

Why Food Costs Rise While Farmers Go Broke

A study of labor-intensive economics in action

In the last few years the term 'labor-intensive' has become a catchword in certain circles, signifying a brave new world of abundant jobs, "less is more" technologies, and low capital expenditure. Few business and labor leaders are likely to view either the environmentalist rendition of the formula (solar-heated pools, grow-your-own) or the World Bank's analogous but more austere Third World version (plows, 1,700 calories a day) as serious proposals for reviving the U.S. economy. Nevertheless, only slightly more moderate plans for low-skill jobs creation and cost-cutting (for example, the Humphrey-Hawkins bill) have won at least a measure of respectability from people who should know better.

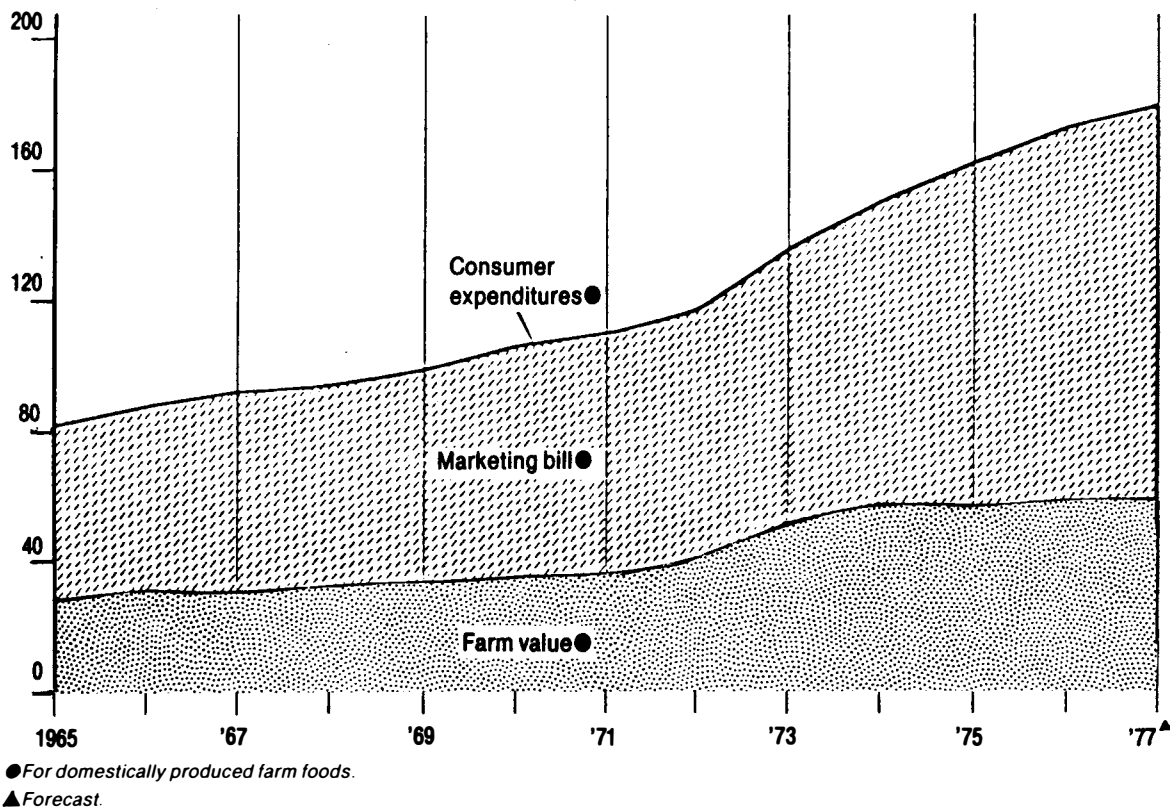
To evaluate the merits of the labor-intensive model versus the high-technology, high-skill, high-capital-

investment methods that built this country originally, one need only take a good, hard look at America's food industry.

As consumers are well aware, their expenditures for American farm foods, the largest single component of the household budget, have risen steadily and dramatically in the past four years. But the farm value of American food products — basically, what the farmer is paid — has remained relatively stagnant at 30-40 percent of total food expenditures. This discrepancy between farm producer receipts and consumer food expenditures (see Figure 1) represents the cost of processing, transportation, and distribution of food goods.

