembly.

Imports - partners: US 68%, Japan 4.7%, Germany 3.6%, Canada 2.5% (2001 est.)

Exchange rates: Mexican pesos (Mex$) per US$1 - 9.1614 (January 2002)

Source: CIA World Factbook, 2003

Labeling

Mexican labeling requirements for prepackaged and non-alcoholic beverages are as stringent as the United States', especially with respect to consumer information. Labels must be written in Spanish, providing clear and adequate information to protect consumers against misleading or false claims. Meat and poultry are subject to additional labeling requirements. Labels must provide information on the product's brand, net contents, list of ingredients, expiration date, country of origin, and name and address of manufacturer, among others (USDA-FAS, 2001).

Authorized private verification agencies conduct pre-inspection of product labels or packages prior to issuing a "certificate of compliance." Such agencies also conduct physical inspection of pre-labeled products entering the country (USDA-FAS, 2001).

Retail Facilities

There are around 4,250 food retail stores in Mexico, including major retail chains and government and convenience stores. Retailers invested around U.S.$1.2 billion in 2002 on new outlets and more floor space. Supermarkets and department stores remain the best venues for U.S. exporters for sale of their products. Traditional retail stores serve a huge clientele but offer little potential for selling imported products.

Intellectual Property

Trademarks may be registered with the designated agency after fulfilling the basic requirements for registration. However, trademarks unused for three consecutive years

may become null and return to the public domain. Names and symbols that are part of Mexico's national heritage cannot be registered as trademarks.

Outlook

Mexican consumers are price-sensitive. Therefore, low-price products from Mexican and third country manufacturers continue to pose a threat to the U.S. exports. Mexico has a large food processing sector that manufactures dairy products, beer, wine, preserved fruits and vegetables, juices, soft drinks, poultry and a variety of other products of common use (USDA-FAS, 2003).

The U.S. continues to be the major supplier of imported food and agricultural products to Mexico, having captured an overwhelming majority of the Mexican import market. European exporters, for historical and cultural reasons, enjoy a larger market share for some gourmet items, particularly wines and cheeses.

Demographic changes in Mexico are encouraging. Women continue to join the workforce in larger numbers, which will boost demand for consumer-ready foods. 44.6 percent of women, 15 years or older, were employed in 2000 (USDA-FAS, 2003). In addition, Mexico's population is becoming increasingly urban and younger (USDA-FAS, 2003).

Local producers continue to be the main suppliers of consumer ready food products. Competition from Europe has increased recently due to the Mexico-European Union Free Trade Agreement, although meat and dairy products were excluded from the treaty. Canada, Australia and New Zealand are major suppliers of meat and dairy

products (USDA-FAS, 2003). Sale of snack foods and other high value U.S. food products fell almost 50 percent in 2002. Overall, sales of U.S. consumer-oriented food products fell 13 percent in 2002, although some products such as meats and fresh vegetables registered strong growth (USDA-FAS, 2003).

TURKEY

Turkey's population is around 70 million and sixty percent of this population lives in urban areas. Half of the country's population is under the age of twenty-five and unemployment of over 10 percent continues to be a serious problem. Turkey's economy expanded in 2002 after two years of negative growth. Inflation was also significantly lower than the average inflation rate during the past decade (USDA-FAS, 2002).

The E.U. is Turkey's principal trading partner. Turkey and the E.U. formed a customs union in 1996, relating to trade in industrial products and processed agricultural goods. In 2002, U.S. agricultural exports to Turkey were worth $730 million, up nearly 30 percent from the previous year. However, the U.S. exports predominantly bulk commodities to Turkey and its share of the consumer-oriented foods market is barely 5 percent (USDA-FAS, 2002).

Import Policy

Food Laws

Turkey employs stricter standards and regulations for some imported food products than for comparable domestic products. Regulations relating to processed foods are subject to strict and frequently changing technical requirements in order to protect consumers and "strategic" and "national" products (USDA-FAS, 2003). Three related laws and regulations govern the Turkish food industry and food imports. Food laws and regulations were formulated in accordance with Turkey's WTO

Key Figures

Population: 67,308,928 (July 2002 est.)

Age structure:
0-14 years: 27.8% (male 9,520,030; female 9,178,423)
15-64 years: 65.9% (male 22,552,253; female 21,827,002)
65 years and over: 6.3% (male 1,946,523; female 2,284,697) (2002 est.)

Population growth rate: 1.2% (2002 est.)

GDP: purchasing power parity – $468 billion (2002 est.)

GDP - real growth rate: 4.2% (2002 est.)

GDP - per capita: purchasing power parity - $7,000 (2002 est.)

Population below poverty line: NA%

Household income or consumption by percentage share:
lowest 10%: 2.3%
highest 10%: 32.3% (1994)

Inflation rate (consumer prices): 45.2% (2002)

Agriculture - products: tobacco, cotton, grain, olives, sugar beets, pulse, citrus.

Exports: $37.6 billion f.o.b. (2002)

Exports - commodities: apparel 24.8%, foodstuffs 12.8%, textiles 12.7%, metal manufactures 8.8%, transport equipment 8.5% (2000)

Exports - partners: Germany 17%, US 10%, Italy 7%, UK 7%, France 6% (2001 est.)

Imports: $43.9 billion c.i.f. (2002 est.)

Imports - commodities: machinery 25.4%, chemicals 13.4%, semi-finished goods 13.7%, fuels 14.0%, transport equipment 12.4% (2000)

Imports - partners: Germany 13.3%, Italy 8.6%, Russia 8.4%, US 8.1%, France 5.7%, UK 4.5% (2001 est.)

Exchange rates: Turkish liras per US dollar - 1,223,140 (January 2002)

Source: CIA World Factbook, 2003

obligations as well as Food and Agriculture Organization (FAO) and World Health Organization (WHO) guidelines. Turkey also revised its Food Codex to conform to E.U. food regulations after signing a customs union agreement with the E.U. in 1995. All imported food products must conform to the Codex. Food laws regulate food items at production, distribution, wholesale and retail levels. All packaged products are issued a license (registration) number after laboratory tests are conducted. Thereafter, inspections are conducted at entry, wholesale and retail levels. All products require import permits. Permits for processed foods are required for each shipment and, in some cases, expire after six months (USDA-FAS, 2003).

Labeling and Packaging

Imported food products may retain their original labels but a sticker in Turkish must be affixed. Labels must provide information on the product, the manufacturer, the importer, country of origin, expiration date, net weight and volume, list of ingredients and additives, and import license number, among others. Imported food items containing more than 1.2 percent alcohol should disclose the exact alcoholic content on their labels. Products containing reduced fat or energy content and other special features are allowed to make such claims on their labels. Food items are allowed in packaging of any type or size (USDA-FAS, 2003). Standards for poultry and meat imports are complex. Inspection of slaughterhouses of importers is required and the entire cost of such an inspection has to be borne by the importer.

Sanitary and Phytosanitary (SPS) Regulations

All imports of consumer-ready food products should accompany a sanitary or phytosanitary certificate from the food inspection agency of the country of origin, stating that it meets all its standards, is fit for human consumption and can be freely sold in the country of origin (USDA-FAS, 2003).

Customs and Inspections

Importers are required to present import documents, including import permits, phytosanitary certificates and bills of lading at the port of entry. If the documents are found to be in order, laboratory tests are conducted to ensure that the product meets the standards of Turkish food regulations and the information provided by the importer is accurate (USDA-FAS, 2003).

