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Government Regulation and Policies Affecting the U.S. Turkey Industry: Agencies and Cost Impacts

Harold B. Jones, Jr.

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ABSTRACT

A wide variety of Government regulations and policies influence the turkey industry. This report describes the major regulatory agencies and policies affecting the industry and assesses their relative cost impacts on various sectors of the industry. Regulatory activity is classified into three types: economic regulation; environmental, health, and safety regulation; and social regulation. At least 19 different Federal agencies affect the turkey industry. The combined effects of these regulatory laws and programs contributed an estimated 9.75 ± 1.82 cents per pound (ready-to-cook weight) to the cost of producing and marketing turkeys in the early eighties. Economic regulation accounted for 3 cents per pound; environmental, health, and safety regulation 2.6 cents per pound; and social regulation 4.1 cents per pound. However, regulatory costs could be expected to range from 7.9 to 11.6 cents per pound, with even greater variations from yearly changes in policies and programs.

Key Words: Economic regulation, industry costs, agricultural policy, environmental protection, transportation, feed additives, poultry inspection.

PREFACE

This report describes the scope and diversity of Federal and State Government regulatory programs and policies that could significantly affect the U.S. turkey industry. Regulatory programs could also affect other agricultural commodities in a similar way. Quantitative estimates of the cost and price effects of regulation were derived to illustrate the magnitude of regulatory impact. Definitive studies of regulatory costs or benefits for specific agencies or programs are generally not available. Not all programs were accounted for, and significant variations in cost and price effects could be expected as certain aspects of these programs change over time. Substantial benefits are possible from many of these programs and policies, but there are few studies that document such benefits.

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SUMMARY

The overall impact of Government regulation and policy on the turkey industry encompasses a broad range of laws and regulations which are administered by at least 19 different agencies. These laws were classified into three categories: (1) economic regulation, (2) environmental, health, and safety regulation, and (3) social regulation. Even though these laws and regulations are a form of intervention in our social and economic system, there are substantial benefits from many of these programs. The most obvious benefits are from programs that improve environmental health and safety, such as meat and poultry inspection or food and drug laws. Other programs will directly benefit certain groups such as agricultural producers, transportation companies, minority groups, or labor unions, but there may also be indirect benefits to the general public from many of these programs.

Economic laws and regulations that affect turkey industry costs and prices include: (1) farm price-support policies which affect the production and price of feed grains, (2) Government food programs that affect the demand and price of turkey products, (3) export market-development programs that affect both feed grain exports and turkey meat exports, (4) Interstate Commerce Commission regulations which affect railroad shipping rates for grain, (5) antitrust laws which apply to companies with contracts or economic integration, (6) Packers and Stockyards Administration regulations dealing with fair trade practices and bonding requirements for poultry processors, (7) U.S. Department of Labor regulations on minimum wages and working practices, (8) State and Federal laws on unemployment compensation and workmen's compensation, (9) energy regulatory policies of the Federal Energy Regulatory Commission and State Public Utility Commissions, and (10) regulations imposed by the Commodity Futures Trading Commission relating to futures trading in commodity markets for both grain and turkey products.

The major environmental, health, and safety regulations that affect the turkey industry are: (1) environmental protection laws that establish standards and regulate water and air quality, pesticides, and solid waste disposal, (2) occupational health and safety laws concerned with establishing and enforcing standards for workers' safety and health, (3) food and drug laws that regulate and control feed additives, pesticide residues, and other aspects of food processing and packaging, (4) meat and poultry inspection laws that regulate processing plant facilities and equipment, processing lines, and labeling and packaging for turkey products, (5) animal and disease control regulations concerned with import restrictions and control of diseases, and (6) grading regulations that establish and administer standards of quality.

The primary types of social regulation affecting the turkey industry include: (1) the social security system which includes old age and survivors' insurance, disability benefits, medicare insurance, and other benefits, (2) equal employment laws that regulate fair employment practices, civil rights of individuals, and equal employment opportunities, and (3) income tax laws and regulations that directly impact on revenue and income of farmers and others in the turkey industry.

The combined effects of the three types of Government regulatory programs and policies considered in this study contributed an estimated 9.75 cents per pound to the costs of producing and marketing turkeys on a ready-to-cook weight basis in the late seventies and early eighties. Economic regulation

accounted for 3 cents per pound; environmental, health, and safety regulation 2.6 cents per pound; and social regulation 4.1 cents per pound. However, due to variations in methods used to calculate the cost impacts and the somewhat different time periods involved, these estimates should be considered approximate and not precise estimates of costs. Benefits from some of these programs may also offset costs. Government food programs and export programs could increase prices for turkey products, and other programs such as the grain export program could either increase or decrease turkey industry feed costs. Regulations by the Interstate Commerce Commission may also create regional differences in turkey production costs. Due to the large number of variables involved, the cost effects on the turkey industry from Government regulations and policies could range from 7.9 to 11.6 cents per pound, with even wider variations possible over the years as policies and programs continue to change.

Government Regulation and Policies Affecting the U.S. Turkey Industry: Agencies and Cost Impacts

Harold B. Jones, Jr.

INTRODUCTION

The turkey industry, a small sector of American agriculture, consists of approximately 7,200 farms that produced 170 million birds with a gross farm income of \$1.3 billion in 1983 [43].^{1/} The industry is highly concentrated in the Midwest, along the East Coast, and in California. Over 50 percent of the turkeys are produced under contract and nearly 30 percent of the industry consists of large owner-integrated operations [35]. This organizational structure, where production is closely affiliated with hatcheries, feed mills, and processing plants, has created a highly specialized industry. However, a wide variety of Federal and State Government regulations and policies affect the industry. This report describes the major regulatory agencies and policies that affect the turkey industry and assesses their relative cost or price impacts on various segments of the industry.

Government regulations are a form of intervention in our social and economic system. These regulations are classified into three types: (1) economic regulation, (2) environmental, health, and safety regulation, and (3) social regulation. Economic regulation involves direct Government intervention into the market for goods and services; that is, where prices, wages, supplies, or market structure are controlled or regulated. The Government intervenes in the market to regulate the economy in order to alter the price-making process in favor of certain groups or commodities; make the market system more efficient and/or less monopolistic; or eliminate dishonesty and fraud in the system. Environmental, health, and safety regulations set Government standards on various products and services to protect consumers and workers and to improve quality of life. Social regulations include social programs that will improve the welfare of certain groups or individuals in society by redistributing income or by protecting people from disruptive changes due to technology or other changes occurring in our socioeconomic system. The 19 primary agencies involved in these regulatory activities and the various sectors of the turkey industry affected are given in table 1.

Although regulatory costs are high, there are substantial public benefits from these programs. Consumers benefit from programs that improve environmental health and safety, such as meat and poultry inspection or food and drug laws.

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^{1/} Underscored numbers in brackets refer to sources listed in the Reference section.

Table 1--Government regulatory agencies affecting various sectors of the turkey industry, 1982

Industry sectors affected	Economic regulation ^{1/}										Environmental, health, and safety regulation ^{2/}					Social regulation ^{3/}			
	ASCS	AMS	FAS	ICC	FTC	PSA	ESD	FERC	PUC	CFTC	EPA	OSHA	FDA	FSIS	APHIS	AMS	SSA	EEOC	IRS
Input supplies:																			
Feed grains	X		X							X	X	X					X	X	X
Grain shippers				X			X					X					X	X	X
Production:																			
Growers		X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X
Hatcheries							X	X	X	X	X	X	X		X		X	X	X
Feed mills				X	X		X	X	X	X	X	X	X				X	X	X
Processing:																			
Assemblers						X	X					X					X	X	X
Processors		X	X		X	X	X	X	X	X	X	X		X		X	X	X	X
Further processors					X		X	X	X			X		X		X	X	X	X
Distribution:																			
Shippers				X			X					X					X	X	X
Wholesalers					X		X	X	X	X		X				X	X	X	X
Retailers					X		X		X	X		X				X	X	X	X

^{1/} Agencies are Agricultural Stabilization and Conservation Service (ASCS), USDA; Agricultural Marketing Service (AMS), USDA; Foreign Agricultural Service (FAS), USDA; Interstate Commerce Commission (ICC); Federal Trade Commission (FTC); Packers and Stockyards Administration (PSA); Employment Standards Division (ESD), USDL; Federal Energy Regulatory Commission (FERC), USDE; Public Utilities Commission (PUC), States; Commodity Futures Trading Commission (CFTC).

^{2/} Agencies are Environmental Protection Agency (EPA); Occupational Safety and Health Administration (OSHA); Food and Drug Administration (FDA); Food Safety and Inspection Service (FSIS), USDA; Animal and Plant Health Inspection Service (APHIS), USDA; Agricultural Marketing Service (AMS), Grading Division, USDA.

