U.S. and EU Consumption Comparisons

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Consumers in the EU and the United States are sometimes regarded as being very different. In his 1976 book *The Joyless Economy*, Tibor Scitovsky refers to "the greater choosiness of the European buying public", and discusses the many differences in European and U.S. food preferences. However, there are a number of similarities in the consumption trends occurring in the United States and the EU. Food consumption patterns originally came from Europe to the United States, along with immigrant populations, but in recent decades, some food consumption trends have traveled from the United States to the EU, and to the extent that rising incomes drive food trends, higher incomes in the United States mean that the United States will experience food trends ahead of the EU (Connor, 1994). Additionally, both the EU and the United States exhibit variation among regions, although the variability seems to be higher within the EU.

This article examines EU and U.S. food consumption patterns and finds that the percentage of income spent on food and food prices (given income) are somewhat lower in the United States, and there are definitely some differences in EU and U.S. preferences for food characteristics and specific types of food. However, in some cases, the differences among EU countries in food preferences dwarf the differences between the EU and United States. Additionally, the EU and the United States are experiencing similar demographic changes. In both regions, people work more hours, cook less and eat more prepared food, and consolidation is taking place in the food retailing sector.

The first section of the paper discusses prices, expenditures, and income. The second section deals with food availability and consumption patterns, the third discusses preference trends, the fourth discusses demographic trends, and the fifth discusses food retailing.[1]

Prices, Expenditures, and Income

Prices

Many foods are less expensive in the United States than in the wealthier countries of the EU, but food is somewhat more expensive in the United States than in the less wealthy countries of the EU. Both the EU and the United States have much higher food prices than the wealthiest Eastern European countries, with the exception of Slovenia. One problem with comparing purchasing power parity from country to country, or even within the EU or the United States, is that qualitative differences might be difficult to capture. Meat is generally of lower quality in Eastern Europe (Bjornlund et al., 2002). Products available vary within the United States from region to region, and are different from those available in the EU. Thus, some of the price differences might be capturing differences in quality. Table 1-E gives purchasing power parity indices for food prices in the countries considered here. A quantity of bread and cereals items that cost $100 in the United States would cost $156 in Denmark, but only $85 in Portugal, and only $40 in the Czech Republic. Meat costs are higher in most EU countries than in the United States, but are much lower in the Eastern European countries. A quantity of meat costing $100 in the United States would cost $210 in Denmark, but would only cost $73 in Hungary or Poland.

Food prices not only vary between the United States and the EU, but there is remarkable variation within

[1]Gracia and Albisu (2001) use a structure similar to this article and cover a number of the same issues.

Table 1-E—Incomes and food prices

Country	1998 GNP per capita (constant 1995 $US)	Average growth rate of GNP per capita, 1994-98	Bread and cereal price index 1998 (PPP)	Meat Price Index 1998 (PPP)
United States	29,316	2.66	100	100
EU				
Austria	30,841	2.21	114	163
Belgium	29,284	2.36	116	161
Denmark	36,892	3.30	156	210
Finland	27,807	5.23	147	156
France	28,028	2.19	125	157
Germany	30,941	1.65	145	187
Greece	12,111	2.32	104	102
Ireland	19,469	7.78	80	103
Italy	19,363	1.68	101	135
Luxembourg	50,851	1.22	NA	NA
Netherlands	28,344	2.81	106	176
Portugal	11,573	2.82	85	116
Spain	15,405	2.66	89	91
Sweden	26,613	2.34	151	179
United Kingdom	20,214	2.72	90	128
Eastern Europe and Cyprus				
Cyprus	12,942	3.10	---	---
Czech Republic	5,070	1.84	40	78
Estonia	3,889	4.98	47	80
Hungary	4,726	3.25	52	73
Poland	3,833	5.79	50	73
Slovenia	10,717	4.36	71	117

Source: World Bank World Development Indicators, 2000.

the EU and the United States. Using Sweden as a benchmark of 100, the food price index in the EU ranges from 109 in Denmark to 65 in the UK and Portugal, a 68-percent difference (Lennernas et al., 1997). This means that a balanced basket of food, representing the consumption of the average consumer, that costs $65 in the UK, would cost $109 in Denmark. This price variation is mirrored in the United States. A basket of groceries that cost $141.50 in Manhattan would cost $93.30 in Houston, a difference of 52 percent (ACCRA, 1999).

A number of factors contribute to the divergence of food prices. Lipsey and Swedenborg (1993) studied the variation in food prices among OECD countries (the United States, the EU, Japan, Australia, New Zealand, and the non-EU Scandinavian countries[2]) in 1993. The study indicated that differences in income, taxation of food, and protection of agriculture from international competition[3] explained the differences in food prices, and that the importance of those three factors differed for different countries. They also hypothesized that wage patterns might also explain some of the differences. Taxation in the form of value-added taxes (consumption taxes) were very important in explaining the high prices in Denmark and Sweden, while in Finland, taxation and agricultural protection were equally important. These results suggest that income might explain the differences in prices among many countries in table 1-E, while differences in agricultural protection, consumption taxes, and wage patterns could explain part of the reason why the United States has lower food prices than EU countries with comparable incomes.

[2]Sweden was not an EU member in 1993.

[3]Protection that increases agricultural prices can include market price support, where the government sets a price for a product higher than the world price, and then enforces the price by placing tariffs on cheaper imports.

Expenditures and Income

Differences in food prices and incomes lead to some differences in the percentage of household expenditures spent on food. Food prices are lower in the United States, and incomes are high relative to some EU countries. Thus, in 1997, U.S. consumers spent only 13.8 percent of household expenditures on food (Bureau of Labor Statistics, 1998). For the EU as a whole, for 1997, food consumption was 17.4 percent of household expenditure, ranging from 13.9 percent in Germany to 30.5 percent in Ireland, and 36 percent in Eastern Europe (European Commission, 2000, Josling and Tangerman, 1998).[4] This higher percentage of expenditures stems partly from the higher prices in the EU, which explains why expenditure shares are slightly higher in some of the wealthiest countries of the EU than in the United States. In some EU countries, like Greece and Portugal, and in Eastern Europe, expenditure shares are much higher, even though prices are on par with the United States. In these countries, incomes are much lower, so that despite relatively low food prices, food is a more prominent component of household expenditures. Additionally, regional differences in diet might mean that the preferences of some EU countries are more expensive than the preferences of another (Meade and Rosen, 1997). In such a case, if two countries have the same income but one prefers a diet that includes more expensive items, including prepared foods and high-quality foods, that country's food expenditures might be higher.