Intellectual Property

While registration of trademarks is convenient, enforcement is lacking. Additional legislation intended to improve enforcement of applicable laws and penalties for copyright infringement is in the offing (USDA-FAS, 2003).

Outlook

Turkey's consumers spend almost half of their incomes on food. The food market is worth $23 billion and its retail food sector is growing and modernizing. However, the majority of the market is composed of locally produced goods. A few supermarkets and hypermarkets do operate in large cities such as Istanbul, Izmir and Ankara, but the

majority of consumers buy food products at small neighborhood outlets (USDA-FAS, 2002).

U.S. exports have not reached their potential due to inadequate promotional efforts and the market holds good prospects for U.S. food exports for several reasons. Firstly, there is a growing demand for specialized products such as diabetic and diet foods, ready-to-eat foods and frozen food, most of which are imported. Secondly, U.S. food products enjoy a reputation for quality and value. The expanding supermarkets and hypermarkets sector will also open up new opportunities for branded imported food products. However, U.S. exporters face stiff competition from their European counterparts whose transportation costs are much lower (USDA-FAS, 2002).

INDONESIA

Indonesia is the world's fourth largest country, with a population of more than 200 million, half of them under the age of twenty-five. The upper and middle-income class is estimated at around 40 million (USDA-FAS, 2002). Indonesia was a top ten market for U.S. agricultural exports in 2001, with imports valued at around $1.2 billion.

Import Policy

Import Regulations

Import regulations pertaining to agricultural and food products are undergoing fundamental change in Indonesia. A comprehensive law governing production, safety and sanitation, labeling, import and distribution of food products was formulated in 1996 but enforcement regulations were enacted only in 2000. Government controls on food import and distribution have waned considerably in recent years, creating a more favorable environment for trade. Tariffs are also being lowered (USDA-FAS, 2000).

Importation of most food products no longer requires a license. However, all imported processed food products must be registered, except those with a shelf life of less than 7 days at room temperature. Certain products like additives require additional approvals. All imported food products must carry a health or safety certificate from the country of origin. Import procedures are simple to follow but require attention to details. Minor errors or omissions can lead to agonizing delays. Import documents may be prepared in English and should be concise, complete and require attention to details. Minor errors or omissions can lead to agonizing delays. Import documents may be

Key Figures

Population: 231,328,092 (July 2002 est.)

Age structure:
0-14 years: 30.57% (male 34,932,102; female 33,783,603)
15-64 years: 64.96% (male 72,889,994; female 73,124,821)
65 years and over: 4.47% (male 4,413,268; female 5,640,422) (2000 est.)

Population growth rate: 1.54% (2002 est.)

GDP: purchasing power parity - $687 billion (2001 est.)

GDP - real growth rate: 3.3% (2001 est.)

GDP - per capita: purchasing power parity - $3,000 (2001 est.)

Population below poverty line: 27% (1999)

Household income or consumption by percentage share:
lowest 10%: 4%
highest 10%: 26.7% (1999)

Inflation rate (consumer prices): 11.5% (2001 est.)

Agriculture - products: rice, cassava (tapioca), peanuts, rubber, cocoa, coffee, palm oil, copra; poultry, beef, pork, eggs

Exports: $56.5 billion (f.o.b., 2001 est.)

Exports - commodities: oil and gas, plywood, textiles, rubber

Exports - partners: Japan 23.4%, US 13.8%, Singapore 10.7%, South Korea 7%, China 4.5%, Malaysia 3.2% (2000 est.)

Imports: $38.1 billion (f.o.b., 2001 est.)

Imports - commodities: machinery and equipment; chemicals, fuels, foodstuffs

Imports - partners: Japan 16.3%, Singapore 11.4%, US 10.2%, South Korea 6.3%, China 6.1%, Australia 5.1% (2000 est.)

Exchange rates: Indonesian rupiahs per US dollar - 10,377.3 (January 2002)

Source: CIA World Factbook, 2003

prepared in English and should be concise, complete and simple. Custom clearance can be secured in two days but incomplete documents can result in delays of several weeks.

Labeling and Packaging

Labeling laws for food products are broad in scope and are being revised. They apply primarily to packaged foods. Food labels must be written in the Indonesian language and should be easily read and understood. Labels must include the product's name, weight or volume in metric units, use by date, production code, registration number, name and address of the manufacturer or importer and whether the food conforms to Islamic standards. Products containing pork must state that on their labels prominently in a prescribed manner. Islamic traditions require that food products from an animal origin must conform to "Halal" purity standards.

Nutritional specifications are not mandatory. Any misleading information may result in criminal prosecution. Packaging should conform to safety concerns and prevent contamination. However, enforcement of labeling regulations is lacking (USDA-FAS, 2000)

Special Regulations

The Food Act of 1996 mandates that any food product containing GMO must be proven to be safe for human consumption. Labels must include the *words Genetically Engineered Food*. Islamic religion and culture prohibits consumption of alcohol. Hence sale of such beverages is strictly controlled and subject to high excise duties.

Intellectual Property

Protection of intellectual property is inadequate. However, trademarks may be registered to ensure some degree of protection. Laws protecting copyrights and trademarks are being revised in order to meet world standards.

Infrastructure

Transport and storage infrastructure in Indonesia is limited and primitive even by Asian standards. Indonesia's tropical conditions result in spoilage of food products due to inadequate storage facilities.

Outlook

Indonesian consumers are extremely price-conscious and the state of the economy influences purchasing decisions. Infrastructure problems, such as the lack of modern food retail stores, persist. Few households own appliances. In Jakarta, an estimated 43 percent of households have refrigerators, 27 percent have gas stoves and only 10 percent own microwave ovens. However, demand for convenience-oriented food products is likely to grow with more urban women joining the workforce (USDA-FAS, 2002).

MALAYSIA

Malaysia's population is around 25 million and it is one of the most developed nations in Southeast Asia. The middle to upper income group makes about 61% of its population. Malaysia is politically and economically stable and open to foreign trade. The economy has been growing at a healthy rate, with low inflation (USDA-FAS. 2003).

Import Policy

Food Laws

The Food Act of 1983 and the Food Regulations Act of 1985 govern food standards, food hygiene, food import and export, food advertisements and laboratory tests. Since the majority of the population is Muslim, strict labeling laws have been enacted for products containing pork and alcohol. However, such content and labeling requirements are not restrictive in nature (USDA-FAS, 2001).

Labeling

Labels on imported food products should be either in Bhasa Malaysia or English. Labels should clearly mention the principal ingredients, weight and volume, expiry date, storage instructions, information on the manufacturer and the importing agent, among others. Labels must clearly mention if the product contains beef, pork or alcohol. Meat products should indicate the abattoir, packaging plant, date of production and the type of slaughter (Halal or not). Nutritional foods must indicate its special contents (USDA-FAS, 2001).

Key Figures

Population: 22,662,365 (July 2002 est.)

Age structure:
14 years: 34.1% (male 3,974,532; female 3,753,407)
15-64 years: 61.6% (male 6,995,451; female 6,969,435)
65 years and over: 4.3% (male 424,776; female 544,764) (2002 est.)

Population growth rate: 1.91% (2002 est.)

GDP: purchasing power parity - $200 billion (2001 est.)

GDP - real growth rate: 0.3% (2001 est.)

