

THE ROLE OF ECONOMICS IN FEDERAL TAX ADMINISTRATION

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IT has long been recognized that consideration of economic principles is vital in the field of tax policy and tax planning. Even though these principles may often be honored in the breach, their pertinence is universally granted. What innovator would dream of presenting his tax program for public consideration without an adequate—in his opinion—demonstration of its perfect harmony with the true principles of economics? The United States Treasury Division of Tax Research bears testimony to the official recognition of the place of economics in tax policy.

In the realm of tax administration, however, only in recent years has the economist been called upon to supplement the work of the accountant, the engineer, and the lawyer. As might be expected, experiment preceded any definite adoption of economics as a recognized tool in collecting the taxes, and the process of evolution still continues: new problems continually arise

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where economics can make a contribution to the practical every-day administration of the Bureau of Internal Revenue.

The basic reason for recourse to the new discipline is the increasing scope and complexity of the tax statutes. The discussion which follows will, it is believed, illustrate some of the reasons for this increasing scope and complexity, which seem to lie in an attempt to plug avoidance loopholes and make the impact of tax burdens more discriminative. The very terms "unjust enrichment tax," "excess profits tax," and "fair and just amount representing (normal) net income" indicate the purpose to have taxes as highly discriminative as possible, in the true meaning of that word, the discernment of differences. Tax law continually strives for an ever more careful perception and appreciation of fine distinctions, a recognition of true distinctions amidst superficial similarities. Where these fine distinctions appear in the field of economic concepts, as in making a tax or a tax refund depend upon the possible shifting of a burden of an earlier imposed tax, it is clear that the economist must

aid the accountant and lawyer in applying the statutory provisions. Or where the tax administrator must measure the normal pre-war income of a corporation under hypothetical conditions, the resulting problems go far beyond the scope of accounting techniques. Nor do cases decided by the courts before the emergence of the new concepts furnish much precedent for the lawyer, particularly when the hypothetical conditions are suggested as goals in the taxing statute rather than defined in detail.

This paper will use three examples to illustrate the contribution economics is making to more effective tax administration.

Processing Tax Refunds

The experimental phase of economics in modern tax administration began with the situation created by the invalidation of the Agricultural Adjustment Act and its processing taxes by the Supreme Court on January 6, 1936. This decision paved the way for a new principle of taxation, involving both tax collections and tax refunds. Prior to that time the tax administrator had not needed to bother with the question of who bore the burden of a tax. He collected the taxes imposed by Congress as best he could, let the taxpayer find the money where he might, and let Congress or the tax planner worry about the shifting and incidence of the taxes paid. But with the invalidation of the processing taxes, there was a fund of nearly a billion dollars, collected over a period of two and one-half years from a relatively small group of processors of selected farm products—flour mills, meat packers, cotton textile mills, sugar refiners, and so on—who, in general, had acted merely as collectors of the

taxes paid to them by consumers, but who, under existing law, were entitled to a full refund of the taxes on application. It seemed inequitable to levy new taxes to collect the money to make the refunds to the processors, just because they were technically the taxpayers who signed the checks in payment of the invalid processing taxes.

There was also the companion problem of either collecting for the Government or allowing processors to keep the quarter of a billion dollars representing processing taxes for several months prior to the invalidation of the statute—taxes which were not yet due to be paid, even though collected from consumers, or funds paid into escrow under court order by hundreds of processors who obtained court injunctions against the collection of the taxes by the Government. These funds, never in the Federal Treasury, were returned to the processors by the courts following the Supreme Court decision. Those processors who had shifted the burden of taxes had no more equitable right to keep these impounded funds than to receive a second reimbursement of taxes paid to the Government.

The inequity in both cases was especially glaring because of the general recognition that the processing taxes were intended to be indirect taxes. This intention was evident in several elaborate provisions of the Agricultural Adjustment Act itself, such as the section putting compensating taxes on competing articles like paper bags and towels, and the section laying special import duties on competing goods. There were likewise provisions in the Act that made sense only on the assumption that the processing taxes were added to prices—export drawbacks and

tax refunds on goods going into charitable uses, for instance. The data of the Department of Agriculture showed that in general the intentions of the act in this regard had been realized in practice. Certainly no general refund of the taxes could be justified.