^{3/} Agencies are Social Security Administration (SSA); Equal Employment Opportunity Commission (EEOC); and Internal Revenue Service (IRS).

Government food programs and export-market development programs also benefit certain agricultural sectors and consumer groups by increasing the demand for food. Other programs primarily benefit specific segments of the economy such as farmers, transportation companies, or minority groups, but there are also often indirect benefits to the general public from many of the programs.

ECONOMIC REGULATION

Economic regulation of business in this country at the Federal level began with the Interstate Commerce Commission Act of 1887 and the Sherman Antitrust Act of 1890, which were established to regulate the railroads and prevent monopolistic practices of big business [39]. Many States adopted certain regulations prior to this time, but inconsistencies in these laws and public pressure led to Federal regulatory laws. Other Federal regulations passed at the turn of the century were the Pure Food and Drug Law of 1906 and the Meat Inspection Act of 1907 which regulated sanitary conditions in the food industry. In the 1930's, a wide variety of regulatory agencies were formed under the Roosevelt administration to control electric power, telephones, natural gas, securities, farm credit, emergency relief, labor unions, and social security. Farm production and price control programs for agricultural commodities also started in the thirties, and these programs continue to have an important impact on the agricultural sector.

Farm Price-Support Policies

Although there are no direct economic controls on turkey production or prices, other forms of economic regulation affect prices and production decisions. Agricultural price-support and production control programs for feed grains influence turkey production costs because feed accounts for 60 to 70 percent of production costs. These programs are developed by Congress and administered by the Agricultural Stabilization and Conservation Service (ASCS) of the U.S. Department of Agriculture (USDA).

Price and production control programs are designed to stabilize production and prices by regulating supply and setting minimum prices to help avoid severe fluctuations in farm income [33]. These programs often result in higher prices for feed grains than would occur if there were no controls. The higher prices benefit crop farmers but increase production costs for livestock and poultry producers. Possible increases in production costs for poultry producers vary according to the specific provisions of the programs. Over the past 22 years, Government nonrecourse loans and support payments for corn ranged from \$1.06 per bushel during 1960-61 to \$2.40 in 1981-82 [26]; anywhere from 1.7 to 18.3 percent of the annual production of corn was put under these programs. The basic support level during 1982-83 was \$2.55 a bushel with a \$2.70 target price. Farmers had to comply with an acreage reduction of 10 percent under 1981 levels to qualify for the target price or a higher reserve loan rate of \$2.90 per bushel, which, in turn, reduced the national corn acreage by about 2.2 million acres [46]. The acreage reduction increased corn prices 18 cents per bushel at the farm level nationwide and 37 cents per bushel for No. 2 yellow corn at the wholesale level in St. Louis [46]. An 18-cents per bushel increase in corn prices would increase turkey feed costs by about \$4.50 per ton, and a 37-cents per bushel increase would increase feed costs by \$9.25 per ton--a 0.70 to 1.43 cents per pound live-weight increase in production cost in 1982 (0.87 to 1.79 cents per pound processed

ready-to-cook (RTC) weight).^{2/} The 1983 Payment-In-Kind Program (PIK) also substantially reduced feed grain acreage. Corn acreage planted in the 1983-84 crop year declined 21.7 million acres, resulting in a 57-cents per bushel feed-cost increase [46], or about \$14 per ton for turkey producers. Under the PIK program, broiler feed prices increased by as much as \$26 per ton in Georgia by late 1983 [23]. This program increased turkey production costs by 2.2 cents per pound live weight in 1983 (2.7 cents RTC weight). Government programs for feed grains also create minimum (floor) prices which prevent sharp price decreases below support levels, hence effecting a floor on decreases in production costs in the turkey industry as well.

Government Food Programs

Domestic food programs include Federal spending for both direct purchases of foods and food assistance programs. These programs have expanded rapidly since their original inception in the 1930's to help eliminate surpluses brought about by Government price-support programs. The primary emphasis has shifted from surplus disposal to welfare-oriented food assistance programs for the needy. Under the food purchase programs, conducted by the Agricultural Marketing Service (AMS) of USDA, the Government buys substantial quantities of food each year and donates it to various schools, welfare recipients, public institutions, and disaster victims [45]. Food assistance programs, administered by the Food and Nutrition Service (FNS) of the USDA, involve direct distribution of foods or food stamps to various low-income recipients or to special groups such as child nutrition or school lunch programs. These food programs cost the Federal Government \$18.7 billion in 1983; the Food Stamp program accounted for \$11.1 billion, or 59 percent of the total expenditures [1].

Government poultry purchases accounted for only a small portion of the 1980 commodity distribution programs, about 10 percent of the quantities purchased and 15 percent of total expenditures [43]. The Government bought \$68.4 million worth of turkey products (99.6 million pounds) in 1980, most of which went to school lunch programs [49]. Purchases for 1981 were 64 million pounds, costing \$46.3 million. In the 1981-82 school year (July 1981 through March 1982), the Government purchased 80.7 million pounds of turkey for \$60 million, and they purchased 77.8 million pounds of turkey for \$59 million in the 1982-83 school year [53]. Turkeys have been bought under these programs for the past 27 years, and although they constitute a small portion of total turkey production (4.1 percent in 1980, 2.5 percent in 1981, and 3 percent in 1982), quantities purchased could have a significant shortrun impact on turkey prices. If the price response to the additional quantities of turkeys purchased was close to unity,^{3/}

^{2/} Conversion from live to ready-to-cook (RTC) weight, based on 80-percent yield factor.

^{3/} An elasticity of unity (-1.0) was used because previous estimates of retail-price elasticities of demand for turkeys have historically ranged from -0.65 to -1.55, with elasticities at the wholesale and farm level somewhat less [25]. Although recent studies show a somewhat more inelastic demand (-0.47 or -0.65), they are based on prices and consumption of whole turkeys. Since nearly 70 percent of all turkeys are now sold as parts, roasts, and further processed products (which have higher retail prices), they probably would have a more elastic demand [25]. Price responses to changes in quantities demanded are technically measured by price flexibility coefficients (similar to the reciprocal of price elasticities), but such coefficients are unavailable for turkey products.

the result would be higher turkey prices than would have occurred without these purchases--as much as 4.4 percent higher in 1980, 2.7 percent higher in 1981, and 3.1 percent higher in 1982. This equals a 2.8-cent increase in the New York RTC wholesale price of hen turkeys of 63.6 cents per pound in 1980 (or 1.76 cents per pound live weight), a 1.6-cents per pound RTC weight increase in 1981 (1.0 cent live weight), and a 1.9-cents per pound RTC weight increase in 1982 (1.2 cents live weight). However, actual price effects will probably be much less because purchase programs have existed for many years, and producers have allowed for the additional demand in their production decisions. Annual price differences due to variations in purchase levels could range from 0.3 to 0.8 cent per pound RTC weight, depending upon whether producers can anticipate purchase levels and can adjust production accordingly. These estimates include the effects of direct purchases only, and do not include any possible price effects of increased turkey consumption by low-income consumers as a result of the Food Stamp program (which is much larger in scope than are direct distribution programs).

Export Market Development

U.S. agricultural policies concerned with export markets influence the turkey industry in two ways: (1) increased exports of turkey products can create additional shortrun demand, which would raise domestic turkey prices; and (2) increased exports of grain can diminish domestic supplies and increase the price of grain, which would increase cost of producing turkeys.

The Foreign Agricultural Service (FAS) of USDA, in cooperation with agricultural export trade associations, conducts agricultural export-development programs. Export markets provide an outlet for about 30 percent of harvested crops in the United States, with a value of \$39.1 billion in 1982 [43]. Therefore, additional sales generated by export-development programs will have an important impact on domestic agriculture. Farm exports provide numerous nonfarm production and transportation jobs; create a strong balance of trade, which strengthens the U.S. dollar in foreign-exchange markets; and stimulate food production in other countries. About 54 million metric tons of feed grains were exported during the 1982-83 crop year, valued at \$7 billion, or 18 percent of total agricultural exports. If large quantities of feed grains are planted with the assumption that export markets will be available, there are not likely to be large price effects on the domestic grain market. However, foreign demand is relatively unstable, and political decisions related to embargoes or other export policies are often subject to rapid change. Thus, export markets can affect domestic grain prices substantially in the short run.