GDP - per capita: purchasing power parity - $9,000 (2001 est.)

Population below poverty line: 8% (1998 est.)

Household income or consumption by percentage share:
lowest 10%: 1.7%
highest 10%: 38.4% (1997 est.)

Inflation rate (consumer prices): 1.5% (2001 est.)

Agriculture - products: Peninsular Malaysia - rubber, palm oil, rice; Sabah - subsistence crops, rubber, timber, coconuts, rice; Sarawak - rubber, pepper; timber

Exports: $94.4 billion (f.o.b., 2001 est.)

Exports - commodities: electronic equipment, petroleum and liquefied natural gas, wood and wood products, palm oil, rubber, textiles, chemicals

Exports - partners: US 20%, Singapore 17%, Japan 14%, Hong Kong 4.5%, Netherlands 4.5%, China 4%, Thailand 4% (2001 est.)

Imports: $76.9 billion (f.o.b., 2001 est.)

Imports - commodities: electronics, machinery, petroleum products, plastics, vehicles, iron and steel and iron and steel products, chemicals

Imports - partners: Japan 20%, US 17%, Singapore 13%, Taiwan 5%, China 4%.

Exchange rates: ringgits (M$) per US$1 - 3.8000 (January 2002)

Source: CIA World Factbook, 2003

Inspection and Testing

Food products entering Malaysia are inspected on a random basis at the ports of entry to ensure food safety and compliance with prescribed standards and regulations. Food products that are found to be unsafe for human consumption are likely to be destroyed. Meat, milk and pork products are subject to veterinary inspections, and then random samples are taken for further laboratory tests to ensure product safety, hygiene, and suitability for human consumption. All meat and livestock products must be "Halal" certified. Foreign slaughterhouses of importers must be inspected and approved by the Malaysian veterinary and religious authorities prior to issuance of import permits. Beef imports must carry a certificate indicating that the product is free of diseases such as BSE and Anthrax (USDA-FAS, 2001).

Import Procedure

Importation of alcoholic beverages, animal and plant products, health and medicinal products, meat and meat products, milk products, and poultry products require licenses and permits (USDA-FAS, 2001). All goods, whether subject to import duties or not, must declare the goods and packages, value, weight, quantity, country of origin and produce bills of lading, prior to clearance at the customs.

Intellectual Property

The Trademarks Act of 1976 provides protection against infringement. Trademarks and brand names can be registered for protection (USDA-FAS, 2001).

Outlook

The Malaysian food and beverage market is served by both local and imported products and is sophisticated by regional standards. Total retail sales in the organized sector, including non-food products, were estimated at around U.S. $12 billion in 2002. The non-organized retail sector, such as wet markets, accounts for 50 percent of total food and beverage sales. Strong economic growth in the late 1980s and early 1990s transformed consumption patterns. Urban consumers prefer to shop in large stores, which provide convenience and better product selections (USDA-FAS. 2003).

EGYPT

Egypt's population is about 68 million and the official unemployment rate is 9 percent. In January 2003, the Government allowed its currency to float. Prices of many food and feed items, particularly imports, increased 20 to 30 percent as a result of the devaluation of its currency (USDA-FAS, 2003).

The E.U. and Egypt signed an agreement in 2001, which is designed to substantially reduce or eliminate import tariffs on most products, including agricultural products, over the next 12-15 years. Its implementation will may disadvantage some U.S. agricultural products, particularly value added products (USDA-FAS, 2003).

Import Policy

Food Laws

The process of inspection and certification of imported goods was centralized in year 2000. The central bank of Egypt requires 100 percent cash deposit to open letters of credit for importation of consumer ready products. This law has impacted imports of consumer ready products since many importers of such products are small and medium companies that lack sufficient finances (USDA-FAS, 2001).

Egyptian regulations accord similar treatment to imported food products as domestic food products, but in reality imported products are often discriminated against. Product standards are not clearly defined. Besides, laws are undergoing frequent changes and often lead to confusion (USDA-FAS, 2001). Importation of dietary products requires

Key Figures

Population: 70,712,345 (July 2002 est.)

Age structure:
0-14 years: 33.96% (male 12,292,185; female 11,721,469)
15-64 years: 62.18% (male 22,190,637; female 21,775,504)
65 years and over: 3.86% (male 1,191,091; female 1,541,459) (2002 est.)

Population growth rate: 1.66% (2002 est.)

GDP: purchasing power parity - $258 billion (2001 est.)

GDP - real growth rate: 2.5% (2001 est.)

GDP - per capita: purchasing power parity - $3,700 (2001 est.)

Population below poverty line: 22.9% (FY95/96 est.)

Household income or consumption by percentage share:
lowest 10%: 4.4%
highest 10%: 25% (1995)

Inflation rate (consumer prices): 2.3% (2001)

Agriculture - products: cotton, rice, corn, wheat, beans, fruits, vegetables

Exports: $7.1 billion (f.o.b., 2001 est.)

Exports - commodities: crude oil and petroleum products, cotton, textiles, chemicals

Exports - partners: EU 43% (Italy 18%, Germany 4%, UK 3.2%), US 15%, Middle East 11%, Asian countries 9%, (2000)

Imports: $16.4 billion (f.o.b., 2001 est.)

Imports - commodities: machinery and equipment, foodstuffs, chemicals.

Imports - partners: EU 36% (Germany 8%, Italy 8%, France 6%), US 18%, Asian countries 13%, Middle East 6% (2000)

Debt - external: $29 billion (2001 est.)

Exchange rates: Egyptian pounds per US$1 - market rate - 4.5000 (January 2002)

Source: CIA World Factbook, 2003

a license. All food items, except those that are on prohibited list, can be freely imported. Imported meat and poultry products must conform to the Islamic "halal" practices (USDA-FAS, 2001).

Tariffs

Egypt's tariff rates on several products are higher than that of other developing countries. Tariff rates on poultry and beer are as high as 80 percent and 1200 percent respectively. However, alcoholic beverages imported by the tourism industry are subject to 300 percent duty (USDA-FAS, 2001).

Inspection and Testing

All imports are subject to tests and analyses upon arrival at the port of entry as per the specifications and regulations. Laboratory tests and veterinary inspections are conducted for product safety, in addition to checks for compliance with labeling and product regulations (USDA-FAS, 2001).

Labeling

Egypt employs restrictive labeling requirements for imported food products. Labels must be printed in Arabic. English may be used for production/expiration dates. Meat and poultry products are subject to additional requirements. All labels must include information on the manufacturer, importer, brand, country of origin, production and expiration dates, storage instructions, net weight or volume, and, in the case of meat and

poultry, compliance with “Halal” standards. Processing of meat and poultry other than in the country of origin is prohibited (USDA-FAS, 2001).

Laws require insertion of labels inside the packages of imported food products, providing information on the importer in Arabic. This law forces manufacturers to produce food items separately for the Egyptian market, which increases production costs. Meat and poultry products should be packaged in sealed bags. Labels must be inserted inside as well as placed on the outside of each carton. Shelf-life requirements are stricter than international standards. Exporters of food products to Egypt find government regulations too rigid (USDA-FAS, 2001).

Import Procedures

Custom formalities normally take two weeks to be completed and include presentation of a bill of lading, commercial invoice, packing lists, weight list, import permit and food certificates, among others (USDA-FAS, 2001).

