New NAFTA and Mexico-U.S. Migration: The 2004 Policy Options

by
Philip Martin

The number of Mexican-born U.S. residents is rising faster than ever before, by perhaps 500,000 a year.
The U.S. is discussing three major policies to better manage Mexico-U.S. migration—guest workers, legalization Ê
and earned legalization—until the faster economic and job growth envisioned by NAFTA reduces emigration pressures.

Migration has been the major relationship between Mexico and the U.S. for most of the 20th century, but legal immigration remained low until recently—36 percent of 20th century Mexican immigrants arrived in the 1990s, and 34 percent of the apprehensions of unauthorized Mexicans were in the 1990s. Over the past century, Mexican migrants were negatively selected, that is, those who left Mexico usually had less education and skills than the average Mexican, and most of the Mexicans who arrived had their first U.S. jobs in seasonal agriculture. The U.S. and Mexico had bilateral agreements to regulate Mexico-U.S. labor migration between 1917-1921 and 1942-1964, but most 20th century Mexican migrants arrived and were employed outside these bilateral guest worker programs.

A standard treatment of 20th century Mexico-U.S. relations is entitled *Distant Neighbors,* reflecting the lack of economic integration and cooperation on migration and other issues, a relationship sometimes summarized in Mexico as "Poor Mexico, so far from God, so close to the U.S." The picture changed in the 1990s, as the Mexican government liberalized its economic policies, proposed NAFTA to formalize its desire for closer economic integration, and initiated discussions aimed at improving migration management, including the Binational

Study (1997) to reach consensus on the number and impacts of Mexican migrants in the aftermath of California's approval of Proposition 1987 in 1994.

The first Mexicans were recruited to work on U.S. farms during World War I. These Mexican Bracero (strong arm) workers were admitted by making "exceptions" to immigration rules that otherwise would have blocked their entry. The 1917-21 Bracero program ended amid Mexican government complaints of mistreatment of its citizens, and the 1942-64 program ended as a result of pressure from U.S. labor and civil rights groups who argued that the Mexican migrants depressed wages and increased unemployment for similar U.S. workers.

Mexico-U.S. migration was low after the Bracero program, and the late 1960s and 1970s are often considered the "golden age" for U.S. farm workers. Farm wages rose sharply without Braceros—Cesar Chavez and the United Farm Workers won a 40 percent wage increase for grape pickers in 1966, increasing entry-level wages from $1.25 to $1.75 an hour in the UFW's first contract. However, some of the ex-Braceros had become U.S. immigrants, since a U.S. employer could issue a letter asserting that a foreigner was "essential" to fill even a seasonal farm job, and this offer of employment generated an immigrant visa. Ex-Braceros who became immigrants in this manner received immigrant visas

Figure 1. The Migration Hump

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set the stage for NAFTA. First, the U.S. enacted the Immigration Reform and Control Act (IRCA) to reduce illegal immigration by imposing sanctions on U.S. employers who knowingly hired unauthorized foreigners and to legalize some unauthorized foreigners in the U.S. Second, Mexico changed its economic policy from import substitution to export-led growth, which led to dislocations, especially in agriculture.

IRCA included two legalization or amnesty programs, and the legalization program for unauthorized farm workers—the Special Agricultural Worker program—was rife with fraud: over one million Mexican men became U.S. immigrants by presenting letters from employers saying they had worked 90 days or more in 1985-86 on U.S. crop farms as unauthorized workers. There were about six million adult men in rural Mexico in the mid-1980s, and the SAW program gave one-sixth of them immigrant visas. Their families were deliberately excluded from legalization, under the theory that SAWs wanted to commute to seasonal farm jobs and keep their families in Mexico, as had earlier green-card commuters.

The SAWs did not behave as expected. Many switched to nonfarm U.S. jobs and settled in U.S. cities with their families. As state and local government costs of providing education, health and other services to newly legalized immigrants and their often unauthorized families rose during the early 1990s recession, there were suits against the federal government that sought to recoup state and local expenditures on unauthorized foreigners. The perception that immigrants did not pay their way culminated in Proposition 187 in 1994 and federal welfare reforms in 1996. Meanwhile, SAWs were replaced by newly arrived unauthorized workers in the fields.

printed on green cards, and were known as green-card commuters—Mexicans who lived in Mexico and worked seasonally in the U.S.

As green-card commuters aged out of seasonal harvest work in the late 1970s, many sent their sons north, using false or altered green cards or simply entering the U.S. illegally. A smuggling infrastructure soon evolved to provide information and move rural Mexicans to rural America, and it was strengthened in the early 1980s by events in the U.S. and Mexico. In the U.S., the UFW called a strike in support of another 40 percent wage increase in 1979, when federal wage-price guidelines called for a maximum seven percent increase. With no workers available from UFW hiring halls, growers turned to labor contractors, many of whom were green-card commuters who returned to their villages to recruit unauthorized workers. The contractors stayed in business after the strikes were settled, and competition between union hiring halls and labor contractors to supply seasonal workers favored the contractors, who increased their share of the farm labor market. The number of workers under UFW contract dropped from 70,000 in the mid 1970s to 7,000 by the mid-1980s.