This "marketing bill" accounts for between 60 and 70 percent of aggregate consumer food expenditures, and

Figure 1: Farm Value, Marketing Bill, and Consumer Expenditures (\$ billions)



Source: *Developments in Marketing Spreads for Food Products in 1977*. U.S. Department of Agriculture. Agricultural Economic Report No. 398. March 1978.

the steady expansion of this oversized marketing-charge component of the nation's food bill presses on consumer pocketbooks and farm producer incomes alike.

The enormous food marketing bill is the price American society as a whole pays for the technological backwardness and inefficiency that plagues the country's largest single industry, food. Characteristically, the oft-scapegoated "middleman" is for the most part undergoing a continuous profits squeeze, as much a victim of this accumulated backwardness as the producer and consumer.

1. What Makes Up the Marketing Bill

As Figure 2 dramatically shows, the overwhelming cost factor in the nation's food marketing bill is labor. That plus transportation, real estate and related costs (rent, interest, and other speculative charges) and energy costs together represent the most significant combined quantitative-qualitative determinants of the marketing bill.

Labor. The fact that labor costs account for nearly 50 percent of the marketing bill cannot be taken to mean that the food industry is characterized by a uniquely high wage structure. The proportion of the marketing costs associated with direct and indirect manual labor is the strongest evidence of the industry's technological backwardness.

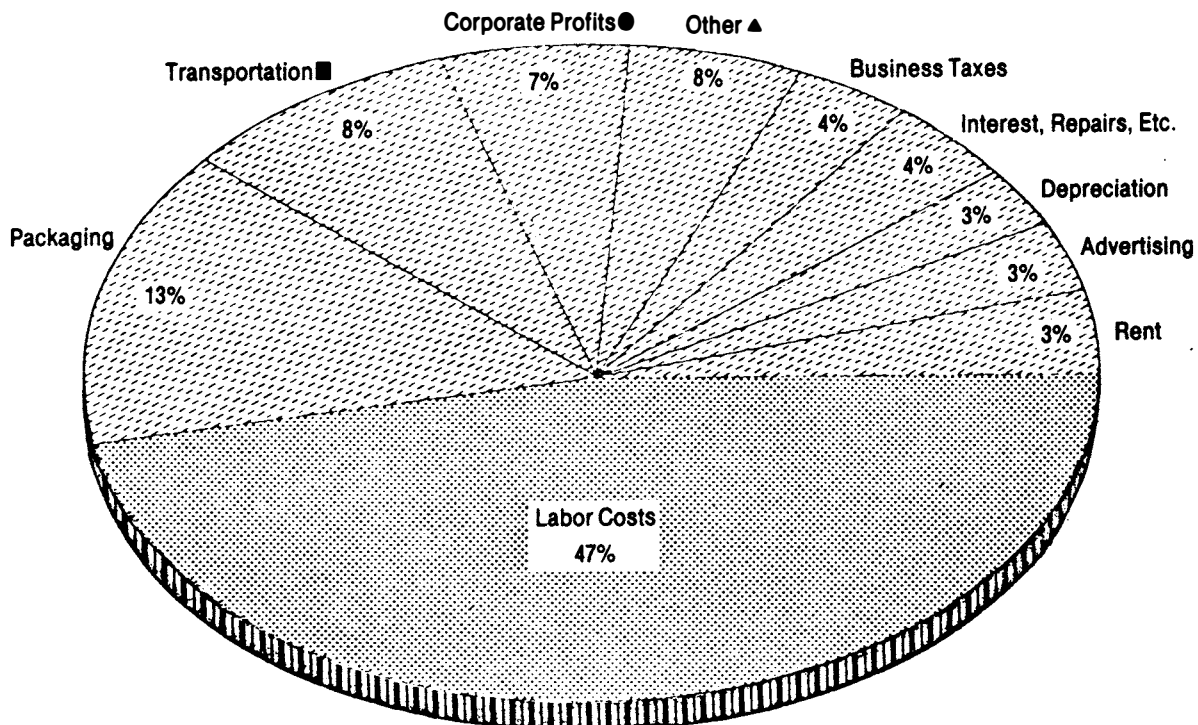
In fact, from 1970 to 1977 the hourly earning of food

industry employees rose 70 percent at an average annual rate of between 7 and 10 percent, from \$3.03 to \$5.17 per hour — a rate of increase which is conservative compared to the doubling of freight rates and the tripling of energy and utilities cost components of the marketing bill over the same period. The burden of labor costs must be attributed to the high and secularly rising absolute levels of low-skilled and unskilled employment in the industry.