U.S. corn exports increased from 1.68 billion bushels in 1976 to 2.05 billion bushels in 1982 [43]. Although Government development programs can affect annual changes in export shipments, not all quantities exported can be attributed to the programs. The average annual fluctuation in corn exports from 1976 to 1982 was 216 million bushels (8.9 percent), with 4 years of increasing exports and 2 years of declining exports. Salathe estimated that each 100-million bushel increase in corn exports could increase the domestic price of corn by 15 cents per bushel, or \$5.36 per ton [36]. Thus, an average annual change of 216 million bushels could change the price of corn by \$11.59 per ton in any given year. Translated into feed costs for turkeys, this could result in a 1.26-cents per pound live-weight (or 1.57 cents RTC weight) increase or decrease in production costs, depending upon changes in quantities

of corn exported. If 30 percent of this annual fluctuation was due to export development programs, the net effect on turkey production costs would be ± 0.47 cent per pound RTC weight. Political embargoes would have a much greater impact on feed grain prices, depending upon what countries were involved and the exact nature of such embargoes.

Exports of poultry products, accounting for only 1.48 percent of the total value of U.S. agricultural exports in 1982, are of much smaller magnitude than exports of feed grains [43]. Turkey meat exports were 81 million pounds in 1980, or 3.3 percent of total turkey production; 68 million pounds in 1981, or 2.6 percent of production; and 56 million pounds in 1982, or 2.2 percent of production [43]. With a price elasticity of demand of -1.0 ,^{4/} export sales would have increased wholesale RTC turkey prices by 2.12 cents per pound in 1980, 1.7 cents per pound in 1981, and 1.4 cents per pound in 1982 compared to what would have occurred without exports. Equivalent live weight turkey price increases would have been 1.4 cents in 1980, 1.1 cents in 1981, and 0.9 cent in 1982. Government export-development programs for turkey products probably contributed to some proportion of these increased exports which could have ranged from 0.30 to 0.52 cent per pound RTC weight (based on annual variations in price effects due to export sales).

Transportation and the ICC

The U.S. turkey industry is highly concentrated in certain geographic areas. Large production centers are located in the Midwest, but about 62 percent of production is located outside the midwestern grain belt in important turkey-producing States of North Carolina, Virginia, Arkansas, Texas, and California. Feed grains must be shipped to these areas, and turkeys produced must be shipped to consumer markets throughout the country. Therefore, Government regulation of transportation rates will have an important influence on turkey industry costs.

The Interstate Commerce Commission (ICC) is the primary agency involved in regulating U.S. transportation rates, including those for feed grains. Rate changes will affect delivered feed costs for producers and will thus create changes in production costs. Feed grains move to poultry-producing areas mainly by railroad, although some are shipped by barge and truck. Proposed changes in railroad rates or route structures must be filed with the ICC for approval which often takes many months or years. Moreover, rates are based on technical and economic factors which may not always represent competitive costs [29]. This regulatory process can therefore increase costs of production for poultry producers and create certain inefficiencies in the transportation system. However, rate-setting procedures are much more flexible under the Staggers Rail Act of 1980, even though rail rates are not completely deregulated [44].

Railroad freight rates for shipping grain and soybeans to turkey-producing regions have more than doubled in the last several years, reflecting increases in labor costs, fuel, and other factors [43]. However, there are significant differences in railroad rates for feed grains shipped to different regions due to rate bases authorized by the ICC in the past which are based on changes in technology, variations in competitive modes of transportation, and other factors [22, 38]. Regional differentials in rates widened in the seventies as

^{4/} See ^{3/} for discussion of price elasticities of demand for turkeys.

across-the-board rate increases were applied on a percentage basis [38]. These rate changes created substantial differences in charges for shipments from the Midwest to various poultry-producing regions, even though shipping distances are often similar [22]. In the early eighties, the South had at least a \$10 per ton shipping cost advantage over the Northeast and Mid-Atlantic States, which gave the South a 1.2-cents per pound (live weight) advantage in production costs for turkeys (assuming 75 percent of feed ingredients were shipped). Regional differences in rates could be greater or less, depending upon the exact location of the producing area, shipment size, switching requirements, and the specific railroads involved. These regional differentials will probably have a net impact on average cost of production for the U.S. turkey industry of about 0.6 cent per pound live weight because 38 percent of turkey production is still located in the Midwest where shipping costs are somewhat lower due to shorter distances. Changes in rail rates resulting from the Staggers Rail Act of 1980 also will allow greater flexibility in rate changes, which could reduce future regional differentials [44].

In some producing regions, barge shipments of grain or soybeans on inland waterways are becoming more important. Barge shipments of feed grains are exempt from ICC regulation; and since barge rates are generally lower than railroad rates, significant savings are possible. For example, barge shipments through Guntersville, Alabama, reduced grain shipping costs below rail shipments by 5 cents per bushel for companies in Georgia and Alabama in 1981. These rates are \$1.78 per ton lower than those of rail shipments, a cost advantage of 0.28 cent per pound live weight for turkey producers. Other producing areas, depending on location and rail competition, could save even more. However, the Inland Waterways Revenue Act of 1978 affects barge shipments by imposing escalating user charges such as fuel taxes on the U.S. inland waterways system [22]. These user fees are levied by the U.S. Army Corps of Engineers which controls the Nation's inland waterways system. User charges may result in a minimum 10-percent increase in barge rates for feed grain products by 1985, which could cost some poultry producers more than \$1 or \$2 per ton. However, these changes affect feed costs for turkey producers only slightly: a \$2 per ton increase in feed transportation rates creates only a 0.31 cent per pound increase in costs of production live weight. Also, only a small portion of the feed used by the turkey industry is shipped by barge.

Turkey meat and processed products are shipped to various distributors and consumer markets primarily by trucks. Although the ICC regulates much of the U.S. trucking industry, unprocessed food products and certain other commodities such as processed poultry products and seafood are exempt from ICC regulation. The Motor Carrier Act of 1980 also exempted feed ingredient shipments from regulations in interstate commerce [21]. The impact of ICC regulations on the marketing and distribution of poultry products is thus very minimal; however, indirect effects on shipments of containers or other inputs to various segments of the industry are still a relevant cost factor.

Antitrust Laws

Industry firms are also subject to antitrust laws such as the Sherman Antitrust Act of 1890, the Clayton Act of 1914, and the Federal Trade Commission Act of 1914, plus amendments [39]. These laws are designed to prevent unfair trade practices, price fixing, collusion, or other deceptive practices; restore competitive conditions in oligopolistic or monopolistic industries; and prevent monopolies or monopolistic concentration through mergers. Antitrust laws should

benefit consumers by enhancing economic competition and preventing monopolistic pricing. The Antitrust Division of the U.S. Department of Justice and the Federal Trade Commission (FTC) enforce antitrust laws.

There has been little concern over antitrust issues in the past because the turkey industry has a relatively low level of economic concentration, a wide variety of substitute products, and a highly competitive market structure. However, these laws recently have been applied more broadly and to a wider variety of industries, including agricultural cooperatives, many small business firms, and trade associations. Minor complaints or infractions of the law often can be settled informally without major impacts on the firms involved; but major indictments for price fixing or other deceptive practices could be very costly for individual firms particularly if litigation were complex and continued for a long time.

Packers and Stockyards Act

The turkey industry is also subject to the Packers and Stockyards Act which regulates the buying and selling practices of dealers and handlers of livestock, meat, and poultry products. The Packers and Stockyards Administration (PSA) of USDA administers the act to help prevent unfair and deceptive practices and ensure fair market prices for producers and handlers in the marketplace [18]. These objectives are similar to those of the Federal Trade Commission, but they are more specific and relate directly to the livestock and meat industries and live-poultry dealers and handlers.

The PSA supervises trading practices in public stockyards, livestock buying yards, packing plants, and livestock and dealer facilities. The agency is involved in a wide range of activities, including bonding dealers, testing scales, and preventing dishonesty and fraud in buying and selling practices. The agency also assures the financial integrity of dealers and monitors contract payments to poultry producers, thereby providing direct benefits to industry participants [11]. Enforcement involves court injunctions, fines, suspension of licenses, and in certain cases, criminal complaints. Regulatory enforcement by the PSA would normally take precedence over FTC enforcement if the activities were covered by the specific provisions of the Packers and Stockyards Act. However, the broader powers of the antitrust laws (or FTC regulations) would still apply to livestock and poultry firms in certain situations. Dealers or firms could be charged minor fines or undergo costly and lengthy litigation for violating these laws and regulations.

Employment and Labor Standards

Labor laws related to wage rates and employment standards also apply to the turkey industry. The Fair Labor Standards Act of 1938, as amended, establishes minimum wages and standard hours for workers employed by industries or businesses involved in interstate commerce [15]. The Employment Standards Division (ESD) of the U.S. Department of Labor enforces this act. Agricultural workers and certain other groups were originally exempt from coverage, but Congress eventually expanded the law to apply to farmers and many other groups. Farm workers were included under the act in 1966, but small farmers who use less than 500 days of labor quarterly are still exempt from most provisions of the law.