The United States has some variation in the percentage of income spent on food, but not nearly as much as the variation across the EU. In 1999, the national average spent on food was 13.6 percent of household expenditure, but was only 12.9 percent in the Western States, while residents of the Northeast spent 14.3 percent of their household expenditures on food (BLS, 1999). Interestingly, Northeastern States have the highest incomes, while Western States have the second highest incomes.

Food expenditure as a share of income is falling in both the United States and the EU, as incomes rise and food prices fall relative to other goods. Engel's Law states that the income share of food expenditure falls, as incomes rise, since consumers don't tend to increase their food intake very drastically. For EU countries, the proportion of food expenditure in total income declined during the 70s and 80s. Food expenditure as a percentage of total household expenditure declined in the United States as well, but not very quickly, dropping from 15 percent of household expenditure in 1984.

Changes in food prices will have greater effects on countries where food is a greater share of the budget. Consumers in the EU can be expected to be more sensitive to changes in food prices than U.S. consumers, with the countries about to join the EU the most sensitive, and those wealthy EU countries only slightly more sensitive than the United States.

Policy implications

Many differences in prices and shares of income spent on food are the result of different income levels among and within countries, and, therefore, policy differences matter relatively little. However, some price differences could be the result of differences in agricultural protection and consumption taxation, as well as differences in wage structures and marketing. Food prices are often a composite of the prices of many different inputs, including commodities, distribution and transportation, marketing services, and processing costs (see McCorriston, 2002). Further research will be necessary to understand the source of all of these differences.

Patterns of Food Availability And Consumption

Food availability, described below, and consumption patterns vary substantially across the EU and also differ from those of their U.S. counterparts. Mediterranean countries, far Northern European countries, and Eastern European countries all have distinct dietary patterns. While the United States does not differ markedly from the EU in some respects, consumption of a few key commodities is substantially higher in the United States.

FAO food balance sheets (1999) can shed some light on differences in food consumption among countries. These data provide food availability, a measure of the per capita supply of foodstuffs available after imports, exports, and processing needs have been added in, and these data are reflected in table 2-E. These figures don't reflect actual consumption, but they give a general picture of food available to consumers in each country. Food availability patterns taken from the FAO

[4]Some sources state that food is between 30 and 35 percent of income for Eastern European countries.

Table 2-E—Food availability by country

Country	Food availability per capita (in kg)						
	Cereals	Starchy roots	Sugar & sweeteners	Oil crops	Vegetable oils	Vegetables	Fruits
Mediterranean							
Greece	150.8	71.4	32.0	13.5	27.7	281.5	175.2
Italy	160.3	39.4	31.7	3.1	26.2	178.9	134.2
Portugal	129.3	129.7	35.1	2.5	16.5	188.3	132.9
Spain	99.6	87.0	31.0	5.9	27.3	163.4	114.6
Far Northern Europe							
Finland	97.5	70.2	40.2	1.4	11.1	70.8	85.5
Sweden	102.4	52.5	44.6	2.4	18.2	78.1	107.2
Austria	114.2	66.4	46.8	3.4	16.2	99.3	110.1
Belgium (LUX)	107.5	107.4	50.1	2.8	22.8	148.2	110.5
Denmark	115.5	72.0	56.5	1.5	6.7	103.5	105.2
France	114.4	67.2	41.0	2.7	16.5	125.2	89.1
Germany	99.8	77.5	42.5	3.2	17.7	73.7	111.7
Ireland	129.7	127.4	48.1	3.2	14.2	73.1	69.3
Netherlands	73.7	83.7	46.9	2.9	15.6	87.7	135.3
United Kingdom	107.2	110.5	38.1	3.8	18.4	88.6	85.5
EU (15)	114.7	78.2	39.0	3.7	19.9	122.4	110.1
USA	113.7	64.2	74.2	6.0	24.0	134.2	108.6
Cyprus	114.8	37.1	46.1	9.9	15.9	178.6	163.7
Czech Rep	121.9	78.9	46.3	3.9	17.1	81.8	73.4
Estonia	178.1	150.3	22.0	0.5	7.4	68.0	70.3
Hungary	111.0	70.0	58.0	1.6	15.6	105.6	71.9
Poland	151.5	137.3	43.1	1.3	12.8	126.4	53.3
Slovenia	135.0	57.0	17.9	0.8	11.4	98.0	94.8

Country	Food availability per capita (in kg)						
	Alcohol	Meat	Offal	Animal fats	Milk	Eggs	Fish, seafood
Mediterranean							
Greece	63.0	85.5	4.1	3.5	257.1	10.3	26.7
Italy	79.1	91.3	3.9	10.4	260.5	12.9	23.5
Portugal	128.1	92.8	6.2	12.1	206.5	9.3	58.1
Spain	108.2	113.1	4.2	3.9	164.5	13.9	40.9
Far Northern Europe							
Finland	94.7	67.3	1.9	11.4	373.6	9.3	35.6
Sweden	74.6	72.4	1.5	17.3	345.4	11.6	27.5
Austria	151.5	90.9	1.3	18.7	279.2	13.0	14.1
Belgium (LUX)	125.3	84.0	7.8	26.2	219.0	14.4	20.2
Denmark	153.1	112.4	1.0	27.6	199.2	14.7	24.4
France	105.1	99.9	9.9	19.0	265.2	16.0	28.7
Germany	151.2	85.3	4.2	22.3	239.1	12.2	14.6
Ireland	158.5	99.4	19.6	17.8	263.1	6.9	15.4
Netherlands	98.5	85.9	2.3	9.4	364.1	16.1	15.9
United Kingdom	118.6	76.3	2.3	8.3	233.2	9.2	22.1
EU (15)	114.7	90.3	4.8	14.3	246.8	12.6	24.6
USA	101.8	124.0	1.0	6.7	256.0	14.5	20.3
Cyprus	62.4	117.6	4.1	5.2	194.7	11.2	23.0
Czech Rep	175.2	81.3	5.0	9.5	202.9	16.4	11.5
Estonia	56.3	57.6	3.0	7.6	202.7	11.4	19.7
Hungary	109.0	84.3	2.6	22.0	169.5	15.7	4.7
Poland	77.3	70.2	2.7	13.4	189.3	10.5	14.1
Slovenia	116.6	96.2	6.6	17.4	252.4	10.4	6.7

Source: FAO Food Balance Sheets, 1999.

balance sheets indicate that consumption patterns still differ from country to country, sometimes probably due to regional cost differences or income differences, but sometimes with few discernable patterns.