In Mexico, a peso devaluation in 1982 made work in the U.S. more attractive. Apprehensions of Mexicans just inside the Mexico-U.S. border reached their all-time peak of 1.8 million in 1986, meaning that the U.S. was apprehending an average three Mexicans a minute, 24 hours a day, 7 days a week.

In 1986, two events occurred that, contrary to expectations, increased Mexico-U.S. migration and

NAFTA and the Migration Hump

Mexico's economic reforms culminated in NAFTA, which went into effect January 1, 1994, locking in place policies that lowered barriers to trade and investment in Canada, Mexico and the U.S. Most of the benefits

of this freer trade were expected to accrue to Mexico, in the form of more foreign investment, faster economic and job growth, and increased exports. The most frequently cited study of NAFTA's likely effects concluded that Mexican employment, which was projected to be 30 million in 1995, would rise by 609,000 or two percent because of NAFTA. Mexican wages were projected to be nine percent higher with NAFTA, largely because foreign investment and Mexican money staying in Mexico were expected to raise the value of the peso relative to the dollar, reducing the cost of imports.

All studies agreed that most of the additional jobs due to NAFTA would be created in Mexico, but some anticipated simultaneous job creation in new Mexican factories and displacement in Mexican agriculture, with some of the displaced farmers expected to head to the U.S. For example, one study estimated that NAFTA would displace about 1.4 million rural Mexicans, and that 600,000 displaced farmers would migrate (illegally) to the United States over 5-6 years, meaning that there would be a temporary increase in migration, a migration hump, as a result of NAFTA.

A migration hump, illustrated in Figure 1, means that trade and migration are complements in the short term, with the upward slope of the hump due primarily to previous demographic growth in Mexico, insufficient job creation and displacement, as well as a strong U.S. demand for Mexican workers. The downward slope of the hump was expected to begin when the number of new labor force entrants fell and economic growth created more and better-paid jobs in Mexico (Year 8 in Figure 1). The Clinton Administration used the migration hump to argue that Congress should approve NAFTA because the additional migration—the hump—was a reasonable price to pay in the short run for less Mexico-U.S. migration in the long run (after Year 15).

Mexico-U.S. Migration in the 1990s

Trade and migration were complements in the 1990s. Bilateral Mexico-U.S. trade tripled to almost $725 million a day in NAFTA's first decade, but migration also increased. Between 1991 and 2000, some 2.2 million Mexicans were admitted as legal immigrants

Figure 2. Mexico: Growth of 16-44 Year Olds and Employment Growth (1996-2010)
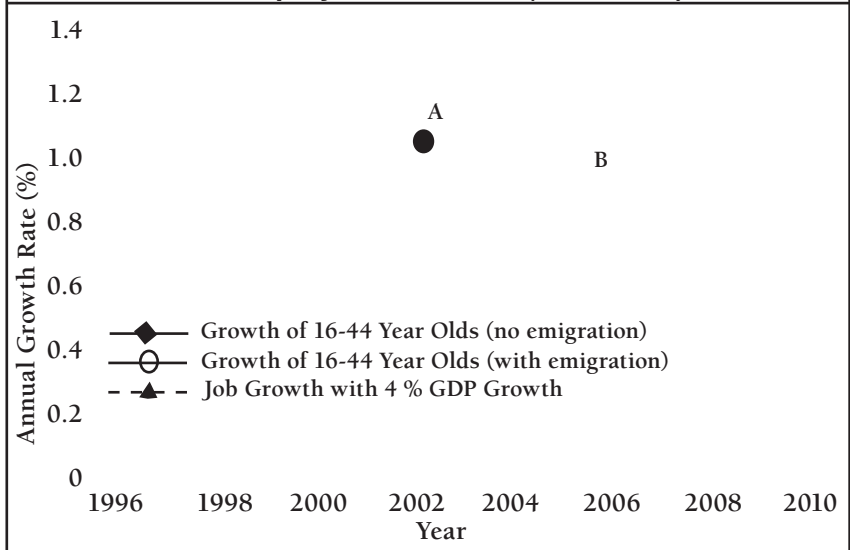
and 15 million foreigners, 95 percent Mexicans, were apprehended just inside the U.S. border.

NAFTA did not create enough formal sector jobs to reduce emigration pressures. There were about 109 million Mexican-born persons in 2000, and eight percent lived in the U.S. In 2000, 15 million of the 40 million-strong Mexican labor force had formal sector jobs; with an additional six million Mexican-born workers in the U.S., meaning that 29 percent of Mexicans with formal sector jobs were in the U.S..