But it was not certain that in the case of all of the commodities involved the processors had actually been able to pass on to others the full burden of the taxes in line with the intentions of the act. In the case of tobacco products, for instance, the prevalence of customary prices for cigarettes and chewing tobacco had made it unwise for some manufacturers to raise prices as a result of the processing tax; backward shifting was highly improbable, and it was by no means certain that sufficient economies in manufacture could be achieved to balance the tax expense. More important, it was believed that the courts would have invalidated any attempt to defeat the refund of the amounts paid in as taxes or to collect the amounts retained by processors, on any such general grounds as the intent of the Agricultural Adjustment Act to impose indirect taxes or a demonstration of the economic theory of the probability of their general shifting. Legally, a tax is a payment by the person on whom the tax is laid in the first instance, and, in the absence of strong overriding considerations, he is entitled to the refund of a tax illegally collected.

In the case of sales taxes on cosmetics and automobile accessories erroneously collected, the principle had been well established that Congress could properly lay down the rule that a taxpayer could receive a refund only after showing that "such amount was not collected, directly or indirectly, from

the purchaser or lessee," or that he had himself made a refund to the purchaser or lessee. The same principle was applied in the amendments to the Agricultural Adjustment Act of August 24, 1935 (five months prior to its invalidation), when the issue of the validity of the taxes was seriously raised by the invalidation of the National Recovery Act. This provision was immediately subjected to legal attack, as being an impossible burden of proof in the case of processing taxes, and undoubtedly influenced many judges in granting hundreds of injunctions against further collection of the taxes. One judge expressed his feeling in these words: "I cannot figure out how a processor, assuming that he sells the pork and sells it for more than the amount of the processing tax would ever be able to prove he did not pass on the tax. I have not been able to figure that out. I do not think he could. I do not think as a practical proposition he could, so I think those are just words, just words that mean nothing."

As a matter of fact, the experience with the cosmetics and automobile accessories sales taxes furnished no precedent with respect to the practicability of a demonstration of the absorption of a processing tax burden by a taxpayer. True, with respect to the sales taxes the Supreme Court held that "If the taxpayer has borne the burden of the tax, he readily can show it; and certainly there is nothing arbitrary in requiring that he make such a showing." But there the legal shifting of the tax burden depended merely upon the manner of billing the customer, and whether the manufacturer had minimized the tax by applying the tax rate to the net amount of the sale price instead of the gross

amount billed to the customer. The question involved the shifting of a sales tax in a technical sense rather than the shifting of the real economic burden of a tax which constituted a cost of production. Quite properly, then, processors who had paid the processing taxes whose validity was being attacked challenged the Government to suggest how the proof of the absorption of the tax burden could be made.

What was required, following the invalidation of the Agricultural Adjustment Act, was a provision requiring a demonstration by a processor of his equitable right to a refund, or to the nonpayment of impounded taxes, coupled with a formula showing how such a demonstration could reasonably be made. Such a formula was necessary, it was believed, not only to aid in the defense in the courts of the basic requirement of proof of tax burden bearing as a condition of tax refund (or nonpayment of impounded taxes), but such a formula was necessary also in the practical administration of these provisions—in guiding the preparation of refund claims by processors and their examination by the Bureau of Internal Revenue. Here was a challenge to economics to show that in the field of tax shifting it could do more than theorize on the general tendency of certain types of taxes to be shifted or absorbed by the taxpayer, under various assumed conditions, and to propose a formula that would meet the requirements of "due process of law" in the courts.

Fortunately agricultural economists, both within the Department of Agriculture and outside, had been analyzing the operations of the various processing taxes through the continuous study of the margins or spreads of processors—

the difference between the unit cost of the raw material, say wheat, and the value of the resulting products, flour and the milling by-products. These analyses clearly showed that in most instances the margins widened on imposition of the taxes by roughly the amount of the taxes, and similarly narrowed on their removal. In some cases, cotton, for instance, the influence of other factors was clearly evident, such as the increase in labor costs on adoption of the N.R.A. industry code just prior to the imposition of the taxes. This analysis of cost-price margins seemed to furnish an adequate basis for the formula desired.