The high labor content of the food sector is by no means a function of restaurant and other service help. It is prevalent throughout the food delivery chain; from processing and packaging through transportation, warehousing, and retailing, the cumulative manual labor charges culminate in retail prices that are three times the farm value of the food items in question (see Figure 3). The repetitive manual handling of produce from field to market, manual handling of containers in transit or warehouse, manual cutting up of livestock for retail cuts, manual shelving of products at markets, manual registering of prices of individual goods at the check-out counter, and manual bagging — these individual portions of inefficient "cheap labor" continue to vastly increase pass-along costs

In the key fresh-produce sector (fruits and vegetables), for instance, only 50 percent of the annual U.S. output of 55 billion pounds in 1970 was industrially prepackaged in final retail form. Fully 27 billion pounds of produce in 1970 was manually handled and rehandled at intermediate points along the delivery system, and

Figure 2: The Components of the Marketing Bill*



*Bill for marketing U.S. farm foods in 1976; shares for 1977 will closely approximate 1976 data.
 ● Before taxes. ■ Intercity rail and truck. ▲ Residual includes such costs as utilities, fuel, promotion, local for-hire transportation, and insurance.
 Source: *Developments in Marketing Spreads for Food Products in 1977*, U.S. Department of Agriculture, Agricultural Economic Report No. 398, March 1978.

manually weighed and wrapped yet again at the retail level—an astonishing waste of human labor power.

The lack of standardized cartons, pallets, unit containers, and so on for such produce and other goods compounds the need for wasteful manual handling and rehandling in the intermediate transportation and warehousing stages of the distribution system. Poor placement of packaging and processing facilities, at more or less great distances from farm producers, together with the lack of purposeful integration of the transportation system, adds to handling and rehandling charges.

The extraordinary amount of manual labor expended in unloading, shelving, marking, cashiering, and bagging, as well as 19th century clerk inventory-taking methods at the front end of the delivery system in the supermarket, compound the problem.

This high labor content, and the corollary absence of applied technological innovation, is characteristic of the American food industry and marketing structure.

The industry as a whole is overwhelmingly *labor-intensive*. And this fact constantly reasserts itself in low productivity, high per unit costs, and low profitability—all down the line.

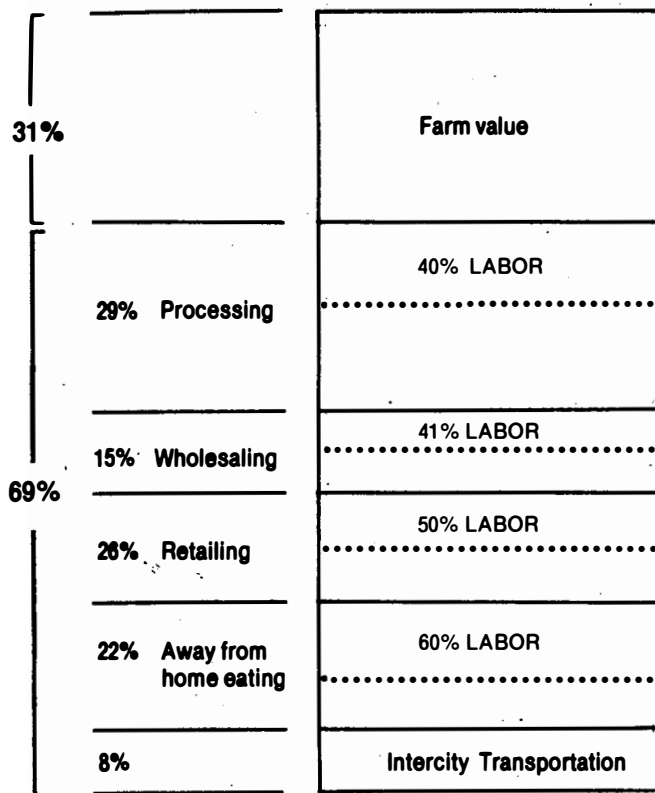
In this respect, the industry can be usefully contrasted to other sectors of the industrial economy, or the farm-production sector proper for that matter, whose characteristic *capital-intensive* nature is defined by a proportionally low or declining proportion of raw labor input in favor of technological and scientific applications and capital investments which sharply raise rates of productivity and lower per unit costs.