Past demographic growth presents Mexico with a major job-creation challenge that may soon ease. The number of Mexicans turning 15, the age of labor force entry in Mexico, is expected to drop 50 percent between 1996 and 2010, from one million a year to 500,000 a year; the rate of growth is projected to drop from 1 to 1.3 percent a year to 0.4 to 0.7 percent a year by 2010. Declining demographic growth and sustained economic growth could create enough jobs for new labor force entrants so that fewer Mexicans feel compelled to emigrate. At five percent GDP growth, the Mexican employment growth rate would rise from 0.9 to 1.3 percent.

The combination of fewer work force entrants and rising employment will work to create an environment where the falling number of labor force entrants equals employment growth. As illustrated in Figure 2, projections made in the mid-1990s imagined reaching this outcome in 2002, when labor force growth of 1.1 percent matched employment growth of 1.1 percent (Point A). Growth was slower than anticipated however, so the balance is not likely to be reached until after 2005

(Point B). In summary, emigration pressures in Mexico are likely to fall for both demographic and economic reasons. It may be easy to credit border enforcement for what demography and economics accomplished.

Guest Workers, Legalization and Earned Legalization

How should Mexico-U.S. migration be managed until emigration pressures fall? The three major U.S. migration policy options are guest workers, legalization and earned legalization. President Bush in January 2004 unveiled a Fair and Secure Immigration Reform (FSIR) proposal that would permit unauthorized foreigners in the U.S. with jobs, perhaps two-thirds of the total, to become temporary legal residents. The Bush proposal offers no clear path from guest worker to immigrant status, and administration officials emphasized that "there is no linkage between participation in this program and a green card…one must go home upon conclusion of the program" and then apply for an immigrant visa, perhaps with the support of the U.S. employer.

Some Congressional Democratics support legalization for unauthorized foreigners who have worked in the U.S., paid taxes and can pass a background check. The major Democratic proposal in Congress, the Safe, Orderly, Legal Visas and Enforcement Act (SOLVE), would permit unauthorized workers who have been in the U.S. at least five years, worked at least two years, and pass English, background and medical checks to become legal immigrants. Those in the U.S. less than five years could apply for a "transitional status" good for five years, and apply for immigrant status after they satisfied the residence, work and other tests.

The in-between option is earned legalization, a concept embodied in the Agricultural Job Opportunity, Benefits, and Security Act. AgJOBS, with 63 Senator and 115 Representative co-sponsors in October 2004, would allow unauthorized foreigners who did the lesser of 575 hours or 100 days of farm work (one hour or more constitutes a day of work) in any consecutive 12-month period between March 1, 2002 and August 31, 2003, and who are not excluded by, e.g., criminal convictions, to receive a six-year Temporary Resident Status (TRS) that would grant them the right to live and work anywhere in the United States.

However, in order to become regular immigrants, TRS workers would have to perform at least 2,060 hours or 360 days of farm work in a six year period ending in 2009, including at least 1,380 hours or 240 work days during their first three years and, in at least three of the six years, do at least 75 days of farm work a year. The spouses and minor children of TRS workers would not be deportable if they are in the U.S., but they would not be allowed to work legally until the TRS worker becomes an immigrant, at which time spouses and minor children could also receive immigrant visas, regardless of queues and waiting lists in the immigration system.

AgJOBS also makes the current H-2A guest worker program more "employer-friendly." Instead of having the U.S. Department of Labor (DOL) certify their need for foreign workers, farmers would simply "attest" that they need foreign workers, and DOL would have to approve employer attestations if employers file their job offers in a timely fashion. In other words, instead of the burden of finding U.S. workers falling on employers, the burden of finding U.S. workers would shift to DOL, which would have to authorize the admission of H-2A workers if it could not locate the workers requested at least 14 days before the farmer-set need date. If AgJOBS is enacted, farmers would still have to pay foreign H-2A workers the higher of the federal or state minimum wage, the prevailing wage in the occupation and area of intended employment, or the (usually highest) Adverse Effect Wage Rate (AEWR), but the AEWR would be frozen at its 2002 levels for three years and studied.

Conclusions

The economic integration symbolized by NAFTA should eventually reduce economically motivated Mexico-U.S. migration. However, during the 1990s, migration and trade increased together, producing a migration hump. However, currently high levels of Mexico-U.S. migration should not obscure the fact that Mexico-U.S. migration may soon diminish for demographic and economic reasons. A combination of the sharp drop in Mexican fertility in the 1980s and 1990s, the potential for sustained economic and job growth in Mexico, and the completion of the exodus of surplus workers from Mexican agriculture should reduce Mexico-U.S. migration after 2010.

