

## Commodity Spotlight



# French Fries Driving Globalization of Frozen Potato Industry

**D**riven largely by growing popularity of Western-style cuisine, particularly fast food via quick-service restaurants (QSRs), frozen french fries and other frozen potato products are generating billions of dollars in sales worldwide each year. Although precise worldwide production and sales figures for frozen fries are not available, global frozen potato production capacity is estimated to be at least 9.6 million metric tons (mmt) a year.

Worldwide exports of frozen potato products in 2000 (over 90 percent of which is frozen french fries) were valued at \$1.9 billion. This export value does not account for the billions of dollars of frozen potato products produced and sold domestically in countries around the world.

The rapid global expansion of QSRs is key to the tremendous growth in worldwide consumption and trade of frozen potato products. Beginning in the U.S. in the 1950s, the QSR chains of McDonald's and Burger King expanded rapidly. Expansion through the 1960s occurred primarily in the U.S., but these restaurants

began to open franchises around the world in the 1970s. Early expansion was concentrated in Canada, Western Europe, Japan, Hong Kong, Australia, and New Zealand.

Additionally, new firms such as Wendy's emerged and began expanding. In the 1980s and 1990s, QSR growth was occurring worldwide, surging in many Asian countries as well as in Latin America, while continuing to grow in the original markets. By 2001, McDonald's had over 29,000 outlets in 121 countries, Burger King had over 11,000 in 57 countries, and Wendy's over 5,000 in 34 countries.

### Growth of an Industry

Rapid, continuing growth in the fast-food industry over the years has spawned growth in the frozen potato industry, first in the U.S. and then worldwide. Commercial production of french fries began in the U.S. on a small scale in the mid-1940s, but did not develop into a major industry until after the inception of QSRs in the 1950s. As QSRs expanded, so did the frozen potato products industry, with U.S. output increasing from 129 million

pounds in 1955 to 3.9 billion pounds in 1980, and to an estimated 9.3 billion pounds in 2000.

Despite the industry's dramatic growth, ever-increasing domestic and international demand for frozen french fries far exceeded U.S. processing capacity. By the 1970s, processors in Canada and Western Europe were producing fries to meet the growing demand. Today, the U.S. still ranks as the largest producer of frozen french fries in the world, turning out an estimated 3.6 mmt of fries in 2000. The Netherlands ranked second in 2000, producing 1.2 mmt, while Canada was third with 1.1 mmt.

Without frozen fry production statistics from every country, assessing shares of global production is difficult, but it is likely that the U.S., the Netherlands, and Canada collectively produce 60-80 percent of the world total. The bulk of the remaining fry production occurs in other European Union (EU) nations (particularly Belgium, France, Germany, and the United Kingdom) and, to a lesser extent, Australia and New Zealand. French fries are also produced in Eastern Europe, Asia, Africa, and South America. As french fry consumption rises in these areas, local production is likely to increase as well.

### Major & Potential Markets

While frozen potato products are clearly global commodities today, the predominant markets are still the U.S., the EU, Canada, and Japan. However, as these markets mature, their growth potential is likely to be limited. This is most evident in the U.S., the oldest and largest single-country market for frozen potato products, where demand seems to have leveled off in recent years. Per capita utilization of frozen potato products in the U.S. is estimated at 29.4 pounds per person in 2001, 2.4 percent below the record set in 1996.

Further evidence of market maturity is the somewhat slower expansion of traditional burger and fry outlets in the U.S. compared with the rest of the world. In 2001, for example, the number of McDonald's outlets in the U.S. increased by only 2.3 percent from the previous year compared with 4.8 percent worldwide. With over

13,000 outlets in the U.S. in 2001, there was one McDonald's for approximately every 22,000 people. Canada ranks second with one McDonald's outlet for approximately every 25,000 people.