Southern European countries have different patterns of food availability than other EU countries or the United States. The fact that there is a distinctive "Mediterranean Diet", with an emphasis on grains, fruits, vegetables, olive oil, cheese, yogurt, and fish, and with little red meat or sweeteners, has been recognized by nutritionists, and some research suggests that the diet can contribute to reductions in heart disease (NAL, 2002; Gracia and Albisu, 2001). Some of those food patterns attributed to Mediterranean diets are reflected by the food availability data in table 2-E, although the patterns are not completely uniform across all Mediterranean countries. Compared with the other countries examined, southern European countries--Greece, Italy, Spain, and Portugal--exhibit high availability of vegetables. They are the lowest consumers of sweeteners in the EU, although not that far below the average. Spain and Portugal have very high availabilities of fish, and Italy and Greece have high availabilities of cereals and fruits compared with the EU average. Italy, Spain, and Greece have the highest availability of vegetable oils, probably due to high production and consumption levels of olive oil. Other studies confirm these observations. The European Economic Digest (1998) confirms that Spain and Portugal consume large amounts of fish, and Gil et al. (1995), suggest that historically, little meat has been eaten in Mediterranean countries.

There is some evidence that changes are taking place in the Mediterranean diet. Gil et al. (1995) indicate that animal calorie consumption increased and then fell on average in EU countries from 1970-1990. In the 1970s 19 percent of consumption in Mediterranean countries came from animal products, compared with 30 percent in other countries, while the 1990 average was 34 percent of total consumption (Gil et al., 1995). Meat consumption in Mediterranean countries has risen since the 1980s (FAO, 1999, 1998b; Gracia and Albisu, 2001), and the food balance sheets for 1999 indicate that meat consumption is now somewhat high compared with the rest of Europe for a number of Mediterranean countries. Fruit and vegetable consumption is decreasing in the Mediterranean countries (Gracia and Albisu, 2001). Some of these changes may be driven by rising income.

Two of the Far Northern European countries, Sweden and Finland,[5] have a distinctive diet as well. These countries have low availabilities of vegetables and meat, and high availability of milk. Their availability of cereals and fruit is below the EU average, and fish availability is above the average, although availability in these food categories differs from the average by 20 percent or less. This is supported by other research. Northern European countries have high proportions of calories from animal fat, milk, dairy, and sugar (Gil et al., 1995). Consumers in Finland purchase more meat products and fewer grain products than other OECD countries (Herrmann and Roder, 1995). Historically, the Scandinavian countries have not traditionally had the climate or land necessary to grow vegetables or fruits cheaply, so that traditional diets might incorporate fewer of those products, and relative prices will be higher due to the need to transport such foods.

Change seems to be taking place in these countries as well. As noted above, in many categories, Sweden and Finland differ from the EU average, but not by large amounts. The FAO data conflict somewhat with other research, which suggests that Scandinavia is the biggest consumer of bread and pasta (EED, 1998). In Finland, vegetable consumption has risen, and grain and potato consumption have fallen (Finnish National Public Health Inst., 1999). In Finland, meat consumption has decreased over the last decade, and fish and dairy consumption have decreased in both countries (Gracia and Albisu, 2001).

Many of the Eastern European countries are on the high end of cereal consumption, and many have a relatively low availability of fruit, fish, and milk. Meat consumption is on the low end, and cereal consumption is high, although availability for both categories is within 20 percent of the EU average. Across the countries examined, table 2-E suggests an inverse correlation between cereal availability and income, and a positive correlation between milk availability and income, so that some of these differences could be due to lower income in Eastern Europe. The fish availability could reflect either low incomes and/or low access to the sea in those countries. Other researchers have found that Eastern Europeans eat more canned foods, more rice and pasta, more chicken, and more spicy food (FAS, 1996a).

[5]Interestingly, Denmark, also a Northern Scandinavian country, does not have the same dietary pattern.

The United States has markedly more meat and sugar and sweetener availability than its EU or Eastern European counterparts, as indicated by table 2-E. Other researchers have found that beef and poultry consumption is higher in the United States than in the EU (Connor, 1994). This finding is probably due to the low prices of meat in the United States relative to the price of other foods. Meat consumption has risen in the 90s, mostly due to an increase in poultry consumption (Putnam, 2000). The United States also falls on the low side of animal fat availability, with an availability that is 50 percent lower than the EU average.[6] Only Cyprus and Greece, two major olive-producing states, exceed the United States in oil crop supply per capita. In other categories, the United States falls in the middle of the distribution of selected countries with respect to cereals, fish, milk, fruit, and vegetable availability, and is within 20 percent of the EU average availability for these food categories. Compared with countries with similar per capita incomes,[7] the United States is again very high in meat and sugar consumption, and is among the higher consumers of oil crops, vegetable oil, and vegetable consumption.

A number of studies have considered whether European diets are converging and becoming more similar, as incomes rise and trade in food products occurs. One study finds that convergence has occurred in animal calories, cereals, pulses, fruits, and vegetables, while no convergence has occurred in proportion of calories from meat, fish, and eggs (Gil et al., 1995). However, another study found that wine and meat consumption converge for OECD countries (Herrmann and Roder, 95). Gracia and Albisu suggest that there is a great deal of evidence to support convergence, but European countries still have dietary differences (2001).

Over time, the Eastern European diet is also undergoing some changes. Eastern European diets differ rather substantially from those of the EU, probably due to income and relative price differences. Ellsner and Hartmann (1998), looking at a number of Eastern European countries between 1988 and 1995, including Hungary, Poland, the Czech Republic, and Estonia, find that the Estonian diet is clearly converging with that of the EU, and the structure of food consumption in the Czech Republic is converging with that of the EU. The results are more mixed for Poland and Hungary, possibly because they were more similar to the EU with respect to diet at the beginning of the period in question. Eastern European countries also experienced a decline in calorie intake between 1988 and 1995, as incomes fell and prices rose. These results have implications for trade. Ellsner and Hartmann also find that intra-industry trade, i.e., trade in similar products, has increased between the EU and Poland and Hungary, despite the fact that incomes in Poland and Hungary fell. This suggests that the countries are developing similar preferences beyond those that would be influenced by changes in income.