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Vertical Contracts Between Manufacturers and Retailers: Inference With Limited Data—The Case of Yogurt

by
Sofia Villas-Boas

Rarely do firms sell their products directly to final consumers, instead selling through intermediary firms along a vertical supply chain. Vertical contracts between upstream firms (such as manufacturers) and downstream firms (such as retailers) involve negotiations about wholesale prices and other contractual terms that researchers and policy makers do not observe. This paper introduces a framework for determining which vertical contract best fits the data for certain retailers and manufacturers. In particular, we analyze the yogurt market in the United States.

Manufacturers rarely supply final consumers. Instead, most industries are vertically separated. We refer to firms in these markets as upstream (for example, the manufacturers) and downstream firms (the retailers). In these settings, downstream firms are the customers of the upstream firms. Downstream firms do not simply consume the product they purchase from upstream firms, but make further decisions regarding the product, such as the determination of final price, the promotional effort and the placement of products on store shelves.

Since the downstream decisions may affect the upstream profits, upstream firms care about the activities of the downstream firms. The first motivation for studying vertical relationships is that they determine the total profit to be divided among firms and its distribution. Vertical contracts also have policy relevance since they determine the benefit to consumers (consumers' surplus). Second, vertical contracts may promote efficiency because they lead to departure from a simple uniform pricing scheme that results in "double marginalization." Double marginalization occurs when the upstream and downstream markets are not perfectly competitive, and the product is traded with a uniform wholesale price. If a monopoly manufacturer supplies a good to a monopoly retailer and charges the retailer a monopolistic price, the result is double marginalization pricing. Figure 1 provides an illustration. Both the wholesaler and the retailer mark up price above their full costs, causing efficiency or "deadweight" losses equal to the triangles A and B in Figure 1.

If there is one thing worse than a monopolist, it is two successive monopolists. Monopolists charge their customers a markup above cost. In cases of double marginalization, we have markups on top of markups. The interesting thing is, not only is double marginalization bad for consumers, but actually the firms themselves may end up with lower profits.

The case where there was a monopoly in the downstream market was just described. But in fact, the problem still exists if there are multiple firms. All that is needed is that the downstream firms have some market power for this to be a problem. As a consequence, the sum of profits for the manufacturer and retailer may be less than it could have been if they could have "vertically" coordinated their decisions.

Figure 1. Double Marginalization
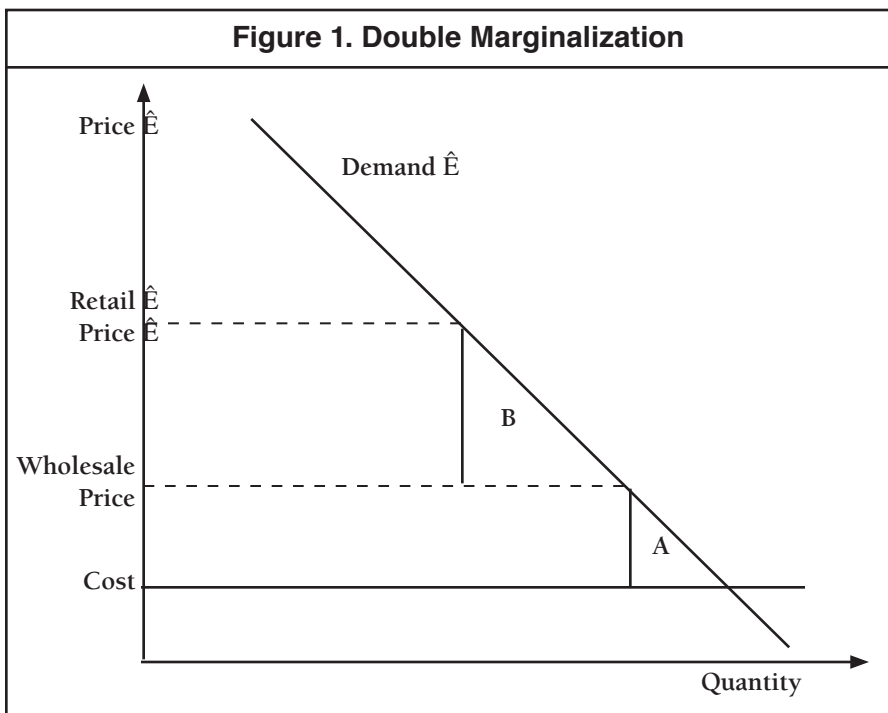
The Question

The question asked in this paper is: Does the contracting between manufacturers and retailers in the supermarket industry follow the double marginalization model or something more efficient?

Vertical contracts are especially difficult to examine empirically due to limited data availability. Wholesale price data are typically unavailable, and retailers' and manufacturers' marginal costs are difficult to measure separately. Even with these data limitations, this article demonstrates how one can draw inferences about vertical contracts.