Transportation: Undoubtedly understated in official estimates of its absolute cost and its proportion of the total marketing bill, transportation ranks as the second most important quantitative-qualitative determinant of the food industry's high-cost inefficiency. Both the farm producer and consumer are directly and indirectly paying generously for the scandalous anarchy and disrepair of the nation's transportation system.

Freight rates constitute a great expense for particularly high-bulk, low-cost-per-volume items such as food. For example, the freight cost alone for shipping lettuce from California to Boston is as much as the cost of the lettuce itself delivered in California! The Bureau of Labor Statistics' index series of U.S. rail freight rates shows that those rates for all farm commodities have doubled since 1969. Spokesmen for the U.S. Agriculture Department estimate that truck rates have moved in the same fashion—an assumption that is open to question since, unlike rail, truck rates are unregulated and generally set on a "freelance," trip-by-trip basis. Furthermore, trucks are increasingly at an advantage as virtually the sole available carriers of the nation's fruit and vegetable produce. Today 90 percent of fruit and vegetable shipments are by truck; the number of rail cars suited for such shipments is rapidly declining, and the remaining few are outfitted specifically for frozen produce.

High transportation costs, inclusive of the substantial labor component, are a function of the overall lack of

Figure 3: The 1976 Food Bill



efficient integration of the national transportation system. Any given rail freight car, for instance, stands idle an astounding 90 percent of the time. The trucking industry supports a 40 percent empty backhaul rate. The limited use of unit trains, in part the result of a stubbornly empiricist reading of the Interstate Commerce Act, as well as the limited and spotty introduction of containerization, adds to the pressure on freight rates and to the total transportation bill in terms of intermediary labor and related costs associated with frequent transfer points and lengthy shipping times. Transportation costs are further bloated by such current practices as reliance on the pallet system — the pallets themselves can take up as much as one-quarter of the volume of a freight car or truck.

But the expensive inefficiency of the transportation system does more than simply boost freight rates for the shipper. It creates additional charges for spoilage and warehouse inventory maintenance on the account of the supermarket chain or retailer. The unreliability of the transportation system forces supermarket chains to maintain excess stock of goods to insure that they don't run out of items on the shelf. The necessity of carrying these inventories results not only in added interest and ground rent costs for the supermarkets which maintain huge warehouses, but also in increased spoilage costs due to uncertain duration of warehouse storage.

Initial probes into the feasibility of utilizing air cargo as an increasingly central method for transcontinental shipment of high-quality fruit and vegetable produce and other foodstuffs uniquely indicate the entropic tendency

Table 1: Estimated in-store margins, by major dep'ts, 1975*

	Meat	Produce	Dry grocery	Dairy**	Frozen foods	Total store	
<u>Percentage of Sales</u>							
Labor	11.97	15.59	7.32	6.93	12.51	9.20	* excludes warehousing and delivery costs and headquarters expense.
Direct	4.14	9.62	4.85	4.05	11.47	5.36	** Includes ice cream and other refrigerated items, such as bakery products, fruit juices, and dips.
Indirect	7.83	5.97	2.47	2.88	1.04	3.84	*** Includes additional categories not shown.
Rent	.76	1.81	1.44	.55	1.13	1.20	
Energy	1.02	3.29	.35	.98	3.22	.96	
Total margin***	21.00	31.30	14.60	15.84	19.54	17.64	Source: <i>Cost Components of Farm-Retail Price Spreads</i> . Agricultural Economic Report No. 391. Economic Research Service, U.S. Dept. of Agriculture. Nov., 1977. Wash., D.C.
Sales share (%)	21.50	7.48	53.43	11.68	5.91	100.00	

of the current food marketing structure. Studies conducted six or seven years ago, with the introduction of the 747 air carriers, found that air cargo transport could not be viably expanded domestically without changing the entire marketing system. In the case of lettuce, for instance, it was found that the commodity could be economically shipped by air provided that the outer leaves were removed to cut down on sheer bulk per unit — but when the neatly trimmed, extra-fresh heads were displayed in an East Coast supermarket consumers refused to buy the ordinary lettuce by its side.