The evidence cited above indicates that while European diets are changing and even converging in most countries of the EU, significant differences still remain. EU and U.S. diets differ substantially with respect to meat and sugar consumption, but in other food categories, differences among EU countries are sometimes greater than differences between EU countries and the United States. Differences in consumption patterns have a number of implications for trade between the United States and the EU. Markets with different dietary composition will have different demand curves for a given product.

Why do consumption patterns differ among countries? Differences in expenditure on different types of foods can usually be explained by differences in income and prices (Connor, 1994). Taste differences can be the result of differences in geography, which makes the production of some goods easier in particular countries (Gracia and Albisu, 2001). This results in lower prices for that good, and in its incorporation into the traditional diet. Additionally, lower income countries will consume relatively fewer high-cost goods, like meat and fish. However, the explanatory power of prices and income declines, as a society grows wealthier, and food becomes a smaller share of income (Connor, 1994; Herrmann and Roder, 1995; Ellsner and Hartmann, 1998). We would therefore expect that consumption patterns would reflect relative price differences in countries, but the wealthier the country, the looser the relationship between prices and consumption.

So if prices and incomes are becoming relatively less important in explaining dietary differences and dietary convergence, what other explanatory factors can we find? Changes and differences in tastes, information,

[6]Gracia and Albisu (2001) note that many countries in the EU are moving away from animal fats and toward vegetable fats.

[7]Austria, Belgium, Finland, France, Germany, and the Netherlands.

and demographics all contribute to dietary patterns in different ways. These will be discussed in the next two sections.

Preference Trends

As consumers gain affluence, their attention turns from having enough food, to the quality of food they eat. Consumers in wealthy, industrialized nations are becoming more concerned about healthy diets. Additionally, consumers are becoming more concerned about food safety, like pathogens and disease risks. Finally, consumers are becoming more concerned about the production methods of the foods they eat, particularly the consequences for the environment and animal welfare. While both the EU and the United States are experiencing these trends, some specific concerns are more prevalent in the EU.

Health

Both U.S. and EU consumers are trying to improve the quality of their diets in ways that will improve their health. Evidence, however, indicates that both regions are struggling with these attempts.

Both the United States and EU are reducing fat consumption (Connor, 1994). Putman and Gerrior (1999) note that fat consumption in the United States began to fall during the 90s, although this occurred after two decades of increasing fat consumption. Several individual countries report evidence of increasing consumption of individual foods that are lower in fat than their traditional counterparts (see Finnish National Public Health Inst., 1999; FAS, 1996b). In the United States, cholesterol consumption has been decreasing, and for a large percentage of the population, it is within recommended levels (Kennedy et al., 1997). Egg consumption has fallen in Europe due to cholesterol concerns (Gracia and Albisu, 2001). However, U.S. fat and sugar consumption are still substantially higher than the recommended USDA guidelines, and consumption of added sugar and other sweeteners has risen throughout the 1990s (Kantor, 1997; Putnam et al. 1997; Putnam, 2000). In the EU, most member states, with the exception of Portugal and Ireland, report diets with greater than 35 percent of calories from fat, and the percentage of total energy from fat actually rose very slightly between 1996 and 1998.

In addition to reducing their intake of foods that can damage health, consumers in wealthy countries are trying to increase their intake of foods linked to disease reduction, but are not yet consuming recommended amounts. In the United States, fruit, vegetable, and grain consumption have risen over the last 30 years, but fruit consumption was substantially lower than USDA guidelines recommend (Putnam and Gerior, 1999; Kantor, 1999). In the EU, fruit and vegetable intake varies substantially, and in many countries is inadequate (Byrne, 2001). It has increased over time, however (Gracia and Albisu, 2001). In half of the EU member states, the average fruit and vegetable consumption is less than 70 percent of the World Health Organization's recommended value (Robertson and Knai, 2000).

Improvements in diet have not been adequate to improve all health indicators. Studies in both the United States and the UK report that obesity is rising, and the EU reports increases in obesity as well. Both the UK's National Accounting Office study and the U.S. Center for Disease Control attributed this trend to high fat diets, exacerbated by the increase in fast food intake, and sedentary lifestyles. The EU reports that there is variation in the prevalence and increases in obesity across member nations (European Commission, 2000). There is also some moderate variation in obesity among regions in the United States.

Why is it that consumers in both regions are trying to improve their diets, but struggle? As more and more research indicates that diet is one of the determinants of risk for heart disease and cancer, two of the leading causes of death in the United States, governments are encouraging consumers to reduce cholesterol and fat intakes. Additionally, education and income are related to diet in both the EU and the United States, with better educated and higher income consumers making choices to eat more fruits and vegetables and less fat, and making more conscious choices about the health consequences of diet (Lennernas et al., 1997; Kennedy et al., 1997; Connor, 1994; Robertson and Knai, 2000). Thus as education and income levels rise, we might expect more pursuit of a healthy diet in both the United States and EU. However, the more sedentary lifestyles that accompany wealth are contributing to obesity in some countries. Some scholars suggest that the increasing tendency for U.S. and EU consumers to eat out, especially when they purchase fast food, can contribute to a less healthful diet (NAO, 2001). Indeed, in 1995, Americans consumed 34-38 percent of the fat, sodium, and cholesterol in their diet away from home, while they consumed 27-29 percent of minerals and

fiber away from home (Lin et al., 1999). These opposing forces mean that consumers are both gaining and losing ground in the quest for better health.

Food safety

Food safety concerns, mostly concerns about contaminants and pathogens in food, are changing consumers' purchasing behavior. Fear of the disease Bovine Spongiform Encephalopathy (BSE) or mad cow disease has drastically reduced beef consumption in the EU, with total consumption for 2001 expected to be 10 percent below the previous year (FAS, Market Circular, 2001; Gracia and Albisu, 2001; Thompson, 2001). Other crises, like dioxin in chicken feed in 1999 or foot and mouth disease[8] in the UK have led to sudden changes in consumption patterns, as manufacturers pull some foods, or consumers reject them, while consumers stock up on substitutes. Some food scares have led to large fluctuations in the supply and/or demand for various food products. In the United States, food scares have been more isolated, and have had smaller market impacts. More recently, concerns about Starlink corn resulted in some corn products being pulled from the shelves.