There are other reasons to analyze vertical contracts. They may impair competition through their horizontal effects on the upstream (manufacturer) and downstream (retail) markets by increasing the possibility for coordination (increasing market power) or by excluding rivals and hence diminishing product variety and choices. In general, U.S. antitrust authorities have not paid attention to vertical contracts unless foreclosure became an issue, and most vertical arrangements are treated as per se legal. Foreclosure occurs when a vertical contract closes off some or all of a market to competitors thereby permitting the exercise of market power. Finally, the vertical structure in a particular market can significantly affect downstream prices and price dynamics and condition the assessment of merger activities in the upstream and downstream markets.

Methodology

First, demand is estimated using a store-level scanner data-set for quantity and price of the products in the market. Then the estimates are used to compute price-cost margins for retailers and manufacturers under different vertical supply models, without observing wholesale prices. Then estimated price-cost margins are compared with the price-cost margins estimated using components of marginal costs to assess the fit of these different vertical models and identify the best among the competing possible contracts.

The Yogurt Market

The empirical focus is on the yogurt market in a large Midwestern city. Yogurt is one of the largest dairy categories in retail, and the "yogurt consumer" is an important consumer type for retailers. The yogurt category is the fourth largest in the dairy case. Yogurt is produced by a few leading national yogurt manufacturers: Dannon and General Mills together account for almost 62 percent of total U.S. yogurt sales, private label brands from retail stores are in third place with 15 percent of the market. At the retail level, there are a small number of large retailers (or retail chains) competing directly with each other and who have jointly 75 percent of total sales in the whole metropolitan area. All other retailers not considered had individual shares less than five percent in 1992.

Given the above market structure, yogurt provides an interesting market to test whether double marginalization occurs, since the larger manufacturers as well as the retailers may have market power. The alternative models to be compared with double markup pricing are a vertically integrated model and a variety of strategic vertical supply scenarios, allowing for collusion, non-linear pricing and strategic behavior with respect to the private label products.

What We Find for Yogurt

The results do not provide support for models implying double marginalization. The supply model that fits the data best assumes that wholesale prices are close to cost and that the retailers have pricing power in the vertical chain. The estimates of the price-cost margins are consistent with the range of 30 percent or more attributed to perishables in previous studies.

This result is consistent with several scenarios that include non-linear pricing by manufacturers, via quantity discounts or two-part tariff contracts. In the optimal non-linear pricing contract, the manufacturer sets the marginal wholesale price close to the manufacturer's marginal cost for the retailer to have the right incentives when setting the retail prices. Then the manufacturer extracts revenue from the retailers via a fixed fee or by selling the non-marginal units at higher wholesale prices. The existence of quantity discounts is common practice in this industry.

Interpretations

Anecdotal evidence suggests that retail supermarkets do not often pay fixed fees to their manufacturers, and if they do, these fees are not close to the retail profits. Instead, there seem to be substantial fees paid by the manufacturers to the retailers (so-called slotting allowances). Non-existent fixed fees paid by the retailers to the manufacturers could be explained by the fact that there are multiple manufacturers in this market with whom the retailers can bargain more aggressively for a lower fixed fee by threatening to buy from another manufacturer.

This result is also consistent with high bargaining power of the retailers who are able to force the wholesale prices down to marginal cost. In fact, in the last few decades, arguments have been made that retailers have acquired greater bargaining power relative to manufacturers, suggesting a possible departure from the simple linear pricing model in the industry. Among the several reasons that have been pointed out by industry participants and by researchers is that private labels that compete directly with the national brands provide a new bargaining tool for retailers when negotiating with manufacturers. Retailers are able to sell products that carry the store brand at a lower price than national brands displayed on the same shelf. At a 1995 convention, Douglas Ivester, then-president and CEO of Coca Cola, called private labels "parasites" and said they were responsible for "eroding category profits."

Another factor is the increased concentration at the retail level. Retail stores are merging to create national chains able to compete in the grocery business with discount stores like WalMart. As a result, retailers have market power, which they can use to bargain more aggressively with the manufacturers. An indication of retailer market power is the increase in competition for shelf space, implying that manufacturers have to pay retailers slotting allowances to get their products displayed.

Efficiency Gain

Why should anyone care about the efficiency gain from solving the vertical coordination problem associated with double marginalization? In the double marginalization case the final retail price ends up being higher than the price that would result from maximizing the profits of the channel as a whole (when there is vertical coordination). There is therefore an efficiency gain when departing (through vertical contracting) from the double marginalization case. For the market studied, the magnitude of the efficiency gain associated with the "best model" in comparison with the double monopoly model is roughly $1,600 a week, which represents four percent of the sum of the three retailers' revenues from yogurt sales. Extrapolating to a United-States/yearly basis (given the consumption patterns of a half serving a week, total population and the average price of a yogurt serving of $0.45), then national yogurt retail revenues are about two billion dollars, and four percent of that is about ninety million dollars, a significant amount.