The Fair Labor Standards Act, commonly known as the Federal wage and hour law, specifies minimum wages to pay workers for a standard 40-hour week and specifies rules for overtime pay. Regulations on equal pay for women, child labor, and migrant workers also fall under the jurisdiction of this act [15]. The primary beneficiaries of these laws are minority workers and low-paid, unskilled workers. In the turkey industry, coverage primarily applies to processing plants, feed mills, and other nonfarm segments of the industry, as most turkey producers at the farm level are probably small enough to qualify for the agricultural exemption. However, even though many workers are already above the minimum, increases in the minimum wage may raise overall labor costs in the turkey industry because increases in basic starting levels would create upward pressure on pay scales in order to maintain skill-level differentials.

Minimum wage rates prescribed by the act more than doubled in the last 12 years, increasing from \$1.60 per hour in 1971 to \$3.35 per hour in 1981, with no further increases since then. This is an average annual increase of 14.6 cents from 1971 to 1983, or about 5.9 percent per year. An increase of 20 cents per hour in the minimum wage from current levels would increase turkey industry hourly wage costs 6 percent at the basic level, and perhaps 3 to 4 percent at higher wage levels. Six-percent increases in hourly wages in covered sectors of the turkey industry would increase processing and marketing costs by about 0.4 to 0.5 cent per pound RTC weight, depending upon the upward escalator effect and existing wage levels. Across-the-board minimum wage increases would have a greater impact on costs in regions that have lower wage scales since plants in regions where wages are already well above the minimum will have less pressure to increase their wage structure to conform to higher minimum wages.

State Unemployment Insurance and Workmens Compensation Laws are patterned after Federal legislation which was originally passed in the thirties for industrial workers. These laws now include a larger number of employee groups and industries [15]. Under these laws, employers contribute to a State fund or private insurance plan to compensate workers who are laid off or injured on the job. Contributions of firms vary by the actuarial experience of firms and industries and by the level of benefits specified in State statutes [6]. Agricultural exemptions are common in many States, but they usually apply only to farm workers or small farm operations.

Federal legislation brought agricultural workers at the farm level under the Unemployment Insurance program in 1978, but farmers employing fewer than 10 workers in each of 20 weeks or farmers with a total payroll of \$20,000 or less in a calendar quarter are exempt [20]. Under this program, covered employers are required to pay a premium of 3.5 percent of the first \$7,000 of each employee's wages and are credited up to 2.7 percent of wages paid if contributions are made to a State insurance fund [52]. Rates paid to State plans vary, depending upon the farm's claims experience, the number of workers covered, and the current premium charges. These rates initially would increase employer labor costs by at least 10.2 cents per hour, plus additional record-keeping costs. For covered workers in other sectors of the turkey industry, unemployment insurance accounts for 2 or 3 percent of basic wages, or a minimum of 0.20 cent per pound in production costs (RTC weight). Workmen's Compensation rates range up to 10 percent of base wages, or 5 percent of total labor costs in many States [7, 32]. Assuming a total labor cost of about 8 to 10 cents per pound RTC weight, this could increase costs of producing and marketing turkeys by a minimum of 0.4 to 0.5 cent per pound.

Energy Policies and Regulations

Controls over various forms of energy in the United States have existed for many years. Until the 1973 oil embargo, oil industry regulations were largely based on production quotas for domestic oil determined by State regulatory agencies, and import quotas on foreign oil designed to maintain price differences between domestic and imported oil [56]. After the 1973 embargo by the Organization of Petroleum Exporting Countries (OPEC), Congress passed an emergency Petroleum Allocation Act. This legislation created the Federal Energy Administration (FEA) and gave them the power to control prices and allocate supplies of petroleum products in the United States. This act affected costs in many segments of the economy, including agricultural industries. The FEA became part of the U.S. Department of Energy (DOE) in 1977, and regulatory control remained there until early 1981 when the Reagan Administration deregulated the petroleum industry. Unless additional price or supply controls are reimposed on the petroleum industry, it is unlikely that there will be any further cost impacts on agricultural industries.

Natural gas prices are controlled by both the State and Federal Governments. The Federal Power Commission (FPC) was established in the thirties to regulate well-head prices by producers and interstate transportation of natural gas by pipeline companies [39]. State public utility commissions (PUC's) regulate the retail prices of natural gas in most States. These regulations were developed to prevent monopolistic practices and allow rate increases only when justified on a cost basis, thus benefiting consumers by keeping energy prices low. When the DOE was established in 1977, the Federal Power Commission became a part of this agency, and the resulting authority is now called the Federal Energy Regulatory Commission (FERC), but the regulatory powers of the agency continue as before the merger. Natural gas prices were partially deregulated as a result of the Natural Gas Policy Act of 1978, but complete deregulation of natural gas is not expected until 1985. Natural gas prices increased 2.5 times during the 1978-83 period, from \$2.63 to \$6.60 per 1,000 cubic feet, an average annual increase of 79 cents per 1,000 cubic feet, or 30 percent per year [50]. Turkey producers using natural gas, primarily producers in certain areas of the South and Midwest, and processing plants, feed mills, and hatcheries in many sections of the country experienced substantial cost increases. Natural gas price increases from 1978-1983 have increased turkey production costs by 0.11 cent per pound RTC weight (assuming 20 percent of U.S. producers use natural gas), hatchery and feed mill costs by 0.20 cent RTC weight (assuming 80 percent usage), and processing costs by 0.21 cent per pound RTC weight (assuming 80 percent of turkey processing plants use natural gas). This was a total increase of 0.52 cent per pound over 5 years, or 0.104 cent per year. Natural gas prices appeared to stabilize in 1984, but further increases may occur in the late eighties, depending upon the extent of deregulation and the price of fuel oil. Since natural gas is a low-cost fuel in many areas, there may be limits on substitution of fuel oil or alternative fuels, although further conservation or declines in petroleum prices could offset any possible cost increases.

Electric power is completely regulated by Government agencies. State PUC's regulate retail prices and revenues for companies operating in their States. However, the FERC regulates rates for wholesale customers and transmission of electricity crossing State lines. Due to differences in operating costs, source of fuel, customer density, and other factors, there is a wide diversity in electric power rates around the Nation. Electric rates paid by farmers in

the United States increased 63 percent during 1978-83, rising from 3.98 to 6.48 cents per kilowatthour (kWh) [42]. This average increase of 0.5 cent per kWh per year increased annual turkey production costs by 0.011 cent per pound RTC weight. Processing costs also increased by 0.053 cent annually, and hatchery and feed-mill costs increased by 0.031 cent per pound per year. Electric rates are expected to continue to increase in the next several years because of higher costs for materials and labor, continued emphasis on environmental regulations, and other factors. However, rate increases will vary by region, and their impact on the turkey industry is likely to be moderate.

Commodity Futures Trading Commission

The basic pricing unit of turkeys at the wholesale level is frozen RTC birds. These prices are quoted in various markets, with distinctions made for hens and toms and for different grade and weight classes. There is also trading in futures contracts using similar pricing units: frozen young turkeys, dressed, RTC, and turkeys without basting solution [4]. These contracts for future delivery of turkeys are traded on the Chicago Mercantile Exchange, and they allow hedgers and traders opportunities to participate in markets extending into future time periods. These markets are under the regulatory control of the Commodity Futures Trading Commission (CFTC), established in 1974, to control trading practices and pricing on commodity exchanges that deal in futures contracts [10]. The CFTC was organized to prevent price manipulation and protect participants from unfair and deceptive practices in these markets. The existence of a fair and open market for turkey futures contracts should benefit the turkey industry since it allows hedging opportunities to reduce price risk for various sectors of the industry. There are no direct costs except for those who participate in these markets.

ENVIRONMENTAL, HEALTH, AND SAFETY REGULATION

Environmental, health, and safety issues became a predominant concern of many public interest groups in the United States during the sixties and seventies as pollution, urbanization, scarce resources, and worldwide inflation created serious problems in the U.S. economy. Legislation was passed to protect consumer health and safety, including laws on hazardous substances, motor vehicle safety, truth in lending, fair packaging and labeling, environmental pollution, worker safety standards, wholesome meat and poultry standards, and others [31].

Environmental Protection Laws

Public awareness and concern for environmental quality, which became an important influence in the midsixties, resulted in the National Environmental Policy Act of 1970, which created the Environmental Protection Agency (EPA). This act gave the EPA broad enforcement powers over water and air quality, control of pesticides, solid waste disposal, aesthetics of land and water facilities, and other environmental concerns [14]. Most States have joint agreements with the EPA to help enforce these laws, and many States have also passed their own environmental protection laws. Other legislative acts regulating noise control, radiation, and toxic waste disposal are also under EPA jurisdiction.