The formula took the form, as applied to refunds, of a comparison of the average processing margin of the taxpayer per unit of commodity during the whole of the period of his tax payment, with the similar unit margin for the two years prior to the imposition of the tax and the six months following its removal.¹ A failure of the margin to widen during the tax period by an amount equal to the tax was taken as *prima facie* evidence of the absorption of the tax to the extent of the deficiency: similarly a widening of the margin by the full amount of the tax or more indicated its complete shift. Either the claimant or the Commissioner of Internal Revenue could rebut this *prima facie* determination by showing that some other circumstance than the processing tax—higher labor costs, for instance—helped to explain the facts found.

¹ For a more detailed and comprehensive treatment of this legislation, with appropriate citations, refer to the writer's "Windfall Tax and Processing Tax Refund Provisions of the 1937 Revenue Act," *American Economic Review*, XXVII (1936), 45-60. See also "The Measurement of Tax Shifting: Economics and Law," *Quarterly Journal of Economics*, LIV (1940), 429-454.

The use of this formula does not imply the acceptance of any particular economic theory of tax shifting: an industry may be monopolistic or competitive; it may be static, dynamic or senescent; the demand for its products may be elastic or inelastic; the tax may be shifted forward, backward, or not at all—the factual analysis is still applicable. In the initial phase of the simple comparison of margins, it is implicitly assumed that the industry is one of constant costs: decreasing consumption as the result of a possible shift of the tax is assumed to have no effect on unit costs. In the rebuttal phase, however, any demonstrated change in unit costs due to this or any other cause is taken into account. Thus, the only assumption is that the price policy adopted by the management—be this policy one of price adjustment or price stability—represents a rational reaction to the situation facing the management. For beyond question the problem of tax shifting is a problem of prices and price relationships.

Such methods, of course, would not be quantitatively perfect in measuring tax shifting. No final and definitive estimate can ever be made of what *would have been* in the tax period except for the single factor of the tax. Fortunately, however, taxation is recognized as a practical matter not requiring such precision. The legal requirements necessitated one important compromise with theory and equity in the provisions for the recapture of unpaid taxes—the unjust enrichment tax. Here the provision took the form of an income tax on the *income* from the nonpayment of the taxes. It is quite clear that a tax may be shifted even though the tax-

payer may be operating at a loss: he might have operated at a loss in the absence of the tax. But it was felt not advisable to attempt to impose a tax on hypothetical income from a particular source or during a few months of a fiscal year when the taxpayer had a net loss, or a net income smaller than the tax, for the whole year. Thus the tax was imposed on the taxpayer's net income for the year, *to the extent* that it was attributable to the nonpayment of processing taxes whose burden had been shifted. The rate of tax was put at 80 per cent instead of 100 per cent. Owing to these provisions some of the withheld taxes were not recaptured by the Government, even though their burden had been shifted by the processors.

Following the enactment of these provisions by Congress in the Revenue Act of 1936, problems of administration began, and they were by no means simple, particularly in regard to the rebuttal arguments. Especially difficult was the treatment of the assertion that in some cases it was an increase in demand that caused the increase of the margin during the tax period, instead of the shifting of the tax. Both taxpayers and the Government called in economists to marshal the evidence and argument and to serve as expert witnesses in the court cases where the issues were adjudicated. Taxpayers generally went to the universities and trade associations for their economists; the Treasury made arrangements with the Department of Agriculture for the part-time services of a group of commodity experts and economists to aid in the administration of these provisions. These economists for both parties brought all the tools of their craft, including highly technical

statistical methods, into the contest. In at least one series of crucial cases the technical economic issues were settled by the economists and commodity experts around the conference table, with lawyers excluded by mutual agreement.

Since this episode in Federal taxation is now practically complete, with all the cases disposed of by the Bureau of Internal Revenue and most of those appealed to the courts likewise finished, the episode furnishes the best example to date of the role that economics can play in tax administration. The limits of the present paper do not permit any detailed consideration of the manner in which these provisions fared in the courts. (Here is a nice master's thesis subject for some student.) Briefly, it can be said that the directness of the economic approach has brought the main features of the refund and unjust enrichment tax provisions through the battles in the courts unscathed. From the drafting of the original legislative proposals, through consultative advice in the stage of case-by-case administration, on to advising trial attorneys during the litigation stage, economics has been able to make its contribution. It is no exaggeration to say that this episode of extracting the greatest degree of equity from the situation brought about by the invalidation of the processing taxes by the Supreme Court would never have existed but for the contribution of economics.