Even such a relatively limited marketing revolution really depends on much more than changing the structure of agricultural marketing. In the first place, there is currently a dearth of air capacity to permit an expansion of air cargo food shipments domestically.

More important is the central issue of energy policy. Large-scale air cargo for food could succeed only on the basis of a national program for rapid development of nuclear energy. Fuel costs per pound of air freight are prohibitive and will become even more so if the Administration's energy program with its exorbitant premium on fossil fuels, ever becomes law.

Rent, Interest, and Associated "Ground Rent" Charges. Proportionally equal to the transportation costs share of the total marketing bill, in fact rent, interest, and related financial charges are understated. Insurance costs, for instance, are not included here. Building and equipment depreciation, interest rates on borrowed funds, and rent are the main components. The huge warehousing capacity, for the most part leased by supermarkets, is necessitated, as we have seen, by the unreliability of the transportation system. The related financing of excess inventories is a significant additional expense in its own right.

These costs are directly influenced by conditions, perverse or otherwise, in the general economy—e.g., money market rates and real estate trends. The recent environment of speculative bloat in the real estate markets, followed now with Federal Reserve Chairman Miller's high-interest-rate recession policy for the credit markets, promise that these charges will become an

even more significant speculative tax in the marketing bill.

With the exception of equipment depreciation, significant only in the manufacturing-processing end of the industry, these changes are essentially *speculative*, that is, charges on the productive process which do not function to create new wealth in expanded output in the economy as a whole, but rather siphon off funds to feed fictitious financial accumulations in real estate and other paper.

Energy. Costs of electricity, natural gas, and other energy sources are estimated to amount to 3-4 percent of the total marketing bill. Energy costs for the industry are nonetheless a decisive factor in the marketing bill for two reasons:

(1) They are among the most rapidly increasing cost components.

(2) As such, they act increasingly to prohibit even a piecemeal process of technological advance in the industry, which would have to be predicated on expanded energy inputs.

Approximately half of current energy costs in the industry are incurred in food processing. These energy costs rose 70 percent from 1972 to 1975, compared with a 50 percent increase in the value of industry shipments, and a 23 percent increase in labor costs. Retailing accounted for 25 percent of total food-marketing energy costs in 1976, and retailers' energy bills amounted to an average of 1 percent of retail food store sales.

Electricity represents the largest proportion of total energy costs for most food industries: from 75 percent for supermarkets to 33 percent for wholesalers. From 1976 to 1977 electricity rates increased 11 percent.

A nonnuclear energy policy, of which these rates are characteristic, will bankrupt the industry.

2. The Supermarket

Studies conducted in 1976 by the State University of New York's College of Agricultural and Life Science found that in-store retail operating expenses and profit together amounted to only 17.64 percent of the value of

total retail sales for more than 50 companies of varying sizes and locations, which together accounted for approximately one-sixth of U.S. retail food sales in 1975. Trade sources have corroborated the accuracy of this estimate for independent supermarkets as well.

In other words, nearly 80 percent of the final retail price of foodstuffs represents the cumulative costs of processing, packaging, transportation, and so forth, summed up in the wholesale cost to retail distributors of the products. Retail-level operating expenses and earnings proper make up the remaining 20 percent of final retail value.

Supermarket chains' and independent retailers' profits amount to a puny 1 percent of final sales value—or 1.5 cents on the dollar, before taxes!

A closer look at retail balance sheets for in-store operations reveals that the same basic factors that account for the high-cost inefficiency of the food industry delivery system as a whole are visited upon the retail sector with a vengeance. As the sole sector of the food industry that is *officially* described as *labor-intensive*, the retail sector has labor costs accounting for 60 percent of operating expenses. Significantly, what we have previously identified as speculative charges, dispersed among the insurance, rental, depreciation and amortization and interest categories of retail operating expenses, accounts for an additional 20 percent of the retail margin.