ARGENTINA

Argentina's population is around 37 million, of which 90 percent lives in urban areas. One third of the country's population resides in the capital city of Buenos Aires and its suburbs, and accounts for about 50 percent of the country's consumption (USDA-FAS, 2004). Notwithstanding steady economic growth over the past decade, Argentina's economy suffered from high inflation, external debt, capital flight, and budget deficits. The financial situation deteriorated in 2001 with massive public withdrawals from bank deposits following a decline in consumer and investor confidence (CIA).

Argentina abandoned the peso's peg to the dollar in 2002 and floated its currency. Peso's value plunged and inflation soared (CIA). As a result, imports of foods and beverages dropped considerably from $1 billion to $350 million that year (USDA-FAS, 2004). However, the economy stabilized somewhat by the middle of 2002. Riding high on record exports, the economy gradually recovered in 2003, with output growing 5.5 percent and inflation falling to 4.2 percent (CIA).

Import Policy

Food Laws

Food laws in Argentina are being gradually replaced to reflect Mercosur standards, which are based on European Union (EU), FDA, and CODEX regulations. There are three official agencies that regulate sanitary, quality, packaging and transportation of food products in the country (USDA-FAS, 2002).

Key Figures

Population: 37,812,817 (July 2002 est.)

Age structure:

0-14 years: 26.3% (male 5,090,046; female 4,854,761)
15-64 years: 63.2% (male 11,968,135; female 11,937,709)
65 years and over: 10.5% (male 1,636,332; female 2,325,834) (2002 est.)

Population growth rate: 1.13% (2002 est.)

GDP: purchasing power parity - $391 billion (2002 est.)

GDP - real growth rate: -14.7% (2002 est.)

GDP - per capita: purchasing power parity - $10,200 (2002 est.)

Population below poverty line: 37% (2001 est.)

Inflation rate (consumer prices): 4% (2001 est.)

Unemployment rate: 25% (yearend 2001)

Agriculture - products: sunflower seeds, lemons, soybeans, grapes, corn, tobacco, peanuts, tea, wheat; livestock

Exports: $26.7 billion f.o.b. (2001)

Exports- commodities: edible oils, fuels and energy, cereals, feed, motor vehicles

Exports - partners: Brazil 26.5%, US 11.8%, Chile 10.6%, Spain 3.5% (2000)

Imports: $20.3 billion f.o.b. (2001)

Imports - commodities: machinery and equipment, motor vehicles, chemicals

Import Partners: Brazil 25.1%, US 18.7%, Germany 5%, China 4.6% (2000)

Exchange rates: Argentine pesos per US dollar - 1.33325 (January 2002)

Source: CIA World FactBook, 2003.

Imported processed foods from the U.S., E.U., Japan, Switzerland and New Zealand are deemed to meet the requirements of Argentinean laws if they meet the standards for domestic consumption in their own countries. Regulatory agencies may carry out inspections of foreign production facilities if there is any possibility of risk to human health (USDA-FAS, 2002).

Labeling and Packaging

Fresh, chilled, frozen and by-products of animal, plant and sea origin must have a label affixed to the package. Labels must be in Spanish and include information on the importer, the country of origin, minimum durability and storage specifications, and ingredients, among others. Imported processed foods, and alcoholic and non-alcoholic beverages imported from the U.S. can retain their original package and labels but a sticker label, providing detailed information, must be affixed. Labels on wine bottles imported into Argentina must also provide similar information in Spanish. Information on nutritional contents is acceptable but not required (USDA-FAS, 2002).

Argentinean regulations do not specify any special packaging or container size requirements. There is no waste disposal or recycling regulation affecting imported food products (USDA-FAS, 2002).

Organic Products

Importation of organic products is allowed only from such countries whose organic production standards have been evaluated and approved. Organic products must be certified prior to their importation. Argentina does not have special labeling requirements

for biotech foods despite growing global demand for such requirements (USDA-FAS, 2002).

Import procedures

Every product must undergo "pre-shipment inspections" in the country of origin before it can be shipped to Argentina. International certification companies appointed by the government conduct such inspections to preclude under-billing of products (USDA-FAS, 2002).

Import permits are required for importation of products and by-products of animal origin. All registered importers can procure such permits. Importation procedures have to be completed within 15 days. Importation of U.S. products and by-products of animal origin is restricted to U.S. plants approved by the designated federal U.S. authority, and must carry a health certificate. Importation of live animals and processed meat products are subject to risk assessment to guard against diseases. Products are inspected at the port of entry to verify phytosanitary certificates (USDA-FAS, 2002).

Retail Sector

Over 70 percent of Argentina's imported food and beverages are sold at hypermarkets, superstores, and supermarkets. Several international retail chains such as Carrefour, Casino, Wal-Mart, Jumbo and Makro operate in Argentina. Over the last few years, large retail chains have expanded to the interior areas (USDA-FAS, 2004).

Outlook

One-third of Mexico's population has enough purchasing power to make regular purchases of imported food products. The upper-income group, with an annual household income of over U.S.$12,000, is roughly 5 percent of the country's population, and the middle-income group, with an annual household income of U.S.$6,500, makes up 28 percent of the population (USDA-FAS, 2004).

Imports of high-value food products in 2004 are expected to increase to about $500 million owing to economic recovery and stable exchange rates (USDA-FAS, 2004). According to USDA-FAS forecasts, 2004 will witness the recovery of some imported line products, fewer brands and more private labels, and import substitution with locally manufactured value-oriented products. Ethnic, kosher, and organic foods are gradually gaining acceptance. Opportunities are to be had for some U.S. consumer-ready food products owing to their high quality and image (USDA-FAS, 2004).

APPENDIX THREE

10-Country Data for Fixed Effects Model

CHINA

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	58.860906	984.736	54572.65758	1.498	7737	0	19.6
1981	21.061178	997.001	58735.24664	1.705	7737	0	20.28
1982	2.04992	1012.49	63957.20154	1.893	7737	0	20.96
1983	1.47729	1027.293	71685.65429	1.976	7737	0	21.64
1984	8.999549	1040.6	86621.93098	2.320	7737	0	22.32
1985	3.550013	1054.727	108285.2667	2.937	7737	0	23
1986	5.959111	1070.083	123237.24	3.453	7737	0	23.88
1987	27.562515	1088.08	144500.7379	3.722	7737	0	24.76
1988	21.243467	1105.976	180326.0527	3.722	7737	0	25.64
1989	17.907	1122.566	204254.2947	3.765	7737	0	26.52
1990	21.789	1138.895	224048.9294	4.783	7737	0	27.4
1991	30.674	1153.891	261131.7091	5.323	7737	0	28.2
1992	46.49	1167.595	321774.3116	5.515	7737	0	29
1993	60.846	1180.627	418365.3793	5.762	7737	0	29.8
1994	203.967	1193.537	564829.0637	8.619	7737	0	30.6
1995	448.168	1206.034	706384.852	8.351	7737	0	31.4
1996	240.602	1218.257	820010.4512	8.314	7737	0	32.28
1997	330.488	1230.299	899469.2671	8.289	7737	0	33.16
1998	508.749	1241.891	946369.0259	8.279	7737	0	34.04
1999	279.026	1252.766	991331.2348	8.279	7737	0	34.92
2000	313.845	1262.474	1079947.473	8.279	7737	0	35.8
2001	381.071	1271.085	1164957.79	8.277	7737	0	36.76
2002	434.337	1279.161	1250645.154	8.277	7737	0	37.72