One final point deserves mention. In his contacts with claimants, administrators, and attorneys, the Government economist remains a scientist, and does not become a partisan. He does not control the policy or position taken by the Government, since he is only an adviser to the responsible administrator

and attorney. But he does control his own counsel and his expert testimony. Since the courts will presumably rectify any erroneous actions of the administrator, the economic adviser best serves by giving unbiased, expert counsel. To illustrate in another field, one of the papers written by the present author, mentioned above, has been widely quoted by attorneys for refund claimants as well as the Government. It has also been cited in several court decisions, once to disprove the theory held by a lower court.

Excess Profits Tax Refunds

The second example which will be used to illustrate the contribution of economics to tax administration is the "general relief" provisions of the war-time excess profits tax statute, the well-known section 722 of the Internal Revenue Code.

Under these provisions, enacted in 1942 with retroactive effect, any corporation that has paid excess profits taxes in any year, and that believes that its base period (1936-1939) average net income was an "inadequate standard of normal earnings" for comparison with the war years, can base a claim for refund of its tax upon a demonstration of a *hypothetical* normal base period income.²

The base period abnormality may lie in a physical interruption such as a strike, fire, or flood, or an economic disturbance, either peculiar to the tax-

² In the present paper it will be necessary in the interest of brevity and clarity in some cases to use inexact and incomplete language, and to oversimplify the illustrative material. For example, the base period is not the four years 1936-1939 for every corporation; the period may be as short as 37 months or as long as 59 months, depending on the fiscal periods used by the corporation. This is not a treatise on the technicalities of the excess profits tax, but a suggestive treatment of selected aspects.

payer or general in its industry, as a temporary and unusual. The taxpayer corporation may show its base period profits experience to be subnormal because of a variant cycle of profits characteristic of its industry, or a pattern of sporadic high profits years inadequately represented in the base period. The taxpayer may show a change of character in business, such as an increase in capacity, a change in management, or introduction of a new product or process during or immediately prior to the base period, that renders prior earnings unrepresentative of the changed taxpayer. Finally, certain corporations formed after the base period, and filing their tax returns on the invested capital credit basis, can compute hypothetical base period earnings, seeking a higher credit against war-time income subject to high excess profits tax rates. In short, the aim is to ascertain the *normal* income, under base period general economic conditions, of a corporation of the character that stood on the threshold of the war period.

When the Bureau of Internal Revenue in 1943 faced the problem of examining the refund claims of several thousand corporations under these provisions, it quickly recognized the need for again supplementing its staff of auditors and attorneys, to let the economists help solve some of the problems presented. Tax auditors had never before been called upon to determine the *normal* income of a corporation, much less the normal income under a combination of real and hypothetical conditions. Accounting and engineering techniques alone were inadequate. Taxpayers, likewise, when it was found that allegations of abnormality had to be supported by adequate facts and analy-

sis, turned to economists and statisticians to provide substance to refund claims. With the background of experience with economists in the determination of the unjust enrichment tax and processing tax refund provisions, the Bureau of Internal Revenue set up a small economic division within the Income Tax Unit, primarily to give advisory services on these refund problems. It is significant, too, that when the Excess Profits Tax Council was later created to centralize responsibility within the Bureau for the interpretation and administration of the refund provisions, economists were included, although in a minority to accountants and lawyers.

Economists, of course, had themselves never faced the precise problems involved in estimating the normal income of a specific corporation under unreal conditions: in fact, the problems are not strictly economic in nature. The task is to put flesh on a statute designed to meet a difficult practical situation, a skeleton statute with some quite arbitrary features, such as the predating of certain events in the operations of the taxpayer corporation. Nevertheless the disciplines and techniques of economics and statistics, when applied with discernment, common sense, and constructive imagination, furnish helpful guides. The only alternative is a crystal ball, and there is sometimes a temptation to use it as a supplemental tool!