A still closer look at the breakdown of in-store margins among major product-line departments reveals more of the rationale for specific supermarket pricing and other practices (see Table 1). For instance, the standard fixed percentage mark-up of fresh-produce items at the retail level—no matter what the farm value or wholesale price of the item—reflects, among other things, the fact that while produce accounts for almost a third (31.30 percent) of in-store operating expenses, it constitutes a mere 7.48 percent of total sales. In other words, while its inventory, handling, and display are the most labor-demanding, the

Table 2: Productivity in the food industry

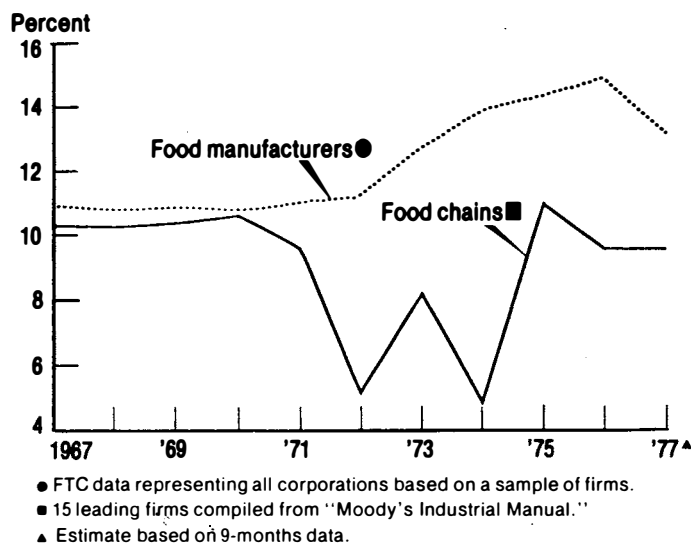
(by output per unit of labor input, as a percent of 1967 levels)

Year	Food stores	Eating and drinking places	Food manufacturing	Nonfarm business sector
1958	75.4	91.3	—	76.8
1963	89.4	93.8	92.0	89.3
1968	105.1	101.9	103.1	103.2
1973	107.5	106.0	112.8	111.4
1974	104.6	102.8	113.8	108.1
1975	106.7	105.0	118.4	109.9
1976*	106.7	103.2	119.7	114.3

* Preliminary.

Source: *Developments in Marketing Spreads for Food Products in 1977*, U.S. Dept. of Agriculture, Agricultural Economic Report No. 398, March 1978.

Figure 4: Rate of Profit on Stockholders' Equity by Food Chains and Manufacturers



Source: *Developments in Marketing Spreads for Food Products in 1977*, U.S. Department of Agriculture, Agricultural Economic Report No. 398, March 1978.

most energy-demanding, and the most space-demanding of the major product lines, its volume of sales is relatively inelastic at a small percentage of total sales.

3. Profits and Productivity

It may seem surprising that indices of productivity in the food-marketing sector have, since 1958, generally kept pace with (albeit several steps behind) productivity advances in the nonfarm business sector (see Table 2). Far from reflecting favorably on the food-marketing system, this fact only emphasizes the poor state of business and industry generally following the benchmark 1958 recession, a condition otherwise reflected in abysmal rates of capital formation across the boards. Halting and belated introduction of such relatively primitive technologies as computerized cash registers, produce prepackaging, and the like are responsible for keeping the industry's productivity record within range of that of the depressed nonfarm sector. Within this framework, productivity levels are characteristically higher, although with tremendous variability by specialty field, in the more highly capital-intensive food-processing and manufacturing subsectors.

The exception proves the general rule. Over the past 10 years the dairy-processing industry has registered huge productivity gains as a result of a shift to large-scale plants and greater automation. Since 1967, hours of labor in the industry have dropped by 25 percent as output remained stable.

Profits are depressed by the millstone of low rates of productivity growth in the overwhelmingly *labor-intensive* food-marketing sector. Not surprisingly, rate of profit on stockholders' equity in the food industry generally hugs the lower rung within the range of acceptable corporate profit rates—a miserable compromise between the relatively more profitable

manufacturing subsector and the relatively less profitable food chain subsector (see Figure 4).