Smaller effects in the United States might be related to confidence in regulation of the food supply. In a 1995 survey of American consumers, 52.3 percent indicated that they trusted food safety information from government publications (Buzby and Ready, 1996). The September 1999 Gallup poll indicated that 61 percent of Americans place "a fair amount" and 15 percent place "a great deal" of confidence in the Federal Government to ensure the safety of the food supply. European results are more mixed. Recent crises have reduced consumer confidence (Gracia and Albisu, 2001). When asked what factor that gave them certainty about a food's safety, 66 percent of consumers reported "national controls"[9] to be a factor (Eurobarometer 49, 1998). More chose national controls than any other determinant. However, when asked whether various institutions tell the whole truth, part of the truth, or none of the truth about food safety, 52 percent of European consumers chose the whole truth for consumer associations, while only 26 percent chose that option for government authorities (Eurobarometer 49, 1998).

[8]The concern about foot and mouth disease occurred in spite of the fact that humans generally don't contract the disease.

[9]As opposed to "European controls" or "controls undertaken by large retailers such as wholesalers and supermarkets".

Production process preferences

Consumers are becoming increasingly concerned about not just the characteristics of the food they eat, but also the production processes used to make their food. In these cases, firms need to communicate information about the production process to the consumer, since the consumer cannot personally verify which production process manufactured their food. Comparisons across countries are rendered somewhat difficult by the fact that there are no international or even domestic standards for defining some production processes, while for others, like organic production, some international standards exist. If the desired production process is more costly, consumers might need to pay a premium to get the products they desire.

There are indications that EU consumers are, in some instances, willing to pay the extra expense of food produced with techniques that are perceived to be friendlier to animals. Bennett (1997), in a survey of British consumers, finds that consumers would be willing to pay 6-30 percent more for eggs, if such an increase were the result of a ban on battery cages, towers of small cages used to house individual hens. Since surveys don't require that consumers spend money, actual market behavior is more indicative of willingness to pay for certain traits. In Denmark, eggs from non-caged hens have a 40-percent market share, in France, free-range eggs have a 6-7 percent market share, and a 15-percent market share in the UK. (Sorensen and Kjaer, FAS, 2000d; British Egg Information Service, 2001). In a survey done by the Market & Opinion Research International (MORI) in 1995, 67 percent of U.K. consumers surveyed indicated that they had purchased free-range eggs or chickens in the previous year. However, in some countries, like Spain and Italy, little free-range egg production exists (Int'l. Egg Commission, 1999; Blandford et al., 2000).

Some evidence indicates that U.S. consumers are willing to pay more for products that they perceive to provide greater animal welfare, but this trend is not nearly as pronounced in the United States as it is in the EU. Bennett and Larson, in a 1996 survey of U.S. college students, find that students were willing to pay 18 percent over market price for free-range eggs and willing to pay taxes of about $8.00 per person to fund practices that they believe will improve conditions for veal calves and hens. However, the share of free-range animal products is much smaller in the United States than it is in the EU.

Organic food is also growing in popularity in the United States and the EU. Table 3-E indicates the average share of agricultural land and food sales held by organic products in various countries. In the individual countries of the EU, anywhere from 1 to 9 percent of agricultural land is farmed organically. Organic food sales represent 0.5 to 3 percent of total food sales, attaining that share of the market only in the wealthiest countries in the EU and in the United States. Some consumers believe that eating organic food will improve their health, and others believe that organic production improves the environment and reduces pollution.

The higher costs of organic production mean that organic products are more expensive than conventionally grown products. Some consumers are willing to pay these premia. Seventy-five percent of Danish consumers had purchased organic goods in the last 6 months. An FAO study (2001) looked at a number of countries, including nine EU countries and the United States. The premia for organic products in the EU varied a great deal, depending on the product and country. Denmark maintains low premia for organics, while other countries average 20-30 percent, and still other countries exhibit wide variation (from 15-150 percent) in the size of organic price premia, depending on the product. In the United States, the premia were also quite variable depending on the product and had similar values to those of several EU countries, ranging from 11 to 121 percent. Such willingness to pay could result in robust markets, but only if the consumers are willing to pay enough to cover increased production costs.

Organic production is rising in many countries, as is the consumption of organic products, despite the high prices. Organic sales rose by 40 percent in the UK from 1998 to 1999. Estimates by the International Trade Commission in 1997 suggested that sales of organic foods would grow by 5-10 percent in Germany, 20-30 percent in the United States, and 30-40 percent in Denmark (Greene, 2000). In some countries, however, like Portugal, much of the organic production is exported.

Many consumers are paying close attention to production processes for foods engineered with biotechnology. Some consumers in both the United States and the EU have voiced concerns about environmental and unknown risks of cultivating and consuming genetically engineered foods. Opinion polls in the United States and EU vary substantially in their results,

Table 3-E—Organic production and consumption

Country	Percent of agricultural land farmed organically	Organic products share of total food sales	Organic share of other food products
United States	.01 (1997)	1-2 (1997)	
Austria	9	3	
Belgium			
Denmark	5.5	3	Milk - 22 percent, Eggs - 13, Oat grains - 18, Beef - 2
Finland	5.8	2	Vegetables - 3.6, Milk 0.8
France	1.1	0.5	
Germany	2.5		
Greece	0.5		
Ireland	0.7		
Italy	5.3	1.5	
Luxembourg	0.8		
Netherlands	1.17		
Portugal	1.3		
Spain	1.5		
Sweden	6.25		Vegetables - 3, Milk - 3, Pork - 0.2
United Kingdom	1.2	1	
Slovenia	0.38		
Poland	0.03		
Estonia	1		
Czech Republic	2.5		

Sources: organic-europe.net; *Agricultural Outlook*, 2000.

depending on the questions asked. Some opinion polls that ask the same questions of consumers in the EU and the United States indicate that EU consumers are more concerned than U.S. consumers (*Environics*, 1999, *The Economist*, 2000). A later Angus Reid poll indicates that there are differences on some issues but not on others. As noted above, actual market behavior sometimes gives a more accurate picture of consumer preferences. In both the EU and the United States, some demand for foods that are free of biotech ingredients exists. In the United States, fewer such foods exist, and are generally sold by smaller, "natural foods" stores, although 100 percent organic products do not contain biotech ingredients. By contrast, in the EU, food containing biotech ingredients must be labeled, and most large supermarket chains have attempted to eliminate biotech ingredients from their food products.