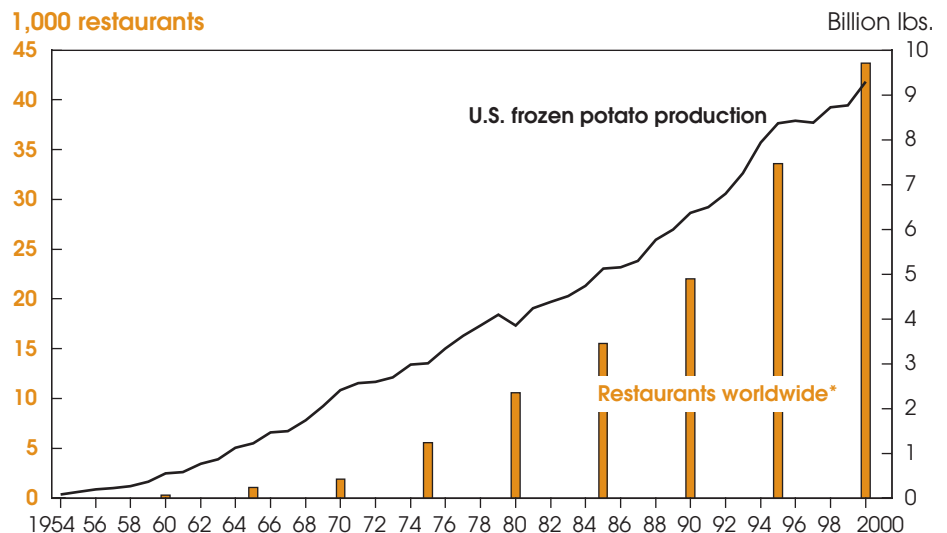
Japan is also showing signs of market maturity for frozen potato products, with consumption leveling off recently after years of rapid growth. Per capita consumption of frozen potato products in Japan reached 5.3 pounds in 1999, and has hovered at around the same level since then. Most of this consumption occurs through the food service industry, with McDonald's by far the leading retailer. After the U.S. and Canada, Japan ranks third in the number of McDonald's outlets per capita, with one outlet for approximately every 33,000 people.

However, other indicators seem to show that the Japanese market may not be quite as mature for frozen potatoes as the U.S. market. McDonald's added 224 new outlets in Japan in 2001 (up 6.2 percent from 2000—a higher growth rate than U.S. and world averages). Also, “ready-to-eat” french fries, sold through convenience stores, are a relatively new product gaining popularity in Japan. Although still less than 10 percent of the market, this product could help boost Japanese french fry consumption in coming years.

QSRs have operated in most EU countries since the 1970s, and in 2001 there was one McDonald's restaurant for every 125,000 people (including Eastern Europe). European per capita utilization of frozen potato products in 2000, although based on limited data from only 13 countries, is estimated at about 13.7 pounds per person, about half the U.S. level. However, per capita utilization in the United Kingdom (UK), the largest European market for frozen potato products, was an estimated 34.6 pounds per person in 2000, 15 percent higher than the 1999 level, due largely to surging demand in the catering sector.

Countries with the most growth potential for frozen potato products in coming years are likely to be those that are still largely untapped by the QSRs, particularly in Asia and Latin America. As these regions continue to develop economically, QSR outlets will likely expand, increasing demand

## U.S. Production of Frozen Potatoes Rises Rapidly With Expansion Of Quick Service Restaurants



\*Approximate number of McDonald's, Burger King, and Wendy's in operation worldwide. Source: Production data from American Frozen Food Institute; restaurant data are ERS estimates.

Economic Research Service, USDA

for frozen potato products. In Latin America, there is currently only one McDonald's for every 332,000 people, and in the Asia/Pacific region, there is only one outlet for every half million people.

Two countries with perhaps the most potential for QSR growth and potential demand for frozen potato products are China and India. The QSR industry in China has developed rapidly in recent years (e.g. McDonald's expanded the number of outlets from 326 in 2000 to 430 in 2001—a 32-percent increase), but is still in relative infancy. As of 2001, there was only one McDonald's for approximately every 3 million people in China. And in India, with a population of nearly a billion, the QSR industry has not even begun to develop, with only 34 McDonald's outlets in the entire country in 2001.

### World Trade Dominated by a Handful of Countries

The Netherlands, Canada, and the U.S. accounted for 67 percent of total world export volume in frozen potato products in 2000, down from 86 percent in 1980. Half the loss in export-market share of these three countries has occurred since

the mid-1990s. During this time, many other countries producing frozen potatoes—e.g., France, the UK, and New Zealand—expanded production capacity and increased exports. Meanwhile, several new countries—e.g., Poland, Argentina, China, and India—entered the frozen potato production and trade arena. Output, capacity, and exports from the Netherlands, Canada, and the U.S. continued to rise, but increasing competition caused their overall export market share to fall. In 2000, Belgium edged out the U.S. to become the third-largest exporter of frozen potato products by volume, but still ranked fourth in value.