INDIA

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	247.32678	687.029	32129.02282	7.872	8665	0	23.1
1981	138.527415	701.413	37714.49559	8.680	8665	0	23.34
1982	47.639506	716.092	42024.75554	9.485	8665	0	23.58
1983	69.605476	731.028	48882.98325	10.124	8665	0	23.82
1984	190.604749	746.654	54934.1679	11.410	8665	0	23.06
1985	58.711682	762.384	62360.4734	12.288	8665	0	24.3
1986	52.663069	777.972	69774.98465	12.629	8665	0	24.54
1987	90.105101	793.691	79084.17677	12.967	8665	0	24.78
1988	166.541777	809.575	94232.72065	13.997	8665	0	25.02
1989	70.88	825.563	108527.4894	16.296	8665	0	25.26
1990	76.528	841.655	126557.9988	17.573	8665	0	25.5
1991	73.975	857.375	145365.9655	22.888	8665	0	25.72
1992	106.204	873.193	166301.7845	25.917	8665	0	25.94
1993	109.411	889.282	191185.8596	30.492	8665	0	26.16
1994	102.339	905.638	224715.1264	31.373	8665	1	26.38
1995	102.435	922.077	262999.2672	32.543	8665	1	26.6
1996	96.334	938.373	303049.2346	35.418	8665	1	26.82
1997	133.715	954.606	338759.7849	36.464	8665	1	27.04
1998	185.268	970.75	387514.6259	41.375	8665	1	27.26
1999	117.699	986.789	429366.2608	43.095	8665	1	27.48
2000	159.268	1002.708	464600.1776	45.087	8665	1	27.7
2001	133.42	1018.504	496026.0554	47.238	8665	1	27.9
2002	166.417	1034.173	537864.7237	48.612	8665	1	28.1

MALAYSIA

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	18.865607	13.764	14285.64556	2.182	8507	1	42
1981	24.717566	14.097	15439.31269	2.302	8507	1	42.78
1982	28.962896	14.442	16770.11699	2.334	8507	1	43.56
1983	40.303506	14.793	18743.01017	2.323	8507	1	44.34
1984	34.784334	15.157	21318.03181	2.348	8507	1	45.12
1985	36.924625	15.545	20760.65383	2.477	8507	1	45.9
1986	26.62962	15.941	19185.98657	2.590	8507	1	46.68
1987	27.509032	16.332	21338.15754	2.514	8507	1	47.46
1988	35.771115	16.729	24307.89519	2.626	8507	1	48.24
1989	35.595	17.118	27692.89495	2.707	8507	1	49.02
1990	40.303	17.504	31337.10611	2.704	8507	1	49.8
1991	54.592	17.906	35558.68466	2.752	8507	1	50.58
1992	62.124	18.32	39653.15742	2.548	8507	1	51.36
1993	70.197	18.748	45313.94966	2.587	8507	1	52.14
1994	92.227	19.18	51436.84709	2.618	8507	1	52.92
1995	106.33	19.611	58545.26755	2.510	8507	1	53.7
1996	118.838	20.045	66771.84484	2.519	8507	1	54.44
1997	137.772	20.476	74156.58056	2.884	8507	1	55.18
1998	108.26	20.912	74537.63482	3.935	8507	1	55.92
1999	120.172	21.354	79036.84164	3.800	8507	1	56.66
2000	131.187	21.793	89659.47445	3.800	8507	1	57.4
2001	168.871	22.229	92127.82555	3.800	8507	1	58.08
2002	165.76	22.662	98622.46967	3.800	8507	1	58.76

THAILAND

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	19.681652	47.026	21055.51342	20.478	8557	1	17
1981	22.653158	47.941	23599.50295	21.903	8557	1	17.18
1982	19.076134	48.837	25690.47763	23.000	8557	1	17.36
1983	25.015576	49.709	27127.13544	23.000	8557	1	17.54
1984	25.972446	50.553	25504.43023	23.685	8557	1	17.72
1985	21.950188	51.367	24155.63124	27.052	8557	1	17.9
1986	21.823627	52.16	25393.95131	26.280	8557	1	18.06
1987	20.208341	52.946	27739.97209	25.698	8557	1	18.22
1988	37.993409	53.725	31365.74861	25.292	8557	1	18.38
1989	37.54	54.493	35349.70083	25.708	8557	1	18.54
1990	41.145	55.25	38526.04582	25.594	8557	1	18.7
1991	52.522	55.982	40504.33672	25.529	8557	1	18.82
1992	57.948	56.718	42466.05109	25.401	8557	1	18.94
1993	77.413	57.449	44806.4755	25.318	8557	1	19.06
1994	78.103	58.173	49215.60112	25.119	8557	1	19.18
1995	81.04	58.894	54370.79487	24.915	8557	1	19.3
1996	95.716	59.608	59926.96863	25.357	8557	1	19.4
1997	101.047	60.311	65583.41547	32.120	8557	1	19.5
1998	67.196	61.003	71352.69705	40.796	8557	1	19.6
1999	75.358	61.684	70588.62416	37.918	8557	1	19.7
2000	83.378	62.352	74732.31343	40.353	8557	1	19.8
2001	99.499	63.007	124989.722	44.435	8557	1	20
2002	126.03	63.645	130380.5692	42.951	8557	1	20.2

INDONESIA

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	14.076545	154.379	5807.979286	627.0	8440	1	22.2
1981	27.00854	157.877	6936.934253	632.4	8440	1	23
1982	25.270809	161.354	7438.633599	663.7	8440	1	23.8
1983	20.857909	164.807	9216.928131	910.5	8440	1	24.6
1984	20.511753	168.231	10810.09544	1029.3	8440	1	25.4
1985	13.719545	171.596	11684.76957	1112.2	8440	1	26.2
1986	15.683434	174.871	12757.82034	1299.3	8440	1	27.08
1987	15.975739	178.09	15381.61464	1644.8	8440	1	27.96
1988	16.125001	181.338	17771.70313	1689.8	8440	1	28.84
1989	20.256	184.648	21323.50888	1772.1	8440	1	29.72
1990	23.348	188.005	25038.22295	1848.1	8440	1	30.6
1991	32.984	191.407	29681.22443	1954.2	8440	1	31.6
1992	42.067	194.868	33531.5181	2032.6	8440	1	32.6
1993	55.854	198.382	39157.55246	2089.3	8440	1	33.6
1994	93.386	201.954	45384.69233	2164.2	8440	1	34.6
1995	125.171	205.588	53968.91624	2252.8	8440	1	35.6
1996	160.924	209.273	63237.01884	2347.3	8440	1	36.68
1997	171.872	212.976	74532.43277	2951.8	8440	1	37.76
1998	53.311	216.668	113485.9878	9835.4	8440	1	38.84
1999	98.156	220.343	131798.7512	7807.7	8440	1	39.92
2000	101.79	224.138	153255.5893	8534.4	8440	1	41
2001	120.726	227.741	184846.5649	10265.7	8440	1	42.04
2002	136.348	231.326	224318.3372	9261.2	8440	1	43.08