Additional trends in taste

Vegetarianism is on the rise in some countries. Vegetarians adopt the diet for many reasons, which might include a desire to reduce cholesterol in the diet, ethical concerns about eating animals, or even a desire to reduce food spending. Finding a strict definition of vegetarian is difficult, and some vegetarians still eat meat of one kind or another. However, consumers in wealthy countries are trying to eat less meat. In the UK, 7 percent of the population consider themselves vegetarians, an increase over the last 5 years, and many are cutting red meat consumption, particularly as high-quality meat substitutes are available (FAS, 2000b). In France, vegetarian foods have a 2-percent market share, which is rising (FAS, 1999a).

Affluent countries generally experience the most concern about food quality, and the United States and the EU, not surprisingly, demonstrate this fact. Not only is the concern about being able to obtain adequate food quantity less acute in wealthy countries, but consumers are also more willing to pay what it takes to get a variety of products. If all products are the same, firms can take advantage of economies of scale, and produce products for lower costs. If consumers instead want small quantities of a wide variety of products, free-range chicken vs. organic chicken vs. soy-based faux chicken, firms will be smaller, and incur slightly higher costs.[10]

[10]Anderson and De Palma (2000) find that in some special cases, competition among differentiated products can lead to lower prices.

The taste for variety also stems from a number of other developments. Behrman and Deolalikar (1999) find that taste for variety generally rises with income. As transport costs fall, consumers find that they can now purchase goods from a variety of firms, some of whom are now farther away, and higher population densities mean that more varieties of goods can be supported (Anderson and De Palma, 2000).

Effects of preference trends

These trends can have an effect on food expenditures. As noted above, consumers spend a smaller percentage of their income on food as income rises, yet they also are willing to purchase different foods, higher quality food, and more varieties of food as income rises. Since these latter trends usually involve spending more per calorie, the effect of Engel's Law is dampened. However, we can observe from the data presented in the first section that the decline of expenditure shares of food with higher incomes outweighs consumers' tendency to purchase more expensive food as income rises.

These trends can also help to explain similarities and differences in diets. As consumers become more concerned about their health and as vegetarianism becomes more popular, countries that ate relatively fewer fruits and vegetables might increase their intake, as Gracia and Albisu (2001) suggest. Increasing taste for variety, coupled with trade, can lead to greater dietary similarity. These factors could help to explain some of the dietary similarities among EU countries and between the United States and EU.

Policy implications

These changes in preference trends have a number of policy implications. The EU and the United States already regulate food safety aggressively. Foodborne illnesses still occur, however, and both the United States and the EU find that they need to respond to periodic food safety crises. Responding effectively is a paramount consideration in order to preserve the health of the population and to maintain the confidence of the public in the food supply.

Additionally, as consumers begin demanding more information from producers on the products they purchase, governments could have a role to play in making certain that the information that firms pass on to consumers is correct and not misleading, particularly as some of the characteristics that consumers

value, like production processes, are difficult for them to observe.

These roles of government have varying effects on trade between the United States and the EU. On the one hand, differences in food safety regulations, differences in standards for defining production processes, for instance, different definitions of "organic", or differences in desires for product characteristics among countries, can disrupt international trade flows. The United States and EU have had very vocal trade disputes over food produced with biotechnology, beef produced with growth hormones, and a number of other products. In other cases, countries have found ways to get around trade disputes, for instance by having firms in many countries adhere to third-party definitions of the term "organic".

Additionally, when consumers develop a taste for variety, they frequently import more goods. If firms only supply the domestic market, differentiated products can be more costly than homogeneous ones, as noted above. If, however, firms can supply foreign markets as well, they can take advantage of economies of scale and reduce production cost per unit. However, when foreign competitors export to the domestic market, this increases competition domestically (Bernhofen, 2001).

Demographic Trends

A number of demographic trends are also altering food consumption in the EU and the United States. These include the age and composition of the population, and the tendency to have two-income households with proportionate reductions in time spent on meal preparation.

Both regions have small households and aging populations. The United States and the EU are experiencing declining birth rates. In the United States, fertility fell from 3.0 births per woman in 1980 to between 2 and 2.1 in the 1990s, which leaves the United States just slightly below replacement level. EU fertility has dropped from 2.59 children per adult woman in 1960 to 1.45 in 1998, and all countries of the EU have fertility rates below replacement level (European Commission, 2000; Lutz, 1999). The EU experiences less immigration than the United States, so the effect of declining birthrates will have a greater effect on population growth. The percentage of people living in single-person households in the EU went from about 8 percent in 1981 to 11 percent in 1998, while in the United States, the percentage was higher (25.6 percent), but had grown much less (from 24.6 percent in 1990) (Eurostat, 2000; Statistical Abstract of the United States, 2001). Average household size in the EU in 1998 was about 2.5 people and for the United States in 2000, it was 2.59. (Eurostat, 2000; U.S. Census, 2001). Again, variation exists, with larger household sizes for the Mediterranean states and Ireland, and smaller sizes for the Nordic states (while birthrates reflect the opposite pattern) (Eurostat, 2000). In the United States, household size also varies by State (U.S. Census, 2000). Interestingly, smaller households lead to greater food expenditures per capita because economies of scale are lost (Connor, 1994). Single people tend to eat more prepared food and eat away from home more often (Gracia and Albisu, 2001).

Aging populations also bring demographic changes. The proportion of the population under 15 decreased slightly in the EU and was steady in the United States from 1988 to 1997. The percent of the population over 65 rose from 14.2 percent to 15.8 percent in the EU, and in the United States, it rose from 12.7 to 13.2 percent (Eurostat, 1998). Changes in the age mix of populations can alter the allocation of consumption across different foods. Gracia and Albisu (2001) note that the population in the EU is aging, and that older consumers are more likely to stick to eating trends of the past, like eating at home and avoiding new food products. An aging population might have a higher demand for dietary supplements (Bernstein, 1997).

New foods from non-European cultures, already very popular in the United States as new waves of immigration introduce new products into the market, are becoming very popular in the EU as immigration increases there (Connor, 1994; Gracia and Albisu, 2001). Immigration is fueling new tastes in food, and ethnic food sales are rising in the UK and Germany, while Italy has experienced increased demand for non-Italian foods (FAS, 1996d, 1999b, 2000a).