Extensions of the Methodology

Future research considers the fact that looking at just one category may be restrictive since manufacturers, retailers and consumers make their pricing and purchase decisions in the context of multiple categories. For the retailers analyzed, yogurt sales represent on average only two percent of total retail sales in contrast to the two largest dollar sales categories: soft drinks (17 percent) and cereal (12 percent). Given that consumers purchase a basket of goods during a shopping trip, a multiple category demand may be a more realistic framework to consider. In terms of pricing decisions, the fact that one manufacturer sells products in different product categories affects not only its pricing strategy but may possibly benefit its bargaining flexibility with the retailers. Also, retailers use strategic category pricing to drive consumers into the store and increase sales.

Finally, and to motivate future empirical research on vertical contracts, two questions are identified for which the methodology proposed in this paper can be applied. First, given the estimates of demand and a model of a pre- and post-vertical merger supply behavior, one can predict whether a potential vertical merger affects horizontal competition in the upstream and downstream markets involved. The second question is related to pass-through effects of foreign trade policy, given the estimates of demand in a certain country for a particular good that involves a vertical trading supply model across different countries: one can analyze the effect of an increase of a tariff or depreciation of the exchange rate on domestic or foreign margins. Trade policymakers are particularly interested in who absorbs most of the effects of a particular trade policy: foreign margins or domestic margins. That is in turn determined by the vertical relationships between domestic and foreign upstream or downstream firms. For example, if import prices do not rise as much as the dollar depreciation (i.e., the pass-through effect is less than one), then foreign profit margins are being diminished.

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ARE Faculty Profile

Sofia Berto Villas-Boas is an assistant professor in the Department of Agricultural and Resource Economics at UC Berkeley. Sofia received her Ph.D. in Economics from UC Berkeley in May 2002.

Sofia's recent research on vertical contracts has focused on identification and inference about the underlying vertical interactions in the markets when limited data on these interactions are available (see her article in this issue of the *ARE Update*).

In work in progress, Sofia is interested in estimating the effects of upstream price discrimination and below-cost pricing on retail prices and welfare in gasoline markets. Sofia measures the impact of the recent New York State Motor Fuel Marketing Practices Act, by measuring the prices and quantity of gasoline sold at the pump in a comprehensive sample of retail stations in New York and in neighboring New Jersey (that was not affected by this legislation), before and after the April 2004 law.

In current work, Sofia measures the impact on arbitrage conditions and on wholesale price volatility, from the environmental-content regulations in gasoline in its current form. Would price distortions and inefficiency from increased market power be lower or higher under a geographically broader and more uniform gasoline content regulation? Both ongoing projects are co-authored with Justine Hastings at the Yale University Department of Economics.

In another stream of research, Sofia and Rebecca Hellerstein, from the New York Federal Reserve Bank, analyze empirically the link between vertical cross border contracts and exchange rate pass-through, focusing on the automobile market in the U. S. They focus on the vertical contracts that determine whether upstream (foreign) or downstream (domestic) firms absorb the marginal-cost shocks associated with crossing national borders. Policy makers often want to know if a foreign or a domestic firm will absorb the impact of an exchange-rate devaluation or of a particular trade policy such as a tariff. A distribution chain that spans several countries makes firms vulnerable to fluctuations in their margins caused by changes in trade policy or by volatility in exchange rates. How a

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devaluation or a tariff affects a nation's trade balance hinges on what portion of its cost is passed through to local currency prices. The welfare effects of a devaluation or a tariff also depend on whether foreign or domestic firms absorb the cost shock in their mark-ups.

Sofia is originally from Lisbon, the capital of Portugal, the almost European 2004 soccer champions this year. She studied Economics in her undergraduate degree obtained from Universidade Católica Portuguesa in Lisbon. Following her graduation, she started the Ph.D. program at Berkeley in 1996. Sofia has received not only a Ph.D but also three Masters from Berkeley: Master Vasco, Master Diogo and Master Jose' Maria. Sofia and Miguel (Professor of Marketing at the Haas School of Business) live with their three boys within walking distance to the Cal campus. Sofia enjoys painting and loves going to antiques stores and to the Ashby-Adeline Flea Market for bargains, such as her $10 red bike.

Religion, Religiosity, Lifestyles and Food Consumption
by

Amir Heiman, David Just, Bruce McWilliams and David Zilberman

This paper is based on data from Israel showing that beliefs, lifestyle and ability to cook Ê
affect food consumption patterns. The intensity of belief is especially important, and more devout followers Ê
present unique market opportunities. Time-constrained consumers will pay for extra convenience. Ê
Food marketers should know their consumers' beliefs and constraints. Ê

The traditional literature on food demand has been based on the premise that consumers gain direct benefits from consumption of goods purchased at the market and has estimated the effect of prices, income and quality indicators on food purchases. However, for the most part, traditional demand studies that use prices and income as explanatory variables explain less than 50 percent of the variation in the data, and there is a place to increase the factors considered in demand analysis. Following Nobel Laureate Gary Becker's introduction of the concepts of human capital and family production functions, new considerations have added to food demand theory. He argued that consumers derive benefits from commodities produced within the household using processes that utilize both market goods and family members' time and skills. Another Nobel Laureate, George Akerlof, suggests that people consider the impact of their choices on family reputation within the context of social norms. The writings of Becker and Akerlof allow the inclusion of factors such as religion and gender in explaining consumer choices.