The most pervasive problem is the estimation of constructive base period income for a corporation that underwent a change in character during or shortly prior to the base period, or even following the base period (in the case of increased capacity) in consummation of a commitment made during the base

period, giving rise to a higher standard of normal earnings. By assuming the change occurred two years earlier than it actually occurred, the statute grants the corporation this additional period of shakedown of plant and management and exploitation of its market, under base period conditions, to demonstrate what the earning capacity of the changed corporation would have been by the end of the base period. What correlative assumptions should be made, in judging this earning power, when the qualifying change in character is predated two years? Could the corporation have sold more product if it had made the change earlier? Should capacity operation of an enlarged plant be assumed? Should actual sales prices be presumed to apply to the expanded output, or should the added production be regarded as necessitating sales at a lower price in view of the demand existing in the base period? If so, how much lower? Can the elasticity of demand be measured or estimated? Or, on the contrary, should the *anticipated* demand, which called forth the added capacity, be constructively assumed to have been present in the base period as a necessary concomitant for constructing the "normal" income to be realized from the added capacity?

Obviously the answers to these questions depend upon the situation in each case. Was the taxpayer's industry expanding or static? Was the taxpayer consistently capturing a larger share of the market, or merely keeping up with its industry? Was the taxpayer's output a substantial portion, or a microscopic part of the total production of its industry? Was the expansion of production during the base period a true growth in the industry, or merely a

part of the recovery from the depression of the 1930's? Were the taxpayer's competitors expanding, or planning to expand, at the same time as the taxpayer? If so, would the added production cut the profits of all? Or is it improper to consider the prospective actions of other producers in dealing with the constructive base period income of a given taxpayer?

Having determined that the taxpayer's level of base period earnings would have been higher had the change in character been made two years earlier, as provided by the statute, how *much* higher would they have been? Would the growth have continued at the same rate, or at the same percentage rate, as in the last year or two of experience? Or would the increase be at a declining rate within two years? We know that eventually the increase must taper off, but when? The actual experience of growth after 1939 cannot be used as a guide because the reconstruction must presuppose base period economic conditions. And even the production, or sales, or profit experience of the taxpayer during the base period does not, without adjustment, show the past growth due to a change in character. Since in most industries 1938 was a year of sharp depression, an improvement from 1938 to 1939 does not correctly measure the growth due to the change in the corporation's operations: first, there must be a correction for business conditions in the industry.

These questions and comments suggest the breadth of the considerations that are vital to a realistic reconstruction of normal base period net income in the case of a change in character. The approach of economics is the identification of the crucial factors of change, on the one hand, and the relatively

static elements, from the other. From the facts at hand, and those that can be found, the few that contain the key to the reconstruction of normal earnings under the hypothetical conditions postulated are then isolated. A study of past experience of either the taxpayer or comparable concerns, or both, generally indicates which elements are related to the changes hypothesized, and which are independent, and thus static. In the example referred to above of expanded capacity, does experience indicate a relatively fixed pattern of consumer purchases (demand curve), so that an increased volume of sales could be made only at falling prices, or was there an expanding market (a shift of the demand curve to the right)? Are changing unit costs of production or marketing implicit in the expansion of capacity and the scale of operations resulting? Or can these variables all be reduced to a constant net profit per unit, or a slowly changing profit per unit?

Experience has shown the extreme caution necessary in approaching the problem of reconstruction of base period net income by means of minutely detailed cost accounting schedules. This method starts with an accepted figure for expanded volume of production and an assumed price, and estimates each item of production, marketing, and overhead cost according to some formula of fixed, variable, or mixed costs, based on past experience. There have been instances of this technique where the outline of steps is unassailable, and where the details in each step are apparently reasonable, but where the end result is fantastic. The trouble is that a slight margin of error in a gross income or expense item is magnified into

a much higher percentage error in the resulting net income. It is unsafe to count on such errors compensating for each other. It has been found generally to be more satisfactory to follow informed economic and statistical judgment in analyzing the dynamics of the position of the individual taxpayer in relation to the environment of its industry and its market, and to base reconstructions upon simpler computations where the implicit assumptions stand out clearly.