TURKEY

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	8.262163	45.121	8.366062295	78.9	6462	0	43.8
1981	49.661794	46.222	12.63722509	113.0	6462	0	45.54
1982	1.125987	47.329	16.78163218	164.4	6462	0	47.28
1983	1.734264	48.44	22.24152451	230.4	6462	0	49.02
1984	7.782886	49.554	35.18313399	373.5	6462	0	50.76
1985	8.936923	50.669	56.13314515	525.3	6462	0	52.5
1986	11.879531	51.78	81.69835502	681.6	6462	0	54.24
1987	9.667972	52.881	119.5133111	868.3	6462	0	55.98
1988	41.641195	53.966	206.686943	1450.8	6462	0	57.72
1989	11.105	55.031	363.5912462	2140.2	6462	1	59.46
1990	20.822	56.085	628.5962505	2636.8	6462	1	61.2
1991	46.002	57.135	1007.834786	4268.8	6462	1	61.7
1992	57.153	58.179	1748.777474	7005.3	6462	1	62.2
1993	93.931	59.213	3169.879282	11214.8	6462	1	62.7
1994	62.266	60.221	6187.323731	30315.7	6462	1	63.2
1995	75.253	61.189	12415.5884	46662.1	6462	1	63.7
1996	82.167	62.128	23627.11717	83274.8	6462	1	64.12
1997	81.26	63.048	46121.28895	155537.9	6462	1	64.54
1998	84.11	63.946	83530.71577	265321.6	6462	1	64.96
1999	87.672	64.82	123821.1523	427647.5	6462	1	64.48
2000	64.486	65.667	199902.0356	630812.6	6462	1	65.8
2001	92.594	66.494	272392.4945	1249024.3	6462	1	66.2
2002	97.726	67.309	420186.7653	1517690.8	6462	1	66.6

EGYPT

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	207.477727	42.634	2327.958098	0.700	6405	0	43.8
1981	197.479397	44.196	2762.104238	0.700	6405	0	43.8
1982	127.407161	45.682	3094.638113	0.700	6405	0	43.8
1983	121.258013	47.093	3549.846006	0.700	6405	0	43.8
1984	144.347557	48.55	4083.698455	0.700	6405	0	43.8
1985	142.085218	50.052	4569.775013	0.700	6405	0	43.9
1986	76.347824	51.593	4803.545744	0.700	6405	0	43.9
1987	54.892509	52.799	5359.998965	0.700	6405	0	43.9
1988	53.530848	54.024	6155.527906	0.700	6405	0	43.9
1989	78.142	55.263	7496.196197	0.852	6405	0	43.9
1990	37.081	56.694	10321.26341	1.550	6405	0	43.6
1991	50.963	58.139	16044.1709	3.065	6405	0	43.6
1992	40.638	59.402	20429.31508	3.323	6405	0	43.6
1993	70.674	60.677	23881.52957	3.354	6405	0	43.6
1994	76.469	61.983	32042.71987	3.387	6405	0	43.6
1995	105.839	63.322	43121.63402	3.392	6405	0	43.1
1996	85.213	64.705	56043.62072	3.391	6405	0	43.1
1997	123.974	66.134	62986.28933	3.389	6405	0	43.1
1998	127.633	67.602	63715.66529	3.388	6405	0	43.1
1999	144.71	69.067	74558.81351	3.396	6405	0	43.1
2000	109.705	70.492	96916.81024	3.489	6405	0	42.7
2001	119.432	71.902	110067.1129	3.976	6405	0	42.7
2002	133.813	73.313	119522.6525	4.500	6405	0	42.7

MEXICO

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	386.643451	68.686	472.7597235	0.023	472	0	66.4
1981	469.00179	70.321	647.9823319	0.025	472	0	66.44
1982	287.552658	71.91	1036.200771	0.050	472	0	66.48
1983	257.204339	73.435	1890.836811	0.122	472	0	66.52
1984	305.558035	74.945	3116.799251	0.170	472	0	66.56
1985	309.727733	76.475	5011.987988	0.266	472	0	69.6
1986	323.696346	78.035	8375.12883	0.634	472	1	70.18
1987	276.332812	79.623	20444.21	1.426	472	1	70.76
1988	617.44736	81.231	44027.56865	2.276	472	1	71.34
1989	953.448	82.84	58046.06956	2.475	472	1	71.92
1990	888.208	84.446	78144.25222	2.823	472	1	72.5
1991	1337.258	86.055	100379.8718	3.023	472	1	72.68
1992	1538.482	87.667	119013.0007	3.100	472	1	72.86
1993	1639.464	89.28	132852.6606	3.110	472	1	73.04
1994	1991.992	90.888	150193.0895	3.503	472	1	73.22
1995	1363.116	92.488	194279.299	6.492	472	1	73.4
1996	1630.302	94.08	267099.5141	7.599	472	1	73.6
1997	1999.081	95.667	335704.687	7.923	472	1	73.8
1998	2274.438	97.245	406781.9444	9.234	472	1	74
1999	2354.335	98.807	484769.074	9.566	472	1	74.2
2000	2839.024	100.35	574514.4732	9.469	472	1	74.4
2001	3357.592	101.879	600762.8701	9.316	472	1	74.6
2002	3214.824	103.4	622628.4425	9.716	472	1	74.8

ARGENTINA

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percentage)
1980	28.293497	28.37	0.003842321	0.000	5540	0	82.9
1981	23.61516	28.863	0.007478039	0.000	5540	0	83.28
1982	9.20684	29.341	0.021863432	0.000	5540	0	83.86
1983	9.350453	29.802	0.109544775	0.000	5540	0	84.44
1984	6.989398	30.236	0.791315702	0.000	5540	0	85.02
1985	5.30538	30.675	5.307654015	0.000	5540	0	84.8
1986	10.107871	31.146	9.98909505	0.000	5540	0	85.14
1987	10.035428	31.621	23.3439724	0.000	5540	0	85.48
1988	7.563408	32.091	111.1175579	0.001	5540	0	85.82
1989	6.505	32.559	3245.66289	0.042	5540	0	86.16
1990	8.596	33.022	68956.47638	0.488	5540	0	86.5
1991	32.266	33.492	180988.5078	0.954	5540	1	86.7
1992	62.907	33.959	226751.3833	0.991	5540	1	86.9
1993	48.033	34.412	236623.2905	0.999	5540	1	87.1
1994	60.954	34.864	257568.7488	0.999	5540	1	87.3
1995	66.768	35.311	258160.9707	1.000	5540	1	87.5
1996	79.59	35.754	272285.902	1.000	5540	1	87.64
1997	83.876	36.203	293005.3842	1.000	5540	1	87.78
1998	84.261	36.644	299097.8902	1.000	5540	1	87.92
1999	77.151	37.074	283401.7376	1.000	5540	1	88.06
2000	79.184	37.498	285102.5874	1.000	5540	1	88.2
2001	59.852	37.917	269289.4605	1.000	5540	1	88.34
2002	27.55	38.331	317738.1919	3.063	5540	1	88.48