This article presents research results that aim to explain the factors that determine the properties of purchased food products. In particular, we analyze how factors such as religion, religiosity, gender, and joy of cooking, in addition to the usual variables (product price and income), affect purchasing of food products with differentiated characteristics. We analyze consumer choices of various poultry products, in particular, the choices of cut versus whole and fresh versus frozen chicken. We also consider the choice of ready-to-eat chicken. Cut chicken requires less time to prepare than whole chicken, and frozen chicken requires less purchasing time relative to fresh chicken. Frozen chicken is also perceived as a convenience good with an element of "modernity." Our empirical analysis is based on survey data collected in Israel in 1999, which has significant diversity both in terms of religious affiliation and adherence. The majority of Israelis are Jewish, but it has large Muslim and Christian minorities, and members of all three religions vary in the extent to which they observe religious mores. We concentrated on chicken since both Judaism and Islam forbid their followers to consume pork, and chicken is the major meat consumed in Israel. We also present results on the choice between chicken and other meats, and attitudes towards food modification, and how they demonstrate the importance of lifestyle and religious beliefs within a larger context.

In preparing for our study, we searched but did not find studies on the impact of religion on the properties of consumed foods. However, we did find a study documenting that Pope Paul VI's 1966 apostolic decree, which relaxed the Catholic Church's rules demanding abstinence from meat consumption on Fridays, led to a significant decline in the demand for fish, threatening the viability of the fishing industry in the northeastern United States.

Conceptual Analysis and Results

In deciding what type of meat to purchase for a meal, consumers aim to maximize benefits of food consumption, leisure time and expenditure on other products, given income and time constraints. In our context, in choosing between cut and whole chicken, buyers consider the tradeoffs between the higher cost of cut chicken and the extra time and effort spent to cut a whole chicken. High-income individuals are more likely to purchase cut chicken, while individuals who enjoy cooking are more likely to purchase a whole chicken. In choosing between fresh and frozen chicken, individuals trade off the better taste of the fresh chicken with the longer shelf life (which saves shopping time) and the lower price of the frozen chicken. Furthermore, the use of frozen chicken is part of modernity, which may be less appealing to traditional groups who may also resist buying modern appliances needed to prepare frozen foods.

Table I. Determinants of the Demand for Convenience Features in Chicken

Variable		Fresh whole	Fresh cut	Frozen whole	Frozen cuts
Age of respondent			++	--	----
Religion	– Jewish conservative	++		--	--
	– Jewish Orthodox		----	++	+
	– Muslim secular	++	----	----	----
	– Muslim religious	++	--	--	----
	– Christian	+	--		
Enjoy cooking	– Men	+		----	----
Low leisure	– Jewish secular	--		+	
	– Jewish conservative	----	+		
	– Jewish Orthodox	----	----	++	+
	– Muslim secular	----		++	++

++ or ---- = significant at the 95% level; + or -- = significant at the 90% level.

Religiosity sets behavioral norms that directly and indirectly affect food characteristic choices. Devout followers have more children and, thus, lower per capita income and spend more time on child rearing. The lower per capita income increases the demand for frozen-whole chicken. The binding time constraint increases the demand for cut and sometimes frozen chicken. The final impact of religion on cut chicken depends on the magnitude of the two effects.

Religions have established behavioral norms for household chores and leisure time. All three religions value traditional home cooking. This leads to a preference for whole over cut and fresh over frozen chicken. Religions also establish norms on work outside the household. Muslims in Israel deter women from working outside the house, while ultra-Orthodox Jewish women are encouraged to work outside the house to allow their husbands to devote their time to religious studies. Thus, the low income and time constraint of ultra-Orthodox women may lead to increased demand for frozen meat. The conceptual analysis suggests that the stronger intensity of religious beliefs is associated with (1) larger family size, (2) stronger preference for home-cooked meals, and (3) stronger aversion to modernity represented by frozen-food purchases. This holds for all three religions. Affiliation to a specific religious group matters when it comes to a woman's role in the household. Muslims discourage women to work outside the home, while Orthodox Jewish women are encouraged to be the family breadwinner. The extra time pressure suggests a stronger preference for frozen chicken among Orthodox Jews.

The empirical study is based on a face-to-face survey conducted in 388 households. We differentiated among three categories of religiosity (secular, conservative and orthodox) for Jews, Muslims and Christians. The main qualitative results are presented in Table I, and the results support our theoretical analysis. When an entry in a table has ++, it denotes that there is a 95 percent probability that an explanatory variable has a positive effect on consumption of a particular product. For example, age has such an effect on fresh cut chicken consumption. Similarly, there is a 90 percent probability that age has a negative effect on consumption of frozen whole chicken and 95 percent probability that it has a negative effect on consumption of frozen-cut chicken.