Consider next the case of an industry with an alleged cycle of profits varying materially in length and amplitude from the general business cycle, causing a depression in this industry in the base period when general business was, by statutory definition, normal. When is a business or an industry depressed? When base period average earnings are smaller than the 1926-1929 average? When less than a long period average, excluding deficits? In connection with the cycle problem, normal profits would seem to be those over a long period, including good times and bad in their actual proportions, but excluding abnormal periods such as war booms and postwar depressions. A cyclical normal, furthermore, should recognize and adjust for any long-term growth or decline in the industry and in the taxpayer's business, and would not necessarily be represented by a straight arithmetic average of profits in absolute amounts.

Granted that a taxpayer and its industry were depressed in the base period, how can it be determined that this was due to a variant cycle? Obviously the determination of a *material* variation in length and amplitude, as required by the statute, is in the final analysis a

matter of judgment. Amplitude would seem to be of relatively little evidentiary value, since the divergence of a single firm and a single industry from general business may represent merely the dispersion in any series of data around its average, the general business cycle being merely the aggregate profits experience of all business. The identification of a difference in length of the cycle of an individual industry has generally been approached through the graphic method, noting the timing of the major and minor turning points compared with general business. Profits are the business data to which attention is directed first, last, and always, but other elements such as sales volume or price fluctuations may be noted in the study of the causes for profits behavior. If sales volume is "normal," it is unlikely that any abnormality of profits would be due to a variant cycle. Again, if industry profits data are not reasonably available, other data may be acceptable in analyzing the cyclical aspects of a given industry. Any *material* difference in length of the cycle should be clearly evident in the annual data generally employed. Attention is usually focused primarily on the modern period from about 1922 (following the post-World War I boom and depression) through 1939, the end of the base period. If the statistical evidence is inconclusive, it may be supplemented by analysis of the economic relation of the industry in question to other industries and the general economy, to support a reasonable expectation of a variant cycle.

It seems axiomatic that there cannot be many industries with cycles materially at variance with general business. Not only would such heterogeneity in-

validate the very concept of "the general business cycle," but our knowledge of the interdependence of the various segments of the economy eliminates the possibility of numerous exceptions to the rule of substantial similarity. It is likewise inconceivable that any industry dependent on mass demand could have a variant cycle. The principal variant cycle industries have been found to be those with some intimate kinship to the building or construction industries, where the long cycle has been generally recognized by economists.

A closely related set of excess profits tax problems on which the help of economists has been sought are those involved in the determination of the amount of abnormal income realized in a taxable year which is attributable to exploration or developmental expenditures in prior years, as provided in a part of section 721. How is one to split the income actually realized in a war year, and allocate some to other years? The *principle* of discrimination is clear. To illustrate, suppose one producer using standard processes turns out a thousand units during the year (an excess profits tax year) at a net profit of a dollar a unit. Another producer using his own patented processes developed in prior years likewise turns out a thousand units, but at a profit of two dollars a unit. Prior to the war each made profits of a dollar a unit. Obviously it would be inequitable to impose an excess profits tax only on the inventive producer on the theory that his increased profits are war-induced. The excess profits taxes should be discriminative, and take account of the actual though perhaps subtle differences between the two cases. This is the reason for the provision freeing from the excess profits

tax that part of wartime income attributable to exploration or developmental expenses in prior years.

In actual practice, of course, it is not so easy to segregate such income as in the illustration just given. Wartime profit is usually the result of a combination of several factors, including manufacturing and selling, the income from which obviously stems from the year in question rather than from exploration or invention in a prior year. Occasionally it is simple to separate out that part of the income attributable to exploitation of the invention, as when the invention is also licensed to other producers in arm's-length transactions. In this case the royalty equivalent measures the income attributable to the invention.

But even in this case all of the royalty equivalent on current production may not be attributable to earlier years if, and to the extent that, economic conditions in the war years have brought about an increased demand for the product. It is in the determination of the demand factors particularly that the aid of economics has been sought.