Women are entering the work force in increasing numbers in both the EU and the United States. In many Scandinavian countries, women constitute more than 45 percent of the labor force (Eurostat 2000; FAS, 1996c 1996b, 1996f; Finnish National Public Health Inst., 1999). In other countries of the EU the same trend is occurring, and women's employment share in the EU has risen from 39 percent in 1986 to 42 percent in 1998, again with variation across coun-

tries. In the United States, the women's share of the labor force is slightly higher and rises more slowly, moving from 45 to 46 percent between 1988 and 1998 (BLS, 1999/2000).

Two-income families eat out more (Connor, 1994; Gracia and Albisu, 2001). The United States spends a larger proportion of its food budget on food eaten outside the home than does the EU. In the United States, only 60 percent of food expenditures in 1997 was for food prepared at home, a decrease over previous years, compared with 73 percent in the UK in 1998 and 74 percent in Spain in 1997 (Lin et al., 1999; FAS, 1998b 2000b). In both the United States and the EU, the proportion spent on food away from home is rising, and the United States, the UK, and Germany have experienced a large increase in dining out (Lin et al., 1999; FAS, 1996i; FAS, 2000b; Gracia and Albisu, 2001). In addition to the increase in dual-earner families, some particular cultural arrangements also support the trend toward eating away from home. In Finland, all children eat lunch provided by their school, so institutional systems provide a significant number of meals (Finnish National Public Health Inst., 1999).

Two-income families also tend to eat more convenience foods and spend less time cooking, as no one member of the family spends a large portion of the day on meal preparation. More women in the work force have led to increasing use of convenience foods in Europe, and processed food consumption has grown rapidly (Gracia and Albisu, 2001). In France, time spent on meal preparation went from 1 hour to 30 minutes, and meal times have fallen drastically since the 1960s (FAS, 2000a). Ownership of microwaves is higher in North America than in Europe (Connor, 1994). It can be rather difficult for smaller European dwellings to incorporate space for large freezers and microwaves (Gracia and Albisu, 2001). However, the consumption of frozen meals and microwave ownership are rising in the EU. Many EU countries, including some on the lower end of the income scale, report ownership rates for microwaves in excess of 30 percent, and/or an increase in the demand for frozen and convenience foods. (FAS, 1996b, 1996c, 1996d, 1996e, 1996f, 1998b, 2000a, 2000b). Fast food restaurants are on the rise in Greece, Portugal, and Sweden, sometimes taking market share from sit-down restaurants (FAS, 1996e, 1996f, 1997). Mediterranean countries are moving toward more processed foods, and throughout Europe, processed meat consumption as a proportion of total meat consumption is rising (Gracia and Albisu, 2001).

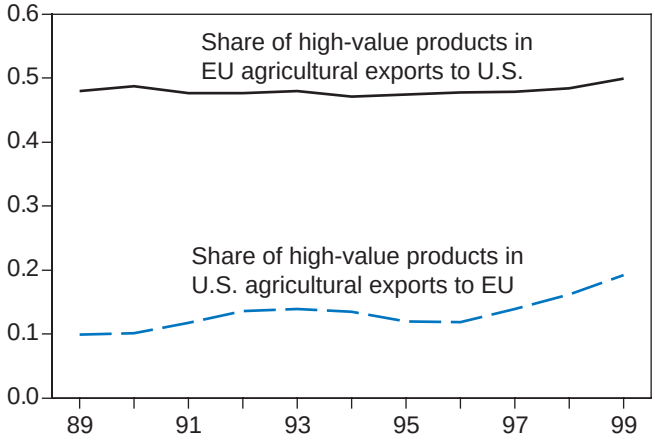
Effects of demographic trends

These changes in demographics have implications for trade in the United States and the EU. The fact that these trends are experienced in both the United States and the EU generally means that products that respond to the demographic changes have been well received in both the EU and United States Tastes for new foods, along with a strong United States economy, are fueling imports in the United States, with imports as a percentage of food consumption rising slightly during the 90s (Putnam and Allshouse, 2001). The demand for high value processed products could also have implications for trade as well. Interestingly, between 1989 and 1999, the share of high-value processed products in U.S. agricultural exports to the EU rose from around 10 percent to around 19 percent (fig. 1-E), perhaps reflecting the increased demand for these products in the EU. The share of high-value products in EU agricultural exports to the United States remained fairly constant, but at a much higher level, hovering between 47 and 50 percent for most of that period.

Food Retailing

Retailers are consolidating in both the United States and the countries in the EU. Once again the consolidation varies from country to country. Table 4-E indicates that level of concentration of the grocery retailing sector in various EU countries. Belgium, Denmark, France, Finland, Germany, Sweden, the Netherlands, and the UK all have very high levels of concentration,

Figure 1-E
High-value export shares



Source: IBAT, 2000 (UN, Economic Research Service).

Table 4-E—Retail consolidation in the grocery sector

Country	Number of retailers	Share (percent)	Market measure	Year
United States	20	48	Grocery store sales	1998
U.S. cities, average	4	69	Supermarket sales	1998
Belgium	4	62	Market	1998
Denmark	5	80	Market	1996
Finland	2	88	Market	1996
France	5	77	Food purchases	1999
Germany	5	62	Sales	1997
Greece	18	60-70	Market	1996
Italy	3	15	Market	1999
Sweden	5	97	Retail sales	1996
United Kingdom	5	48	Wholesales and retail sales, market	1997

Source: FAS Annual Marketing Plans, 1996-98; Kaufman, 2000.

with the top five supermarkets garnering in excess of 60 percent of the retail sales in most cases (see also Gracia and Albisu, 2001; McCorriston, 2002).

The concentration is lower in Southern European and Eastern European countries. Gracia and Albisu (2001) note that consolidation is lower in Southern Europe because it started later. In Italy, the largest three supermarket chains only have 15 percent market share (FAS 1999b), and in Greece, it is the top 18 supermarkets that have 60-70 percent of the market, as opposed to the top four or five (FAS, 1996e). In the Czech Republic, the seven largest chains have only 20 percent of the market (FAS, 1996a).

In the United States, by contrast, the largest 20 grocery retailers have 48 percent of the market in 1998 (Kaufman, 2000). However, the United States is substantially larger than each individual EU country, so regional competition within the United States might be a more accurate comparison with individual EU countries. Data on regional competition in the United States are less readily available, but Kaufman (2000) considers data on competition within large U.S. cities. On average, for a metropolitan area in the United States, the share of sales of the top four supermarket chains in each city was 69 percent, a figure comparable with individual EU countries. As in the EU, there were large variations in the degree of consolidation, with the four top firms holding anywhere from a 29-percent share to a 90-percent share of supermarket sales (Kaufman, 2000).