BRAZIL

Year	US Exports (US $ Million)	Population (Million)	GDP US $ Million)	Exchange Rate (=US $1)	Distance (Nautical Miles)	Open Trade Regime (1=Open, 0= Closed)	Level of Urbanization (Percent)
1980	20.113582	122.958	2.46041E-06	0.000	4435	0	66.8
1981	20.570358	125.93	4.87434E-06	0.000	4435	0	67.62
1982	18.933955	128.963	1.00421E-05	0.000	4435	0	68.44
1983	14.708792	131.892	2.32983E-05	0.000	4435	0	69.26
1984	46.336828	134.626	7.67137E-05	0.000	4435	0	70.08
1985	29.978542	137.303	0.000274698	0.000	4435	0	70.9
1986	144.590782	140.112	0.000727577	0.000	4435	0	71.68
1987	113.501475	142.938	0.002292232	0.000	4435	0	72.46
1988	22.236666	145.782	0.017199594	0.000	4435	0	73.24
1989	42.399	148.567	0.252690218	0.000	4435	0	74.02
1990	40.692	151.084	6.310327169	0.000	4435	0	74.8
1991	45	153.512	32.94061169	0.000	4435	1	75.46
1992	40.53	155.976	350.2235239	0.002	4435	1	76.12
1993	48.837	158.471	7702.742958	0.032	4435	1	76.78
1994	105.479	160.994	190807.4158	0.639	4435	1	77.44
1995	232.609	163.543	353082.7396	0.918	4435	1	78.1
1996	185.266	166.074	425588.1571	1.005	4435	1	78.72
1997	179.067	168.547	475778.94	1.078	4435	1	79.34
1998	181.183	170.956	499270.0593	1.161	4435	1	79.96
1999	111.296	173.294	525018.11	1.815	4435	1	80.58
2000	125.314	175.553	595411.8251	1.830	4435	1	81.2
2001	125.984	177.753	652256.9728	2.358	4435	1	81.74
2002	113.231	179.914	725186.808	2.921	4435	1	82.28

60-Country Data for Classical Regression Model, 1998 and 2003

Country	US Exports	GDP	Population	Factor Endowment	Level of Urbanization	Exchange Rate	Tariff Rate	Distance	Infrastructure
	US $	(Country GDP+US GDP in Million)			(Percent)	(= US $1)	(Percent)	(Nautical Miles)	(Telephones per 1000 people)
Algeria	48693000	8795163	0.010898	19.40723	56	58.73896	24.71	4248	56
Angola	9619000.03	8753481	0.001485	47.40478	33	1	28.10	5824	7
Argentina	68803000.2	9045923	0.063911	3.88304	88	0.9995	12	5540	332
Azerbaijan	7318999.97	8751413	0.001014	55.06302	52	3868.998	8.10	4366	143
Bangladesh	8787999.98	8790261	0.0098	91.89996	24	46.90565	21.1	10486	5
Bolivia	9799999.96	8755451	0.001934	29.33421	61.4	5.510133	12.86	4598	113
Brazil	152779000	9532354	0.151205	6.895614	80	1.160517	10.9	4435	238
Bulgaria	4551000.01	8759820	0.002928	19.66022	68	1.760358	16.5	5155	385
Cambodia	557999.999	8750051	0.000703	123.4007	16	3744.417	1	7190	10
Chile	38100000	8826345	0.017823	5.903485	85	460.2875	7	4598	358
China	498219998	9693287	0.17619	41.85719	35	8.278958	24.7	7737	120
Colombia	128210000	8845419	0.022011	12.33757	74	1426.037	15.2	1127	208
Costa Rica	46598000	8761071	0.003213	8.052634	58	257.2292	15	1153	239
Czech Republic	4656000.01	8808688	0.013914	5.282581	74.5	32.2812	12.9	3620	559
Ecuador	35251999.9	8770230	0.005289	16.53745	62	5446.573	12.86	2463	122
Egypt	102745000	8829053	0.01842	26.09175	43	3.388	24.71	6405	83
El Salvador	79030000.4	8757394	0.002377	17.92446	58	8.755	15	2112	164
Estonia	50766000.1	8752541	0.001271	7.973586	70	14.07467	10.9	4204	626
Georgia	48603000.2	8750595	0.000827	42.42929	56	1.389817	8.10	5609	156
Ghana	3139000.01	8754449	0.001706	79.6611	35.5	2314.147	28.10	4820	12
Guatemala	76612999.8	8766168	0.004369	20.00597	39.2	6.394653	15	816	86
Guyana	10948000	8747693	0.000164	33.01164	36	150.5192	13.9	1174	78
Hungary	6328999.98	8794405	0.010728	6.820057	64	214.402	24.7	4759	533
India	184014999	9156406	0.085432	75.1094	27	41.25937	58.1	8665	28
Indonesia	50876999.8	8842420	0.021355	71.91315	39	10013.62	8	8440	40
Jamaica	95144999.8	8754279	0.001667	11.38256	55	36.55	15	747	247
Kazakhstan	10157000	8769045	0.005021	21.88529	56	78.30333	8.10	4366	111

Kenya	8633000.02	8758205	0.002561	81.31557	31.4	60.3667	28.10	8736	11
Kuwait	39881999.9	8772920	0.005897	2.241579	95.8	1	11.75	8423	359
Latvia	108824000	8753592	0.001511	11.553	61	0.589833	13	4144	412
Lebanon	22482000.1	8763226	0.003702	6.782274	89	1516.132	11.75	6285	370
Malaysia	106634000	8819150	0.016234	9.178585	56	3.924375	2.5	8507	340
Mexico	2077813010	9167983	0.087626	7.323215	74	9.136	5	472	192
Moldova	4313000.02	8748674	0.000388	82.70822	43	5.3707	8.10	5348	131
Morocco	27600000	8782792	0.008123	25.7074	54	9.604416	40.9	3151	66
Nicaragua	22607000	8750547	0.000816	41.83579	55.4	10.58192	15	2275	39
Nigeria	635000.001	8779953	0.007484	104.5945	42.3	21.886	28.10	4870	4
Oman	11890000	8761060	0.00321	5.317005	74.5	1	11.75	7709	140
Pakistan	5697000.01	8807074	0.013555	73.27221	32.6	44.94284	14.98	7976	24
Panama	100841000	8757910	0.002494	7.953511	56	1	15	1200	247
Paraguay	7855000	8755480	0.001941	19.72514	54.5	2726.49	13.90	4498	131
Peru	74443999.8	8803838	0.012834	14.02463	72	2.93	16.2	3323	107
Philippines	151418000	8813545	0.014992	36.44035	57	40.89305	10.9	6533	77
Poland	89519999.8	8915668	0.037126	7.260589	62	3.4754	39.4	3941	365
Qatar	5356999.97	8757230	0.002339	2.142574	92	1	11.75	8186	406
Romania	19092999.9	8789066	0.009532	16.94595	55	8875.576	23.1	5202	227
Russia	758373002	9018013	0.058304	17.27789	73	9.705083	11.4	4366	220
Saudi Arabia	192781000	8898679	0.033515	4.561234	85	1	11.75	5840	170
South Africa	79640999.7	8880558	0.029632	10.27664	55	5.528284	22.8	6669	248
Sri Lanka	128210000	8762736	0.003591	37.95699	22.5	64.45012	18.4	8598	51
Taiwan	524847000	9014164	0.057525	2.587401	90	33.4599	18.1	5920	1
Thailand	62216999.9	8858835	0.024935	17.276	19.6	41.35939	21.3	8557	126
Trinidad & Tobago	32017999.9	8753037	0.001384	5.935007	73	6.298308	15	1456	246
Turkey	80854000.2	8952514	0.044863	9.855623	65	260724	39.2	6462	407
Uganda	6704999.97	8754082	0.001622	97.301	13.5	1240.306	11.6	8008	5
Ukraine	11678000	8788867	0.009488	37.8016	67.7	2.449542	8.10	8736	203
U.A.E.	127382000	8795475	0.010968	1.497501	85.5	1	11.75	5348	754
Uruguay	5070999.98	8769346	0.005089	4.651553	91.5	10.47192	11.5	5502	367
Venezuela	107740001	8842816	0.021442	7.52709	86	547.5558	15	1174	267
Vietnam	13288000	8774092	0.006162	90.0611	23.4	1	26.7	7190	31