It is interesting to note that the two provisions of the excess profits tax statute discussed above are not mutually independent. One of the bases for claiming a hypothetical base period net income higher than actual is the development of a new product or process during or prior to the base period which resulted in a higher standard of normal earnings than the actual average of the base period years. If relief is granted on this basis, computing constructive income to include the normal income with the use of the new product or process, then it is apparent that the wartime income must not also be adjusted

to exclude that attributable to the change. The taxpayer cannot eat his cake and have it too—build up base period income for the new product or process, and eliminate the resulting earnings from taxable wartime income. Again the principle is clear; the difficulty comes in determining the facts in complex cases, putting these facts in proper perspective, and giving each its proper weight.

LIFO Inventory Method and Index Numbers

The final example to be cited concerns a specialized problem that recently faced the Bureau of Internal Revenue, touching the techniques of both accounting and economic statistics. The example is on a much more limited scale than those previously cited, but it illustrates just as well the role of economics when new problems, new techniques, and new principles confront the administrator. In this case the problem arose through the adaptation by economists of index number techniques to the needs of accounting. It concerns the adoption of the "last-in-first-out" inventory method by many department stores in 1942.

In any period of rapidly changing prices such as the last seven years, the problem arises of what material costs should be applied to the goods sold. In a period of rising costs, meaning an inflation of inventory values, the apparent profit realized during a given year will depend partly on whether current sales are charged with current stock costs or with the actual costs of the stock acquired at earlier, lower prices. In theory, if an inventory of a given quantity of goods is constantly necessary to continue in business, there is much to

be said for the view that profit figures should not reflect the *unrealized* profit or loss from inflation or deflation of prices of goods in inventory. This means keeping the inventory on the books at constant costs, to the extent that similar fungible goods are maintained in the inventory. This is the idea in the last-in-first-out, or LIFO, inventory method.

This procedure has been allowed by statute in Federal tax accounting for several years. The Treasury Regulations have permitted its use, however, only in those cases where the taxpayer's inventory records are kept in terms of specific fungible goods, allowing the direct comparison of unit costs at the beginning and end of the year. Such is the case, for instance, for manufacturers with inventories of fine gold or copper, or cattle hides, or cotton of given grades and qualities.

In the late 1930's there was a good deal of interest in the possible use of the method by retail stores, and in particular by department stores. But the use of the retail inventory method, under which all inventory records are kept in terms of retail values by departments, precluded conformance with the requirement of the Regulations of identifying actual cost of each type of item. Challenging these regulations, a group of department stores, through the National Retail Dry Goods Association, arranged a test of the matter in the courts by filing their returns on the LIFO basis. For this, however, it was necessary to have a series of price index numbers to show the average price changes in the goods in the various departments of a store. Although a very few stores constructed their own indexes, most of the stores joined in

calling in the statisticians of the National Industrial Conference Board, a private research agency, to design and construct a set of departmental index numbers, on an over-all national basis.

The construction of price indexes is, of course, a highly technical matter, involving the mathematical principles of the choice of the proper formula, the theory of sampling in order to select from the hundreds of articles in each class a manageable number of articles to be priced, the determination of the proper weights to be employed in averaging these prices, and, in a period such as the last seven years when many important items were unobtainable, the problem of substitution of commodities. Always there is the problem of assuring accurate reporting of data, involving the choice of reporters, and requiring a sufficiently careful description of the articles to be priced so that strict comparability is maintained from year to year. When the test case came to trial before the Tax Court, there were two primary issues. In addition to the strictly legal question of the propriety of the Commissioner's Regulations requiring identification of individual items, certain questions concerning the appropriateness of the price indexes used were involved. Had sufficient care been used in their preparation? Can reliable data be obtained by mail questionnaires, filled out by store buyers unacquainted with the statistical problems involved? Was the sample of items in each department adequate? Was the sample of reporting stores an adequate and representative one? Are price changes in different cities, and in different types of stores, sufficiently similar to warrant the use of a single set of national indexes by individual stores throughout the country? Are the inventories of different

stores likewise sufficiently similar in their composition to insure that such indexes are representative? And finally, as a matter of policy, should the Bureau of Internal Revenue accept such indexes prepared by a private organization, no matter how reputable, when the secrecy of the data maintained by the organization precludes answering such questions as these? If indexes prepared by one reputable organization were accepted on faith, could a Government agency differentiate between it and any other private agency, or must it accept without question the results of all such studies presented to it on behalf of other trades? It is easy to understand, I think, why the Government attorneys assigned to prepare this case for trial came to economists with a plea for help.