Environmental protection regulations for the turkey industry are primarily concerned with water pollution control at the production and processing levels

and odor control from large farms, hatcheries, and processing and rendering plants. These activities are governed by Federal or State laws enforced jointly by Federal-State authorities. Most of the Federal emphasis has been on water pollution control, with odor control largely subject to local or State laws. The Federal Water Pollution Control Act of 1972 requires the EPA to establish effluent limits and standards for wastes discharged into public waterways from various point sources of pollution, with a specific timetable to implement these standards. Under this law, the best practical technology to meet these standards was to be in effect by 1977, and the best available technology is to be in effect by 1985 [14].

In the turkey industry, processing plants are the primary facility subject to these water control standards. The 1972 law also mandates that certain industries, including agricultural feedlots and food processors, cannot discharge waste water from their facilities into public waterways without a permit from the EPA or a designated State agency. Feedlots are broadly defined to include poultry producers at the farm level, and turkey producers could be required to get a permit if they have 55,000 turkeys or more, if they discharge pollutants directly into waterways [14]. Producers may also be subject to nonpoint pollution control guidelines developed by State agencies under the 1972 Act. Nonpoint pollution refers to wastes from diffused sources such as ground water runoff which includes chemicals, animal wastes, or other farm residues. The EPA does not prescribe specific practices to reduce water pollution from nonpoint sources, but pollution control standards may be established by the various States under waste management or water quality plans (subject to approval of EPA authorities).

Implementing water-pollution control standards in turkey processing plants has been very costly to the industry. For those plants building private treatment facilities, capital investment costs in the seventies ranged from \$70,000 to \$600,000 per plant, depending upon size and location of the plant and the type of treatment system used [8]. Annual fixed costs on these investments ranged from \$10,500 to \$90,000 or more, depending upon interest rates and levels of depreciation used. Operating costs for these systems also ranged from \$4,200 to \$14,000 per year. Total annual costs for these older water pollution control systems will therefore range from 0.06 to 0.42 cent per pound or more RTC weight for turkey processors, depending upon volume processed, interest rates, type of treatment, and other factors. Newer facilities will cost even more. However, some savings from additional recovery of by-products will offset some of these costs. If available, municipal waste treatment facilities may be somewhat lower cost for processing plants than constructing their own facilities, since most municipal systems are large enough to achieve substantial economies of scale. However, municipal sewerage charges for poultry processing plants in many communities have greatly increased in recent years. The Wastewater User Charge System requires municipal systems constructed with EPA subsidies to levy surcharges on industrial wastes that are put into their systems in order to recover treatment costs [14]. However, in some areas, municipal rates may still be lower than costs for private treatment facilities, depending upon the size of municipal facilities and when they were constructed.

Occupational Safety and Health Regulations

Renewed interest in worker safety and health occurred in the sixties as part of the growing environmental and consumer protection movements in the United

States. Previous safety laws such as workmen's compensation provided payments to workers for injuries or illnesses that occurred on the job, but these laws relate only to injuries already incurred, after the fact. The Occupational Safety and Health Act of 1970 was passed to protect workers before they were injured. This act established the Occupational Safety and Health Administration (OSHA) within the U.S. Department of Labor which sets safety standards for various industries [51]. Standards are developed in considerable detail and published in the Federal Register before going into effect. OSHA regulations for most industries are lengthy and detailed specifications of what constitutes safety hazards, and many companies found they had to hire safety engineers in order to comply with these regulations.

The act authorizes OSHA to make unannounced inspections of the workplaces to ensure compliance. Priorities for inspection are based on several factors: number of catastrophies or fatal accidents, valid employee complaints, target industries or target health hazards, or random selection. The severity of injuries or accident rates determines target industries, and toxic substances such as asbestos or cotton dust determine target hazards. The meat products industry has a very high injury rate and is thus considered a target industry. The dust level in grain elevators and feed mills makes them a potential hazard to workers' safety. The law also requires businesses with 10 or more workers to keep prescribed records of job-related injuries, illnesses, or fatalities.

At the farm level, agriculture is generally considered to be a hazardous occupation, and OSHA standards have been developed for: sanitation in temporary labor camps, storage and handling of anhydrous ammonia, pulpwood logging practices, slow moving vehicles on roads, roll-over protective devices for tractors, farm machinery safeguards, power tools and electrical hazards, and field sanitation. Pesticide use regulations are generally enforced by the EPA. In addition to certain prescribed standards, employers are also bound by the General Duty Clause of the act, which states that employees must be furnished with a place of employment free of recognized hazards [15]. These regulations may not significantly affect turkey producers because they do not use much complicated machinery or farm labor, and 1977 amendments to the act exempt farmers from coverage if they employ 10 or fewer workers.

OSHA's primary effect on the turkey industry is at the processing plant or feed-mill level. Worker safety hazards related to moving machinery, noise control, feed-mill dust, and placement of ladders and fire extinguishers are considered. Frequent changes occur in these regulations and employers have the responsibility of complying with the laws. Meeting certain prescribed standards could be very costly for some turkey processors and feed mills which are sometimes considered hazardous industries. Enforcement of noise control standards in turkey processing plants at the 85 decibel limit recommended by EPA and OSHA would apparently conflict with USDA inspection requirements and be somewhat costly to implement. Turkey industry cost estimates for meeting OSHA requirements are not available, but they probably would be considerably less than EPA pollution-control costs because of the smaller capital investment required. However, they could be as high as 0.1 or 0.2 cent per pound of turkey processed RTC weight, depending upon the type and degree of safety hazards existing in certain plants and the record-keeping costs required.

Food and Drug Administration

Food inspection regulations in the United States emerged early in this century as a result of the development of large-scale food manufacturing plants and the greater public awareness of unsanitary conditions in the food industry. The Pure Food and Drug Act of 1906 prohibited adulteration and misbranding of food and drugs sold in interstate commerce [37]. The act has since been amended and broadened to include regulations on cosmetics, therapeutic devices, chemical additives, and pesticides in food. These laws, enforced by the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (HHS), substantially benefit consumers who have no way to detect the safety or wholesomeness of food and drugs. The FDA is responsible for sanitation and safety regulations for all foods except meat and poultry which are covered under separate meat and poultry inspection laws. The FDA's regulatory functions include inspecting food and drug manufacturing plants; issuing licenses; establishing sanitation standards; approving labels and packaging; establishing tolerances for food additives, contaminants, or pesticide residues (in cooperation with EPA); approval of testing and quality control procedures of manufacturers; and various regulations mandated by other acts.

The Food, Drug, and Cosmetic Act of 1938, which broadened the original act of 1906, also gave the FDA the authority to enforce safety regulations for animal drugs and feeds. The FDA requires animal feed to be wholesome and safe because products from animals enter the human food chain. Animal drug amendments passed in 1968 further strengthened regulations relating to animal drugs and feed additives. The Bureau of Veterinary Medicine of the FDA enforces these regulations. Under the various acts, the FDA has authority to review and approve new animal drugs and feed additives for safety and efficacy and to assure that unsafe residues of these products will not be present in the edible tissue of animals. Manufacturers of animal health products must test their products by scientific procedures approved by FDA. All drugs, biological products, and veterinary devices must also be unadulterated and labeled correctly. The agency also cooperates with the Animal and Plant Inspection Service (APHIS) of USDA in regulating biologics, and with the EPA in reviewing the safety and efficacy of pesticides and monitoring residue testing for pesticides in foods.

The primary impact of the FDA on the turkey industry relates to regulation of feed additives. There are a wide variety of antibiotics and additives used in turkey feeds that reduce the incidence of disease and improve production performance. These products must be tested and approved by the FDA for safety and efficacy before use. Biologics used for vaccination or therapeutic medication for birds must also be approved by the FDA. Feeds may also be checked for potential pesticide residues or other contaminants. There are both direct and indirect cost effects to the turkey industry from FDA regulation. Manufacturers of animal drugs, feed additives, or biological products must make extensive scientific tests of their products to receive FDA approval before marketing. These regulatory procedures often take many months or years and increase the costs of developing and introducing new products. These higher costs will have a twofold effect: they discourage the development of certain new products which may benefit the industry but will not be produced because volume levels are not sufficient to reach the break-even point; and the products that are produced will have higher prices to reflect the higher costs. These higher prices for animal health products will therefore increase production costs for turkeys.