The results suggest that religious Muslims, who are less well to do, more traditional, and have women working at home, are likely to buy fresh, whole chicken. Orthodox Jews prefer buying the less-expensive but time-intensive item, i.e., the whole chicken. When compared to the secular group, the ultra-religious group buys less fresh chicken and purchases more whole and frozen parts.

The results of this and related studies suggest gender and age differences. When husbands shop, they are more likely to buy whole chicken than when the wives shop. Men are likely to buy whole chicken when they cook. We also found that older individuals are more likely to buy fresh chicken (representing aversion to modernity) and significantly more cut (perhaps because cutting chicken is more strenuous for older consumers).

Related Findings

In addition to investigating choices of different products within the same category, we studied choices among different products, in this case, different types of meat (fresh processed and ready-to-eat chicken, beef and turkey), and obtained some interesting insights.

(1) *Food diversity matters.* The consumers in the survey ranked chicken much higher in terms of taste and ease of preparation. Yet during a period of production glut in chicken, preceding our study,

it was apparent that there is a limit to the quantity of chicken that consumers will buy, even when the prices are very low. In response to the question "why don't you eat more chicken products" the answers of more than half of the respondents suggest that they prefer to diversify their meat intake.

(2) *Ready-to-eat purchases are, in many cases, the second-best choice of consumers.* Consumers with the highest tendencies to buy ready-to-eat meats were the ones who identified themselves as "poor cooks" or "very busy," or "my family doesn't like what I cook." More than 35 percent of our respondents admitted that their family members either "don't like" their cooking or "do not complain," while 65 percent suggest that their family members "like it" or consider it to be "O.K."

(3) *Religious intensity affects attitudes towards food modifications.* The intensity of religious beliefs was the most dominant explanatory variable when we presented consumers with the hypothetical choices between chicken fortified with hormones versus the same fortification through genetic modification, and between beef colored through chemical dye versus genetic modification. While overall, 70 percent of the population preferred the genetic modification, the largest opposition came from the Orthodox, in which 40 percent preferred the chemical treatment. Among the conservatives, 20 percent preferred the chemical treatment, while among the secular, only 10 percent preferred the chemical treatment. We also found that attitudes to the hypothetical genetic modification varies with education. Support for chemical treatment was highest among participants with elementary school educations (40 percent), while 25 percent of the high school educated and 7 percent of those with full or partial college educations were supportive. This suggests that beliefs and knowledge are not only crucial for consumption of existing products, but also affect attitudes towards proposed products.

Conclusions and Implications

This article shows that food purchases are largely affected by religious lifestyle and cultural factors, in addition to prices and income. We find that patterns of behavior vary among followers of different religions, resulting from different norms. Future research should pursue empirical analysis of the demand of different product categories in varying cultures. More empirical evidence will also provide a base for a more complete theory on purchases and consumers'

preference of food, and the impact of belief and lifestyle on consumption.

The result of this article can be generalized beyond religious belief to other beliefs and value systems that affect lifestyle and consumption patterns. Beliefs and attitudes of individuals and groups toward the environmental or ethical merits of production practices (use of pesticides, genetically modified foods, child labor) have a growing impact on consumption choice. It has several impacts for food marketers: (1) *Know your customers.* Their culture and beliefs affect the specific foods they eat, consumption patterns change with age, and the ability to cook affects what they buy; (2) *Recognize the intensity of adherence.* The religious or ideological label matters less than the extent to which people practice their belief. The more devout followers may present separate markets with unique opportunities; (3) *Understand the time constraints of your customers.* Busy parents and working mothers will pay for extra convenience; (4) *Relate to the community, not just the individuals.* Buyers are part of social groups with norms, and integration of marketing efforts with communal life and values may enhance sales; (5) *Anticipate and manage change.* Cooking skills and knowledge restrict food choices, and there is potential gain from provision of recipes and demonstration activities. New information technologies may help identify and reach members of distinct social groups more accurately and effectively.

The authors recommend the following source for further information:

Heiman, Amir, David R. Just, Bruce McWilliams, and David Zilberman, "Incorporating Family Interactions and Socioeconomic Variables into Family Production Functions-The Case of Demand for Meats," *Agribusiness: An International Journal,* Vol. 17, No. 4 (Fall, 2001), pp. 455-468.

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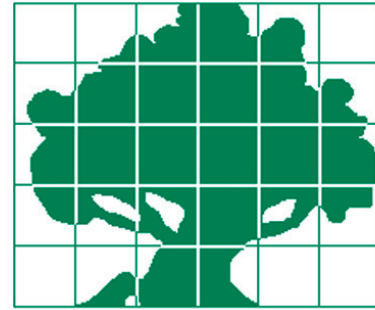
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