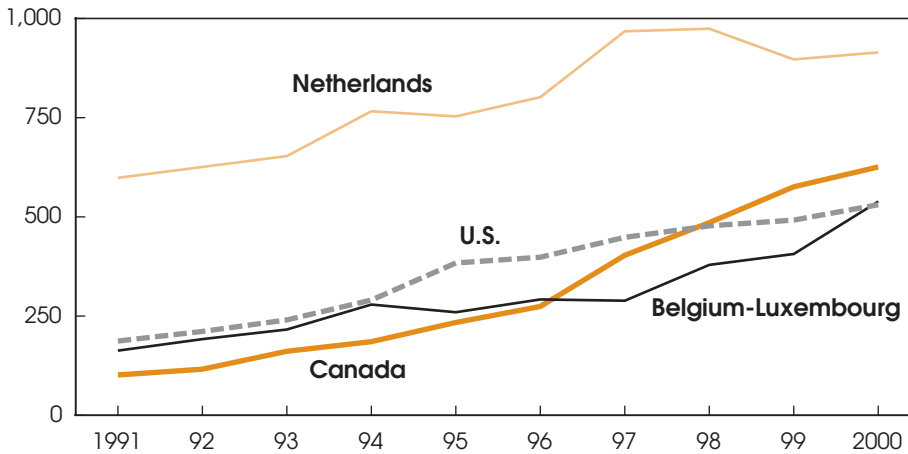
The world's largest exporter of frozen potato products is the Netherlands. In 2000, it exported just over 1 mmt (valued at \$567 million) of frozen potato products, nearly 90 percent going to other EU nations. Other markets for Dutch frozen potatoes include the Middle East, South America, and Eastern Europe. With EU markets beginning to mature, future Dutch export growth may focus on Eastern Europe, Russia, and South America.

The second-largest exporter of frozen potato products in the world is Canada, which in 2000 exported 624,399 metric

## Commodity Spotlight

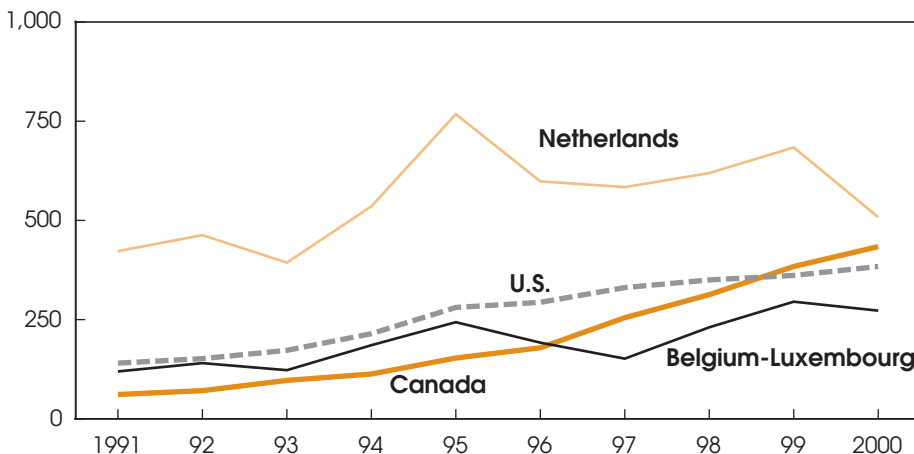
### Canada Is a Rising Star in the Frozen Potato Export Market: In Volume . . .

1,000 metric tons



### . . . and in Value

\$1,000



Source: United Nations Food and Agriculture Organization.

Economic Research Service, USDA

tons (mt), valued at \$423 million. Nearly 90 percent went to the U.S. Between 1989 and 2000, Canadian exports of french fries to the U.S. rose an average of 25 percent per year. In 2000, Canadian fries accounted for about 13 percent of all fries consumed in the U.S., up from only 2 percent in 1989.

Much of Canada's fry processing capacity is located in the central and eastern portions of the country. This creates a comparative advantage over Western U.S. producers when shipping to the Midwest and

Eastern U.S. In addition, the relative weakness of the Canadian dollar (compared with the U.S. dollar) in recent years has given Canadian fry producers an advantage in shipping to the U.S. Exports of frozen potato products to Japan have risen in recent years, accounting for about 13 percent of the Japanese import market in 2000 (the U.S. accounted for 85 percent). With Canadian processing capacity continuing to expand, Canadian exports are expected to continue increasing as well.

The U.S. is the third largest exporter of frozen potato products in value. In 2000, the U.S. exported 511,922 mt of frozen potato products, valued at \$370 million. The largest foreign markets for U.S. frozen potato products are in Asia and the Pacific Rim, accounting for 84 percent of U.S. export volume in 2000.