Failure to approve certain drugs, feed additives, or removal of certain products from the market could also affect turkey industry costs. A 1970 FDA study concluded that use of antibiotics in turkey feeds benefited producers by \$13.9 million annually due solely to improved production performance [9]. Without antibiotics, producers would lose 10 percent or more turkeys to disease. The same study showed that using antibiotics yielded an economic advantage of 12 cents per turkey, equivalent to 0.67 cent per pound live weight based on 1970 prices. Another study made in 1976, using a simulation approach over 5 years, found that banning antibiotics from poultry feeds would increase the wholesale price of turkeys by a maximum of 1.41 cents per pound in the third quarter of the second year, with the effects then diminishing to 0.63 cent per pound in the third quarter of the fifth year [28]. A 1980 study also showed that proposed FDA restrictions on the use of nitrofurans, penicillin, and tetracyclines would initially lower the turkey industry's production and increase costs by as much as 2.3 cents per pound RTC weight during the first year after restrictions were imposed [19]. However, it was also found that in the longer run substitution of other additives or different management practices could lessen the impact of these restrictions. Changes in production costs of this magnitude could substantially affect the turkey industry since net margins are relatively small, and it is difficult for producers to pass increased costs on to the consumer. Recent net returns to the turkey industry (at the wholesale level) have not been much greater than 3 or 4 cents per pound, and they have been negative in many quarters, with losses of 2 or 3 cents per pound common [49].

Meat and Poultry Inspection

The Federal Meat Inspection Act of 1907, another early major food safety law, established sanitary standards and inspection regulations for red meat products sold in interstate and foreign commerce. Under this act, meat animals must be inspected for injuries or disease at slaughter, and processed products must be wholesome and free of harmful additives [37, 47]. The act imposed strict sanitation requirements for meat-packing plants and required approval of all product labels for truthfulness and accuracy. These meat inspection regulations benefit producers and packers by assuring wholesome products, and they also provide substantial benefits to consumers in the form of improved health and less exposure to infectious disease, although actual benefits are difficult to quantify [34]. The Wholesome Meat Act of 1967 amended the 1907 law to establish similar regulatory standards and requirements for packing plants operating in intrastate commerce. The 1967 Act also authorized a Federal-State cooperative inspection program and required State inspection programs to be at least equal to the Federal program.

Compared with the red meat industry, the poultry industry was relatively small at the beginning of this century. Broiler and turkey production did not expand rapidly on a commercial scale until the late forties and early fifties. Inspection of poultry products was on a voluntary basis until the Poultry Products Inspection Act was passed in 1957 [17]. This act established inspection standards and regulations for poultry products sold in interstate and foreign commerce. Eleven years later the Wholesome Poultry Products Act of 1968 imposed similar requirements on poultry plants operating in intrastate commerce. Thus, all meat and poultry plants in the United States now have mandatory inspection standards for safety and wholesomeness, except for certain exclusions for small plants or establishments with predominantly direct consumer sales.

The Food Safety and Inspection Service (FSIS) of USDA administers the Federal meat and poultry inspection programs [47]. The inspection process involves: (1) approval of plant and equipment facilities used for processing, (2) observation of slaughtering and processing of animals or birds, and (3) approval of all packaging and labeling for meat and poultry products. The agency is also responsible for inspection of imported meat and poultry products, drug and pesticide monitoring programs for meat and poultry, approval of quality control programs in processing plants, and approval of additives for meat and poultry products. The FSIS also enforces the Humane Slaughter Act of 1958 which requires that all animals and birds be slaughtered under humane conditions, without undue suffering or cruel and harsh treatment.

Government inspection regulations can substantially affect processing plant output and costs in the poultry industry. Plant layout and equipment changes must be approved by FSIS before construction or renovation is undertaken in order to meet sanitation standards. This process creates regulatory lag and may contribute to increased capital investment. Also, daily sanitation inspections could result in certain periods of down-time for processing operations if facilities are not in proper order or are not clean enough to meet certain prescribed standards. The poultry industry will also incur losses from condemnations based on inspection standards for carcass injury and diseases. Condemnations vary among plants and by season of the year. Turkey condemnation losses from both ante and post mortem inspection normally run slightly over 2 percent of plant volume [43], which amounts to about 1 cent per pound loss on a RTC weight basis. Therefore, a 10-percent increase or decrease in condemnations will change costs by about 0.1 cent per pound. Industry losses from chemical, pesticide, or drug residues in birds will also run between 1 and 2 percent of output, but these losses are much more variable than are condemnations. Occasional detection of major contamination from chemicals such as PCB's or aflatoxin in feeds could result in major losses for certain producers, sometimes including entire flocks.

Modifications or changes in the traditional inspection process could also significantly affect processing costs when there are variations in line speeds and labor productivity. In broiler processing plants, for example, proposed new modified inspection systems designed to improve efficiency and reduce inspection manpower were estimated to decrease processing costs by about 0.16 to 1.04 cents per pound RTC weight [3]. Two-inspector lines would lower costs by 1.04 cents, three-inspector lines 0.40 cent, and four-inspector lines 0.16 cent per pound. However, these savings would be somewhat offset by the higher capital investment required to make these changes: \$75,230 per line for two-inspector lines, \$38,500 per line for three-inspector lines, and \$19,300 per line for four-inspector lines. Modified traditional inspection also allows for increases in line speeds, which increases the processing capacity of plants. The possible effect of modified or sequential inspection on turkey processing plants is likely to be somewhat similar to that of broiler plants, which may lead to lower costs and increased productivity.

Changes in labeling or packaging regulations could also impact on poultry processing costs. Proposed changes in net-weight labeling regulations for meat and poultry products, originally proposed in 1977 (still pending), would require elimination of free liquids and moisture allowance losses from product net weight [13]. Net weight would equal drained weight which would be the basis for sale. This proposal would increase the apparent costs per pound of drained weight but not the costs per pound of usable weight to the consumer.

However, this proposal would require new quality control programs at processing plants, which could increase industry costs by nearly 0.5 cent per pound [13]. Additional personnel and capital investment would also be required by State and local governments to enforce the drained weight inspections.

Regulatory changes restricting the use of nitrates and nitrites as preservatives in meat and poultry products could also increase processor costs [27]. If nitrate- and nitrite-free products were developed, the risk of food poisoning from uncured products would be greater, thus, lower refrigeration temperatures or freezing would be required throughout marketing channels. Unless substitutes were available, this could increase processing and marketing costs substantially if products were required to be sold frozen rather than fresh.

Changes in wage rates for operating the inspection program in processing plants will also affect costs. Since Federal inspection is mandatory, the Federal Government pays the basic costs of inspection for a regular 40-hour week. However, processors must pay for overtime and holiday inspection, special laboratory services, or voluntary export certification fees at a rate specified by FSIS. In late 1980, the overtime and holiday rate for inspectors was \$16.76 per hour [40]. Government grading and inspection cost the turkey industry about 0.09 to 0.12 cent per pound in 1980 and as high as 0.20 cent or more in 1981 [55]. Other plant costs include office space for inspection personnel and trimmer laborers who assist in the inspection. The poultry industry's share of direct inspection costs have been only about 10 to 12 percent of total program costs [2], but as Federal budgets become more restrictive, there may be some incentive to increase industry processing charges in the form of user fees. Hourly wage rates for inspection have increased nearly 7 percent annually in the last several years and about 5.5 percent annually during 1980-84 [40, 48]. Overtime inspection rates rose to \$20.44 per hour in late 1983. Thus, inspection fee increases since 1980 raised turkey processing costs about 0.02 to 0.03 cent per pound to a level of about 0.12 cent per pound RTC weight in 1984 (which is still relatively small when compared with other types of cost increases).

Animal Disease Control and Quarantine

Government regulations to control plant and animal diseases and pests began more than a century ago. Most of the early laws mandated import inspections to prevent entry of diseases and pests into the United States [57]. These regulations were later expanded to include programs for improvement of animal and plant health, establishment of quarantine stations, restrictions on interstate movement of diseased animals, and humane treatment of livestock and poultry. In 1971, responsibility for these regulations was transferred to the Animal and Plant Health Inspection Service (APHIS) of USDA which has a Plant Protection and Quarantine Program to control plant pests and diseases, and a Veterinary Service Program to control diseases and pests affecting livestock and poultry [45].

These regulatory programs help control and eradicate poultry diseases such as psittacosis, ornithosis, Exotic Newcastle disease, or avian influenza [17]. The agency has a surveillance program for detecting outbreaks of these diseases in the United States. An outbreak of Newcastle disease in California in the late seventies resulted in Federal expenditures of more than \$50

million in one major eradication program, and millions of dollars in losses were incurred by commercial poultrymen [58]. The avian influenza epidemic in Pennsylvania in 1983 affected more than 12.6 million birds (858,244 turkeys), with Federal expenditures of over \$40 million through April 1984 [24]. Total Federal expenditures reached \$60 million before the quarantine was lifted in October 1984. If such outbreaks are not contained, costs to the poultry industry could be substantial, and certain producers affected by the disease will have their flocks completely eliminated. Such diseases could also result in substantially higher food costs for consumers; the avian flu outbreak, for example, resulted in wholesale price increases of 25 percent for eggs and 6 percent for broilers in late 1983 and early 1984 [24]. Direct costs to the poultry industry for these programs are minimal, but the benefits for producers and consumers are substantial.