Consolidation has been on the rise in some countries. The top four retailers in the United States went from a 15-percent market share in 1992 to a 29-percent market share in 1998 (Kaufman, 2000). A number of EU countries have experienced marked retail consolidation in the last few years (McCarriston, 2002). The large share of a few retailers in France has been the result of large changes in the retailing sector (Gracia and Albisu, 2001). In others, consolidation is still increasing. The trend toward consolidation is expected to continue in Greece (FAS, 1996e). Southern European countries are experiencing more consolidation in general (Gracia and Albisu, 2001). Here, however, has been some backlash; in Greece, the government has restricted store sizes outside the largest cities (FAS, 1996e).

Retail chains are growing in size, and so are the stores in which consumers shop. Many of these large retail chain stores are supermarkets, and some of these stores are hypermarkets, selling a lot of non-food items in addition to grocery items. These larger stores seem to do particularly well in higher-income countries.[11] In lower-income countries, the smaller, traditional stores have greater roles.[12] Seventy-one percent

[11]In Germany, 42 percent of food sales take place in hypermarkets (FAS, 1998a). In Belgium, 52 percent of food sales occur in large supermarkets (FAS, 2000c).

[12]Traditional stores are 58 percent of shelf space in Italy, 40 percent in Spain, compared with 35 percent in Germany and 20 percent in France (FAS, 1999b).

of Czech consumers shop daily and although more are turning to supermarkets to obtain quality food, most still visit small shops (FAS, 1996a). However, even within income groups, there is variation in store sizes. For example, in Spain, 72.6 percent of sales are hypermarket and supermarket sales, while in Portugal, such sales are only 36 percent of the total, and small stores have a large market share, although that is expected to shrink (FAS, 1998b, 1997).

While supermarkets have been fixtures in the United States for decades, supercenters—large combination food and merchandise stores similar to hypermarkets—are just beginning to become significant. Wal-Mart, the major grocery retailer that uses the supercenter format, is ranked fifth, behind the major chains, if only grocery sales are considered (Franklin, 2001). Wal-Mart supercenters in the United States tend not to open in large city centers, but in small cities, rural areas, and outer suburbs. Supercenter chains in the United States also tend to specialize in discount-priced consumer goods.

Consolidation to reduce costs can have positive or negative impacts on consumers. Consolidation within food retailing represents the desire of firms to obtain economies of scale; for some industries, the more units they process, the lower the cost per unit. In grocery or retail distribution, firms are finding that they are able to take advantage of economies of scale in ordering, distributing, and marketing (Kaufman, 2000). For firms, costs have fallen, so they could reduce their prices.

Consolidation can affect that process in one of two ways. The smaller number of firms can reduce competition, so that firms don't need to pass on their cost savings to the consumer. On the other hand, even if there are only two firms in the market, they can sometimes compete so fiercely with one another that they will lower prices as much as they possibly can to capture a larger share of the market than their respective rivals. What do we actually observe in the market place? Some studies find, even when controlling for quality, that more concentrated markets charge higher prices in the United States (Cotterill, 1999), while others have found no relationship between prices and consolidation (Kaufman and Handy, 1989). In the EU, some larger firms have larger profits than smaller ones, but it is unclear whether the large firms charge higher prices or have lower costs (Viaene and Gellynck, 1995). A recent study by the UK Competition Commission (1999) "concluded that there was no evidence from such comparisons that UK grocery retailers were acting in an anti-competitive manner so as to generate higher prices than would otherwise be the case." Their bases for comparison, however, were other markets in the EU and the United States.

The larger stores also reflect some demographic trends in the EU and United States, as well as economic ones. As more women enter the work force, daily shopping is no longer possible, so people want to be able to purchase a week's worth of goods at a time, and to purchase everything they need at one store. To carry it, they might be more likely to drive to the store, so stores need to locate near convenient parking, or very near to people's homes. Additionally, people are more able to stock up on food. In Portugal, for instance, 20 years ago, people shopped daily because refrigerators were not as common. Now people shop weekly (FAS, 1997).

Policy implications

As noted above, retail consolidation can have positive or negative effects on consumers. Many governments of wealthy countries have laws that regulate the consolidation of industries. These laws exist in order to make certain that reduced competition does not have a negative impact on consumers by forcing them to pay higher prices. The United States has a somewhat longer history of enforcing laws of this nature than the EU, which has been looking harder at such issues over the last decade or so. McCorriston (2002) suggests that more research is needed to determine the impact of consolidation on consumer welfare in the United States and in the EU.

Conclusions

Consumers in the United States and the EU differ in some ways in their preferences and behavior, but are very similar in others. Diets differ somewhat, but rather less than regional EU variation for some food groups. Indeed, the United States is more similar to a wealthy EU country in some respects than the poorer and wealthier EU countries are to each other.

Some trends, like increasing obesity, larger percentages of the food budget spent outside the home, aging populations, smaller households, increases in households with all adults working outside the home, increasing consumption of newer foods, organic food popularity, and the rise of the hypermarket and retail

consolidation, are occurring in both the United States and the EU, although each trend may be more pronounced in one country than the other. Demographic trends are changing the demand for processed foods, prepared foods, and a wide variety of foods and are having an effect on the structure of the retail sector.

In other ways, like concern about biotech goods, concern about animal welfare, food prices, share of income spent on food, and meat and sugar consumption, the differences between the United States and the EU are somewhat more pronounced. Differences in preferences across countries affect consumption patterns. Also, differences in agricultural policies still affect relative prices, which in turn can also affect consumption patterns.

While prices haven't become irrelevant in explaining consumption patterns, several authors have noted that as income rises, prices and income become less important. Demographic patterns, concerns about food quality, and retail changes can all be expected to create demands for different types of foods, including processed foods, foods with specific health implications, and foods produced in certain ways.

These changes in consumption can be expected to influence trade and investment patterns between the United States and the EU. Increases in processed food's share of exports from the United States to the EU and increases in the significance of imported food in the U.S. food expenditure basket are two potential indicators of the future direction of food trade. Additionally, as countries join the EU, the dietary preferences of the new countries will alter trade patterns, but will probably also be altered by trade patterns.

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