Significantly, profit rates of all food retailing firms with annual sales above \$100 million are well below the average for all retail trade corporations, with the latter's profit rates 1.5 times greater than that of the food chains. The recently well-publicized difficulties of giants like Bohack and A and P are to the point.

We are dealing with an industry whose high-labor (i.e., *low-technology*) content—that is, its technological industrial backwardness—locks it into a syndrome characterized by the maximization of costs and inefficiency, namely, the intensification of the high-labor content which is the source of the industry's problem to begin with. This syndrome stands in opposition to the necessary maximization of profits and productivity, and associated rates of growth of capital formation in expansion, modernization, and integration. Here again, the exception serves to prove the rule. In an industry environment defined by labor-intensive economics, technological innovation is characteristically degraded to the sort of parody represented by the proliferation of new ways to crinkle a french fry or cut a fish stick.

4. The Future of the Industry

There is little question that the American food industry is overdue for a technology-based productivity revolution comparable to that achieved in the farm sector proper with mechanization and fertilizers during the 19th and 20th centuries. The happy result will be to raise farm-producer receipts and reduce consumer food prices simultaneously and dramatically!

Here are some of the features—all within existing general levels of technology—that a modern food industry would include:

Processing and packaging. With processing and packaging plants located strategically with respect to the fields and other sources of raw farm commodity supplies, time and handling-rehandling and associated transportation costs would be slashed immediately. The overhaul of the processing and packaging phase itself would open the way for multiple gains in productivity down the rest of the chain. At this stage, food products would be prepackaged in final retail form, including computerized Universal Price Code marking, and assembled in uniform, standardized cartons, pallets or pallet-equivalents, or unit containers for minimal rehandling through to the consumer.

Transportation system. An overhaul of the American transportation system is required, emphasizing carrying-capacity upgrading and expansion together with effective modal integration and standardization, to allow increased automation and computerization of operating procedures in loading, unloading, and tracking-monitoring. This overhaul is not only

imperative for the farm-food industry—the future health and vitality of the entire economy depend on it.

An immediately feasible improvement, cited by MIT Professor Gordon Bloom in a 1972 study of the problems and potentials of productivity in the food industry, is the introduction of unit trains from California to the East Coast. Bloom noted that 90 percent of California's 1.7 billion pounds annual average shipment of canned goods originates in the Stockton-Oakland-San Jose area. From an assembling point there, unit trains could travel to the New York-Philadelphia and Chicago-Milwaukee areas (which account for 33 percent and 15 percent of California's shipments respectively) in an approximate shipping time of 77 hours . . . for a one-shot reduction of from 8 to 18 days in current shipping times, and the complete elimination of intermediary labor, handling, and associated costs.

This would in turn significantly reduce spoilage costs, and eliminate the substantial warehouse inventory costs currently associated with unreliable delivery dates.

Warehousing. As has been demonstrated in some instances already, warehousing at present functions in a virtually medieval state, with trucks often waiting hours, or days, bills handled with pen and paper, and pallets of all sizes preventing systematic automation. This can be completely automated through process computers and automated cranes.

At this stage of the delivery system there are two alternatives. Optimally, the retail outlet-supermarket itself would be replaced by such fully automated warehouses which themselves subsume the retailing operations. At the warehouse bulk shipments from grower-processor-manufacturer would be automatically broken down for computerized selection and retrieval to fill market basket orders phoned in by quantity and catalogue by the consumers.

Retailing. Short of such a thoroughgoing transformation, the costly drudge labor associated with current retail operations can be significantly reduced by adoption of the Universal Price Code to effect automated cashiering. Use of the Code effectively provides for instant monitoring of shelf supplies, since the optical code on each item that passes the cashier station registers as an item sold, and the store computer can readily be programmed to fill out reshelve orders, reorders from suppliers, and so on.

In sum, the point is progress, progress through successive applications of scientific and technological innovations. This is the way to transform a backward, inefficient labor-intensive industry into the *capital-intensive* model of a food industry-delivery system that is the extension of America's spectacular historical achievements in scientific agriculture proper.

—Susan Cohen