Grading Regulations

Grading systems for food and agricultural commodities, which involves setting standards for commodities and classifying goods into designated categories to facilitate trading and provide consumer guidelines, have existed for a long time. [12]. Grading programs for most products are voluntary, except when otherwise specified by certain laws or by contractual arrangements between buyers and sellers. However, conventional trading practices by retailers or other buyers often specify minimum grades or standards for quality assurance and trading convenience. Turkey grading is usually performed at both wholesale and consumer grade levels.

Federal legislation to establish standards and grades for certain farm products began between 1914 and 1918 [12]. Standards and grades for live and dressed poultry were first proposed in 1927, but grading of New York dressed turkeys did not begin on a large scale until 1930. The program has since expanded rapidly along with the growth of the industry, and Federal-State programs now grade nearly all turkeys produced in the United States [45]. The Agricultural Marketing Service (AMS) of USDA administers these Federal programs. Processors or packers pay program costs since the programs are voluntary.

The grading process affects the turkey industry in many ways. Changes in grade standards, based on specific product characteristics and attributes, affect the marketing and pricing process for turkeys. Judgement and experience of grading personnel to apply or interpret grades could cause variations in grade, yield, and size, thus affecting costs and returns to producers and processors. Processors also pay grading fees imposed by USDA to cover costs of the grading program, but these fees are not very large. Processor grading and inspection costs combined were about 0.20 cent per pound RTC weight in 1981 [55]. However, payment fees for grading services have increased, with nonresident base charges more than doubling in the last 11 years, rising from \$9.20 per hour for graders in 1973 to \$21.48 per hour in 1984 [41]. Hourly fees have increased 46 percent since 1980. Plant grading costs have thus probably increased about 0.04 cent per pound since 1980 to a level of about 0.13 cent per pound in 1984.

SOCIAL REGULATION

Social regulations are laws designed to protect the general health and welfare of people. Most of these laws emerged in the thirties as part of President

Roosevelt's New Deal era. During the Great Depression, it became evident that people needed protection from changing social and economic conditions. A wide variety of social programs were passed, many of which still exist today. Social legislation in the thirties involved old age and survivors insurance, unemployment compensation, public work projects, and public aid programs [30]. These laws have since been modified and expanded to include equal employment laws, medical insurance for older workers, food stamps, and other public welfare programs.

Social Security Laws

The social security system began with the Social Security Act of 1935 which established an old age and survivor's insurance program for workers in commerce and industry. The program initially provided supplemental retirement income for people aged 65 or over, but was later expanded to include dependent and widow benefits (1939), disability benefits (1956), and medicare hospital insurance (1965) [5]. Workers in commerce and industry were the only groups originally covered under the system, but coverage was gradually expanded to include farm and domestic workers in 1950, self-employed farmers and most other self-employed groups in 1954 and 1956, doctors in 1965, and ministers in 1967. Coverage now includes over 90 percent of the U.S. labor force. The Social Security Administration (SSA) of HHS administers the program, and joint contributions from employers and employees finance it. For the self-employed, contributions are imposed on the net income of individual workers. Benefit payments to individuals under the program are based on contributions made to the system. Changes and modifications in these programs are enacted periodically by Congress. Automatic adjustments in benefit payments based on changes in the cost of living were adopted in 1972.

The social security program significantly affects costs in the turkey industry. Producers or other companies with one or more employees were required to withhold 6.7 percent of cash wages paid to employees, up to a \$35,700 maximum in 1983 (\$37,800 in 1984), and to contribute a matching 6.7 percent of company revenues to the fund (7 percent in 1984) [16, 52]. In addition, self-employed farmers contributed 9.35 percent of their net income to the social security system in 1983. The 1984 rate is scheduled to be 14 percent (with a credit equal to 2.7 percent of self-employment income). These payments contribute to costs of producing and marketing turkeys. With a total estimated labor cost of 12 cents per pound for turkeys, social security costs in 1983 would be about 1.61cents per pound RTC weight. Annual 10-percent increases in social security taxes (which occurred between 1982 and 1983) would increase turkey costs of production and marketing by 0.16 cent per pound. The cost impact may be even greater than this, perhaps as much as a 0.2 cent per pound increase annually due to additional tax increases in the social security system that will probably be necessary in the future.

Equal Employment Laws

Major legislation concerned with fair employment practices began in the sixties with the Equal Pay Act of 1963 which was established to help eliminate wage differentials based on sex, and the Civil Rights Act of 1964 which created the Equal Employment Opportunity Commission (EEOC) to investigate job discrimination practices [54]. These laws were designed to ensure equal pay for equal work and to prohibit discrimination against workers based on sex, race, religion, or national origin. The Age Discrimination in Employment Act

of 1967 also prohibits discrimination against individuals aged 40 or over. In 1972, the Equal Employment Opportunity Act gave the EEOC more legal power, including the right to sue employers for acts of discrimination. The Vocational Rehabilitation Act of 1973 also requires Federal contractors to take affirmative action on hiring handicapped workers.

Formal complaints or lawsuits can be brought against those who discriminate under the various laws. Complaints filed annually with the EEOC have increased substantially since 1966, rising from 8,854 in the first year to over 90,000 in 1982. However, most farmers are not usually affected since they have relatively small operations with few employees. Processing and marketing firms in the turkey industry could be subject to complaints or legal action, and such action could be very costly in cases where fair employment practices are violated. Most companies are also subject to State laws on fair employment, but not all States have such laws.

Income Tax Policy

Federal income tax originated with the Revenue Act of 1913, which imposed a progressive income tax on individuals for the first time [6]. Tax rates were originally low, deductions were generous, and the income of most families was relatively low. Thus, most people paid little taxes. Tax rates increased after World War II, and procedures for withholding taxes from wages were established. Many more people then became subject to the law. The Internal Revenue Service (IRS) of the U.S. Department of Treasury administers these tax laws. Although the income tax was primarily designed to raise revenue, the laws have also been used to carry out various social and economic objectives by special provisions relating to types of income taxed, exemptions and deductions allowed, and specification of allowable accounting practices. Therefore, these laws and regulations will affect the behavior of individuals and business firms in society and alter their decision patterns and practices.

The tax laws that evolved for agriculture were unique due to the particular problems of farmers and to the nature of the farm business. Starting with the Revenue Act of 1916, farmers were allowed to use either the cash or accrual method of accounting [16]. Cash accounting allows more flexibility for inventory adjustments, cash flow, and timing of taxable income. Other regulations adopted later allowed farmers to deduct the costs of raising livestock and certain other farm products as an annual expense instead of capitalizing these costs over time. Many of these regulations helped simplify the accounting process for farmers. In 1951, Congress also authorized that income from sales of livestock held for breeding could be considered as capital gains rather than regular income.

Other than the use of cash accounting, most special tax law provisions related to agriculture probably have limited applicability to the turkey industry. However, income tax costs to the turkey industry could be substantial, depending upon the tax bracket levels and accounting practices of individual farmers, contractors, and other firms in the industry. For example, a net income of 4 cents per pound for producers growing 40,000 turkeys per year would create a tax liability of about \$4,100, or approximately 0.57 cent per pound live weight of turkey produced [52]. Other income taxes are also paid by feed millers or suppliers, hatcheries, processing plants, transportation companies, and marketing firms. If an aggregate net income of 8 cents per pound were assumed for the whole production and marketing chain (including

retailers), an overall tax liability of 1.6 to 2.4 cents per pound live weight (or 2.0 to 3.0 cents RTC weight) would probably result, depending upon the accounting practices and the taxable income of various firms, the degree of corporate versus individual proprietorship income, and other factors. Recent reductions in tax rates for individuals and corporations as a result of the Economic Recovery Tax Act of 1981 may reduce the income tax impact on the turkey industry in the short run, but some increase in taxes in the mid- to late eighties is likely as new laws are developed to help reduce the Federal deficit.