Zimbabwe	142000	8753249	0.001432	59.78005	34.3	23.67911	24.9	6669	37
Algeria	12653000	11070256	0.01189	18.15481	59	26.041	24.71	4248	74
Angola	41956999.9	11017875	0.002506	29.5155	36	32.614	28.10	5824	15
Argentina	19593999.9	11131345	0.02261	11.53451	88.5	0.885	12	5540	396
Azerbaijan	17762000	11011391	0.001332	40.42879	52	1144.867	8.10	4366	220
Bangladesh	7757000	11058175	0.009741	96.94631	27	12.363	21.1	10486	13
Bolivia	6634000.01	11012643	0.001559	37.87131	64	2.681	12.86	4598	172
Brazil	62378000.2	11496314	0.081972	14.015	83	1.123	10.9	4435	424
Bulgaria	7980999.96	11023943	0.003603	14.45745	67.5	0.58	16.5	5155	701
Cambodia	2650000.01	11008258	0.000764	118.2109	18.8	696.381	1	7190	30
Chile	26176000	11076195	0.012942	8.228122	86.5	312.878	7	4598	659
China	598454999	12416378	0.201618	34.65767	38.8	1.816	24.7	7737	328
Colombia	62201999.9	11081657	0.013908	20.34613	76.5	785.633	15.2	1127	286
Costa Rica	49245000.1	11021597	0.003179	8.415273	60.5	185.691	15	1153	362
Czech Republic	10708000	11093822	0.016053	4.327837	74.5	14.827	12.9	3620	1211
Ecuador	23135000	11030850	0.004847	18.48921	64.5	0.543	12.86	2463	231
Egypt	116935000	11084006	0.014323	35.41773	43	1.576	24.71	6405	177
El Salvador	49892000.1	11017100	0.002366	18.79148	63.5	4.118	15	2112	241
Estonia	11233000	11013127	0.001647	5.639823	70	6.808	10.9	4204	1001
Georgia	37040000.1	11008034	0.000724	44.81551	57	0.658	8.10	5609	234
Ghana	10537000	11011671	0.001383	101.7888	37	1441.664	28.10	4820	33
Guatemala	118904000	11028797	0.004478	21.30233	41	3.915	15	816	202
Guyana	7606999.97	11004753	0.000128	41.03689	38	43.213	13.9	1174	191
Hungary	9773000.01	11086856	0.014826	4.603421	65.5	128.676	24.7	4759	1037
India	137215999	11583788	0.095085	68.62389	28.3	9.186	58.1	8665	52
Indonesia	159960999	11212406	0.036475	42.72743	44	2430.785	8	8440	92
Jamaica	76768999.9	11011949	0.001434	12.93505	57.5	42.075	15	747	704
Kazakhstan	13503000	11033784	0.005375	19.25677	55.7	44.372	8.10	4366	195
Kenya	16775000	11017936	0.002517	87.80019	36.3	33.009	28.10	8736	52
Kuwait	96596999.7	11045800	0.007531	1.981852	96.2	0.333	11.75	8423	723
Latvia	32430999.9	11015113	0.002007	7.958065	60.4	0.249	13	4144	695
Lebanon	19749000.1	11022092	0.003268	7.830662	90.6	1364.88	11.75	6285	426
Malaysia	179661000	11107787	0.018504	8.436988	59.4	1.622	2.5	8507	567

Mexico	2979726009	11630129	0.101869	6.278662	75	6.982	5	472	401
Moldova	12532000	11006000	0.000354	86.28623	42	3.645	8.10	5348	238
Morocco	14365000	11048502	0.008014	27.01859	57.5	3.548	40.9	3151	247
Nicaragua	27170000	11008187	0.000751	48.12975	57.2	2.968	15	2275	70
Nigeria	10900000	11061616	0.010354	80.8463	46.5	50.05	28.10	4870	19
Oman	10179000	11025643	0.003909	4.927092	77.5	0.233	11.75	7709	255
Pakistan	23822000	11077509	0.013175	80.55196	34	12.979	14.98	7976	34
Panama	71003000.2	11016938	0.002337	8.70689	57.2	0.665	15	1200	311
Paraguay	601999.997	11010060	0.001091	38.06987	58	1497.706	13.90	4498	336
Peru	51896999.8	11064655	0.010895	16.9842	73.8	1.51	16.2	3323	152
Philippines	153708001	11082194	0.014003	41.04111	61	12.307	10.9	6533	233
Poland	52642999.8	11213543	0.036666	6.987383	63	1.912	39.4	3941	365
Qatar	7669999.97	11024348	0.003676	1.525592	93	3.912	11.75	8186	727
Romania	31044000	11061000	0.010244	14.89407	56	11713.82	23.1	5202	430
Russia	531956002	11436847	0.072821	12.66148	73	10.237	11.4	4366	362
Saudi Arabia	180445000	11223548	0.038349	4.343739	87.5	2.872	11.75	5840	361
South Africa	30043999.9	11163937	0.028233	10.54416	59	2.598	22.8	6669	410
Sri Lanka	62201999.9	11022287	0.003304	41.02884	24	24.749	18.4	8598	96
Taiwan	476075998	11290205	0.049406	2.993689	90	18.545	18.1	5920	1
Thailand	102425000	11147209	0.025355	17.01373	20.4	12.868	21.3	8557	365
Trinidad & Tobago	37026000.1	11014705	0.001933	3.927713	75.2	4.6	15	1456	528
Turkey	136494001	11243872	0.041748	10.76367	67	796602.8	39.2	6462	629
Uganda	4935000	11011070	0.001274	137.9765	15.4	332.427	11.6	8008	18
Ukraine	8805000	11053587	0.008923	36.76671	68.1	0.992	8.108	8736	300
U.A.E.	151593001	11084475	0.014406	1.170969	88	3.649	11.75	5348	1010
Uruguay	5567000.02	11014853	0.00196	11.86371	92.5	7.995	11.5	5502	472
Venezuela	77955000.4	11088843	0.015176	11.02	87.5	1155.187	15	1174	369
Vietnam	29407999.9	11040423	0.006567	85.22504	25.5	3031.977	26.7	7190	72
Zimbabwe	6001000	11012803	0.001588	54.45692	37.5	209.485	24.9	6669	55

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Vita

Sanjeev Kumar

Date of Birth: April 4, 1971

Place of Birth: Patna, India

Education: B.A. (H), University of Delhi, 1992

M.A., University of Kentucky, 1999

LL.B., University of Delhi, 2002

Professional Positions:

Research Assistant, Department of Agricultural Economics, University of Kentucky, January 2001-August 2005.

Publications and Presentations:

Marchant, M.A. and **S. Kumar**. "An Overview of U.S. Foreign Direct Investment and Outsourcing." *Review of Agricultural Economics*, 27:3(2005): 379-386

Marchant, M.A. and **S. Kumar**. "An Overview of U.S. Foreign Direct Investment and Outsourcing." Principal paper presented at the Allied Social Science Association (ASSA/AEA) annual meeting, January 2005, Philadelphia, PA

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