To skip a large part of the chronology, the decision of the Tax Court was favorable to the department stores on the legal point, holding that they have the right to employ the LIFO inventory method along with the retail method, and implying sanction of the use of price indexes.³ But on the economic questions, the court made no decision as a matter of precedent, holding that, faced with the primary decision, the Commissioner should have an opportunity to study the matter of what price indexes were appropriate, and draw up regulations embodying the principles decided upon.

This decision left the Commissioner with a neat dilemma, in deciding whether to acquiesce in the decision or appeal it to the higher court and in planning the administration of the measure in case of acquiescence or defeat on appeal to a higher court. It seems clear that price indexes prepared

by each store on the basis of the data on prices and quantities of goods in its inventory would be in theory the most accurate and reliable indexes for adjusting prices. This would also accord with the general accounting principle that income is computed from data on the company's own books, rather than data from some other source. But with the highly technical statistical problems involved, and the absence of trained statisticians in or available to the stores, it is by no means certain that the actual results would equal the promise of theory—the prospects are quite the contrary. Just as disturbing from the point of view of the Commissioner was the appalling prospect of having to audit these hundreds of sets of price indexes. Was the use of LIFO by retailers administratively practicable?

Here economists faced the practical problems of administration and suggested study of a possible compromise in the form of a set of index numbers to be prepared by a public body, the United States Bureau of Labor Statistics, for this special purpose, but as a by-product of its regular collection and publication of its well-known data on consumer prices. If found to be suitable, these official indexes could be accepted by the Bureau of Internal Revenue without audit. The prices for the consumers price index are collected on the spot, in person, by trained agents working from elaborate statements of specifications, to assure comparability year after year. The B. L. S. statisticians have the benefit of long experience in solving the problems that inevitably arise in adapting such indexes to changing conditions. The crucial questions were whether the agency had collected data in the past on a sufficient number of commodities ade-

³ *Hutzler Brothers Company*, 8 T.C. No. 3.

quately to cover a department store, department by department, and whether a single set of indexes, or even sectional indexes, would represent the price movements in individual stores of different types, in various cities, with sufficient accuracy for practical purposes.

Arrangements were made for representatives of the American Retail Federation and the Bureau of Internal Revenue to work on the problem with the experts in the Bureau of Labor Statistics, and after several months of investigation and experiment it was agreed that a practicable set of indexes could be prepared for past years, and improvements made in the future, that would give results sufficiently accurate for practical purposes. This conclusion was influential in the decision of the Commissioner of Internal Revenue to accept the decision of the Tax Court on the main issue without appeal to the higher courts. Thereupon the Bureau of Labor Statistics proceeded with the construction of the special indexes, the additional costs being borne by the trade association, and a sample of stores cooperated to the extent of submitting their annual inventory data to the B.L.S. for the purpose of setting up the weights. No one pretends to great precision in the application of such general indexes to individual stores, but a solution to the staggering administrative problem presented by the court decision, satisfactory both to taxpayers and to the Bureau of Internal Revenue, has re-

sulted. Revised regulations have been promulgated, the indexes have been published, and taxpayers who elected the LIFO method are preparing amended returns based upon the official indexes.

Conclusion

These illustrations are by no means intended to leave the impression that economists are usurping the field of expert guidance to the tax administrator—that every time a difficult problem arises a distress call must be sent out for an economist. What is intended is to illustrate the expanding scope of problems entering into tax administration—problems that involve a perspective of a whole industry, problems that explore horizons beyond the view of the accountant and engineer, that yield to the disciplines of economics and statistics. Hardly a month passes but that some new problem, or some new aspect of an old problem, is presented to challenge the ingenuity of the economist in making practical applications of the theories, data, and techniques of the science, largely prepared for the college classroom or developed by an abstract theorist for his like-minded colleagues. Not the least interesting aspect of the work is the necessity of presenting the analyses and conclusions in a form that will be understood by and be convincing to laymen—the administrator and counsel for taxpayers—and that will, if necessary, be convincing to the lawyers and the judges, and come within the bounds of “due process of law.”