OVERALL REGULATORY IMPACT ON INDUSTRY

Table 2 presents estimates of the possible magnitude of economic regulatory programs and policies on turkey industry costs and prices in the late seventies and early eighties. Farm price-support programs for feed grains increased feed costs for turkeys by about 1.6 cents per pound RTC weight in 1982 and by 2.7 cents in 1983. Cost impacts will vary by year, depending upon the specific provisions of the program. Government food programs, which purchase turkey products for school lunches or other direct distribution, increased prices for turkeys by about 0.8 cent per pound RTC weight in the early eighties, but these price impacts will vary depending upon the level of purchases. Export market-development programs could raise or lower feed costs by approximately 0.5 cent per pound RTC weight in any given year, depending upon whether such programs were successful in increasing export demand for grain. Export market-development programs for turkey products probably increased wholesale turkey prices by about 0.5 cent per pound in the early eighties. Railroad rate structures for grain, which are regulated by the Interstate Commerce Commission, contributed to differences of 1.2 cents per pound live weight in regional costs of production for turkeys in the late seventies and early eighties. Railroad regulation probably increased turkey industry costs of production by approximately 0.75 cent per pound RTC weight. Higher barge rates for shipping grain on inland waterways also increased feed costs by an estimated 0.1 cent per pound RTC weight due to newly imposed user charges on the inland waterway system.

Higher minimum wage rates, imposed under the Fair Labor Standards Act in the seventies, increased turkey production costs by as much as 0.5 cent per pound RTC weight annually (table 2). Unemployment compensation plans also contributed an estimated 0.2 cent per pound to costs, and workmen's compensation contributed 0.4 cent per pound. Natural gas price increases since partial deregulation began in 1978 added about 0.1 cent per pound RTC weight annually to production and processing costs, and electricity rate increases added about 0.1 cent per pound. The potential total annual cost increases due to economic regulation were about 3 cents per pound RTC weight. However, Government food programs and export programs for turkeys may have increased turkey prices by as much as 1.3 cents per pound RTC weight. Turkey industry cost differences of \pm 0.5 cent per pound RTC weight were also possible due to changes in grain export-development programs.

The approximate total cost increases for the turkey industry from environmental, health, and safety regulations are estimated at 2.6 cents per pound RTC weight, with a possible \pm 0.6 cent cost variation attributed to inspection regulations (table 2). Water pollution control costs for turkey processing plants accounted for 0.42 cent of these costs, and occupational health and safety regulations accounted for an estimated 0.15 cent per pound.

Table 2--Estimated impact of Government regulation and policies on the U.S. turkey industry, early 1980's

Regulatory agency or program	Primary sector(s) of industry affected	Annual impact on turkey meat costs or prices ^{1/}	Potential cost impacts from regulation	Level of social benefits from regulation ^{2/}
	<u>Sector</u>	<u>Cents per pound</u>	<u>Costs</u>	<u>Benefit level</u>
Economic regulation:				
Farm price supports	Feed costs	+1.63 costs ^{3/}	Variable	Low
Government food programs	Turkey prices	+ .80 prices ^{4/}	Variable	Medium
Export market development	Grain prices	+ .47 costs	Variable	Low
	Turkey prices	+ .52 prices	Variable	Low
Interstate Commerce Commission	Rail rates	+ .75 costs ^{5/}	Higher	Low
	Barge rates	+ .10 costs	Higher	Low
Antitrust laws	Processors	Higher costs ^{6/}	Variable	Medium
Packers & stockyards	Processors	Higher costs ^{6/}	Variable	Medium
Labor: minimum wages	All sectors	+ .50 costs	Higher	Medium
Unemployment compensation	All sectors	+ .20 costs	Higher	Medium
Workmen's compensation	All sectors	+ .40 costs	Higher	Medium
Federal Energy Regulatory Commission: natural gas	Production	+ .06 costs	Higher	Low
	Processors	+ .04 costs	Higher	Low
Public Utility Commission	Production	+ .04 costs	Higher	Medium
State level: electricity	Processors	+ .05 costs	Higher	Medium
Total impact of economic regulation	All sectors	+3.02 costs ^{7/}	Variable to higher	Low to medium
		+1.22 costs		
		+1.32 prices		
Environmental, health, & safety regulation:				
Environmental Protection Agency	Processors	+ .42 costs	Higher	High
Occupational Safety and Health Administration	Processors and feed mills	+ .15 costs	Higher	High
Food and Drug Administration	Feed additives	+1.02 costs	Higher	High

See footnotes at end of table.

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Table 2--Estimated impact of Government regulation and policies on the U.S. turkey industry, early 1980's--continued

Regulatory agency or program	Primary sector(s) of industry affected	Annual impact on turkey meat costs or prices ^{1/}	Potential cost impacts from regulation	Level of social benefits from regulation ^{2/}
	<u>Sector</u>	<u>Cents per pound</u>	<u>Costs</u>	<u>Benefit level</u>
Meat and poultry inspection	Processors	+0.90 costs ±.60 costs	Variable	High
Animal disease control and quarantine	Production	Lower costs ^{6/}	Variable	High
Grading regulations	Processors	+.13 costs	Variable	Medium
Total impact of environmental regulation	All sectors	+2.62 costs ^{7/} ±.60 costs	Variable to higher	Medium to high
Social regulation:				
Social security	All sectors	+1.61 costs	Higher	High
Equal employment	All sectors	Variable ^{6/}	Variable	Medium
Income tax	All sectors	+2.50 cents	Higher	Medium
Total impact of social regulation	All sectors	+4.11 costs ^{7/}	Variable to higher	Medium to high
Total economic impact	All sectors	+9.75 costs ^{7/} ±1.82 costs +1.32 prices	Variable to higher	Low to high

^{1/} Reflects estimated impact of regulation during late 1970's through 1982-83, based on assumptions and variables described in text. Numbers refer to wholesale ready-to-cook weight. Conversion based on 80-percent yield from live weight. Government program operating costs excluded.

^{2/} Refers to benefits to society in general and not specific industry sectors or groups.

^{3/} Costs will vary greatly from year-to-year depending on specific provisions of farm programs.

^{4/} Includes estimated impact from direct Government purchases of turkey meat and not food stamp program.

^{5/} Reflects added costs of economic regulation prior to Staggers Rail Act of 1980. Effects probably valid up to 1982 before the full impacts of the act were felt.

^{6/} Cost or price impacts highly selective and applicable only to individual sectors or firms involved in regulatory action or process.

^{7/} Since estimated impacts for individual types of regulation were derived by different methods and based on somewhat different time periods, they are not strictly additive. Also, changes in some regulatory programs will also affect other programs, which could result in somewhat different total cost impacts.

Food and Drug Administration regulations on animal drugs or antibiotics in feed probably contributed as much as 1 cent per pound or more to costs. Meat and poultry inspection regulations could have increased processing costs by as much as 0.9 cent per pound, depending upon variations in condemnation levels, pesticide residues, increased wage rates for Government inspectors, labeling and packaging changes, or types of quality control programs required. However, new or modified inspection procedures may be implemented with savings of 0.6 cent per pound or more possible in some plants. Cost impacts of animal disease control and quarantines are isolated and apply only to certain producers, but benefits to the industry and consumers are substantial. Grading programs are voluntary, but are used by the majority of processors. User fees of slightly more than 0.1 cent per pound were paid to the Federal Government for these services.

The estimated costs to the turkey industry due to social security and related programs in the early eighties were 1.6 cents per pound of turkey produced RTC weight (table 2). Annual increases of 10 percent in social security taxes would increase turkey production and marketing costs by 0.16 cent per pound. Costs related to enforcement of equal opportunity laws or other discriminatory practices are highly variable, but they could substantially affect individual firms or sectors involved in disputes. Income taxes cost the turkey industry an estimated 2.5 cents per pound RTC weight. However, the incidence of this tax is highly variable, depending upon the relative profitability and net income of different sectors of the industry.

The combined effects of the Government regulatory programs and policies considered in this study contributed an estimated 9.75 cents per pound to the costs of producing and marketing turkeys on a RTC weight basis (table 2). Economic regulation accounted for 3 cents per pound; environmental, health, and safety regulation 2.6 cents per pound; and social regulation 4.1 cents per pound. However, due to variations in methods used to calculate the cost impacts and the somewhat different time periods involved, these estimates should be considered approximate and not precise estimates of costs. Also, the cost impacts may not be strictly additive. Benefits from some of these programs may also offset costs.

Government food programs and export programs could increase prices for turkey products by as much as 1.3 cents per pound, depending upon the volume of purchases and other factors. Other programs such as the grain export program could either increase or decrease turkey industry feed costs by 0.5 cent per pound RTC weight. Regulations by the Interstate Commerce Commission also created regional differences in turkey production costs by as much as 1.2 cents per pound live weight, due to variable shipping rates for grain to different sections of the country. Therefore, the cost effect on the turkey industry from Government regulations and policies considered in this study could range from 7.9 to 11.6 cents per pound, with even wider variations possible as policies and programs continue to change.

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