The largest single export market for U.S. french fries is Japan, accounting for 46 percent of U.S. fry export volume in 2000. U.S. fry exports to Japan rose an average of 20 percent a year in the 1980s and 9 percent a year in the 1990s. The U.S. share of the Japanese frozen potato product import market rose from 84 percent in 1990 to a high of 90 percent in 1998, before falling to 85 percent in 2000. The recent decline in market share in Japan is the result of increased competition (particularly from Canada) and increased U.S. exports to other Asian and Latin American countries.

Other major markets for U.S. frozen potato products in Asia include China (11 percent of U.S. export volume, including Hong Kong), South Korea (7 percent), Taiwan (6 percent), and the Philippines (4 percent). In the Western Hemisphere, Canada and Mexico are the major markets for U.S. frozen potatoes with export shares of 3 and 6 percent, respectively.

### Globalized Production & Foreign Direct Investment

Although output of U.S. frozen potato products has continued to expand and benefit from globalization of the QSR industry, increased worldwide demand has also led to globalization in the production sector. As worldwide demand for frozen potato products increases, a natural progression for the processing industry has been to invest directly in major markets abroad, building and expanding processing plants worldwide. This reduces transportation costs by minimizing shipping distances, and helps stabilize the overall market by limiting the effects of local crop disasters and shortages.

The motivation for foreign direct investment (FDI) in frozen potatoes is no different from related sectors such as wineries or beverages. FDI is motivated primarily by pressures to reduce transaction costs,

## Commodity Spotlight

to access and develop foreign markets, and to jump trade barriers. FDI in frozen potatoes is also driven by a need for a cost-effective, stable, and adequate supply of frozen potatoes to meet the demands of a growing worldwide QSR sector.

Decisions about where and how much to invest also depend on factors specific to host countries. First, a host country must have large markets for frozen potato products, or markets with excellent growth potential. Second, a host country must have the ability to produce ample supplies of processing potato varieties at a competitive cost, along with the infrastructure necessary to support the movement and storage of both raw potatoes and finished products to and from processing locations. Finally, factors such as a host country's economic and political stability are likely to affect investment decisions. Expansion of processing plants around the world in recent years is testimony to increasing FDI in the frozen potato industry.

### FDI & Exports

As FDI and globalization of production increase, they are likely to affect global trade in frozen potato products. The relationship between exports and FDI is influ-

enced by factor productivity and cost, as well as monetary and fiscal policies in the home country and host countries. Additionally, the relationship between exports and FDI depends on characteristics of the host country (e.g., gross domestic product and resource endowments, per capita income, infrastructure, and markets), industry or product (e.g., size, structure, concentration, and inputs), and the risks associated with trade and/or investments.

Analysis of the relationship between FDI and exports in the U.S. processed food industry provides mixed conclusions. One study found evidence that exports may serve as a precursor to FDI. Another study, which explored the relationship between exports and FDI for six food manufacturing firms, found three disparate patterns among firms, suggesting that the export-FDI relationship is ambiguous. A third study, using processed food industry data from the countries of the Organization for Economic Cooperation and Development, showed substitutability between FDI and exports.

Although lack of data on FDI in the frozen potato industry inhibits strong conclusions about the nature of the relation-

ship between exports and FDI, the relationship appears ambiguous and may change over time and across countries. In the short run, FDI may complement home-country exports because foreign production may enable companies to lower transaction costs and open even more new markets for their products. Producing frozen potato products locally in foreign countries may initially stimulate demand in those countries by helping to introduce the product to consumers. If demand for the product increases beyond what can be produced locally, it could boost exports from the parent companies' home country.

In the long run, however, FDI may replace home-country exports if local production increases sufficiently to satisfy local demand. This may occur as worldwide markets mature and worldwide production capabilities improve. **AO**

*Charles Plummer (202) 694-5256  
cplummer@ers.usda.gov  
Shiva Makki (202) 694-5316  
smakki@ers.usda.gov*

**Find more information on the ERS Potatoes briefing room**  
[www.ers.usda.gov/briefing/potatoes](http://www.ers.usda.gov/briefing/potatoes)

Agricultural  
Outlook  
Forum  
2003



**Arlington, Virginia**  
**February 20-21, 2003**

*Mark your calendar*

**USDA's 79th  
Agricultural Outlook Forum**

**An open market for issues and ideas**

Watch for details at [www.usda.gov/oce/waob/agforum.htm](http://www.usda.gov/oce/waob/agforum.htm)  
To receive program updates by email  
send requests to [agforum@oce.usda.gov](mailto:agforum@oce.usda.gov)