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THE VALUE ADDED TAX
Background and Implications
for Agriculture

J. B. PENN and G. D. IRWIN

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ABSTRACT

A value added tax (VAT) for the United States has been undergoing widening public discussion. It has been suggested alternately as (1) a replacement for an existing tax such as corporate income tax or real property tax, or (2) as a new revenue source. Evaluation of either type of use for a VAT requires information on how the economic position of different groups of taxpayers would be affected and on how revenue yields of Federal and State government would change. Since very little published information has been available on the VAT, this report attempts to provide basic background information relevant to determining effects on the farming and other subsectors within agriculture. The report includes background information on the history, concept, forms, and advantages and disadvantages of the VAT, and provides some data on effects of VAT for agriculture.

Three important effects of a value added type of tax are on capital intensity, tax liability, and efficiency. These are examined for the eight major sectors of the economy, and for subsectors in the agricultural production sector. Three of four forms of VAT (gross product, income, and consumption types) are examined using input-output and other data for 1963.

Farming uses large amounts of short-lived capital and gains relatively from forms of VAT permitting capital deductions. The sector would be at a disadvantage if, as often suggested, VAT replaced the corporate income tax because relatively few farm businesses are incorporated. The sector would benefit, however, if a VAT replaced the real property tax, assuming the same revenue yield.

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THE VALUE ADDED TAX

Background and Implications for Agriculture

J. B. Penn and G. D. Irwin*

The tax structure of the United States is constantly undergoing examination and analysis. Serious discussion has recently centered around a relatively new form of taxation -- the value added tax (VAT). A 1970 administration-appointed Task Force on Business Taxation, after studying the European experience with a VAT, recommended that one not be proposed to the Congress at that time as a substitute for existing business taxes. But they suggested that the possibility of using the VAT in the future be given more exposure and discussion. Recent court decisions have also spurred interest in the VAT as a possible substitute for real property taxes in financing local schools. If instituted, a VAT could bring fundamental changes to the Federal tax structure. A number of these changes could be extremely important for agriculture. Evaluation of a VAT as either a replacement for an existing tax or as a new revenue source requires information on how the economic position of groups of taxpayers would be affected as well as on revenue yields to the government.

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This report is intended to provide basic background information useful in evaluating the VAT. The report describes the various concepts of value-added taxation, reviews past experience with VAT in other countries, summarizes data on value added in agriculture and other sectors, plus for subsectors within farming, and makes some estimates of the effects of substituting VAT for either corporate income tax or real property taxes.

BRIEF HISTORY OF THE VALUE ADDED TAX

The idea of value-added taxation is not new to the Western World. A vast number of published articles treat the VAT concept and the related areas of cyclical stabilization and welfare economics.¹ Many of these articles are from Western Europe, where governments have used various forms of business turnover taxes as important revenue sources. A value added tax may be viewed as a net, business turnover tax. The United States tax structure has relied more on personal and corporate income taxes. So publications in the United States are less common, and relatively recent, and have not been as concerned with comparisons of the VAT and other taxes (particularly the corporate income tax) as with the operation of the VAT in other countries.

United States

This absence of publications in the United States does not mean a VAT is being considered for the first time. The VAT was first proposed in the United States in 1921 by T. S. Adams, long-time adviser to the Treasury Department [2], shortly after it was conceived in Germany in 1918 by von Siemens. J. F. Zoller, tax attorney for the General Electric Corporation, made a similar proposal in 1929 before the National Tax Association, calling the tax a "production tax" and proposing its substitution for the corporate net income tax [63]. In 1932, the Ways and Means Committee of the U.S. Congress, in the course of hearings on the revenue bill for that year, gave some consideration to a VAT as an alternative to a proposed manufacturer's sales tax.

The Brookings Institution, also in 1932, recommended a VAT for use in state government in a report on the tax systems of Alabama [5].

¹For a concise but thorough review of this literature, see [21], [17], and [22].

Gerhard Colm suggested, in 1935, the use of the VAT in preference to a payroll tax for financing unemployment compensation, and again in 1939 suggested the use of value added taxes by state governments [7, 8].

In 1937, Roscoe Arant proposed the substitution of a VAT for most business taxes, and in 1937 and 1940 Paul Studenski recommended the use of VAT at the Federal level [4, 50, 51]. The Committee on Federal Taxation of Corporations of the National Tax Association recommended, after several years of study, the imposition of a VAT by the Federal Government in 1939.

In 1953 the Michigan Legislature adopted a variant of the VAT, a business activities tax, which was in effect until 1967. The House Ways and Means Committee of the U. S. Congress again reviewed the VAT in 1964 in relation to income, excise, and sales taxes [14].

The current consideration of the VAT may thus be viewed as another step in a fifty-year evaluation of this form of taxation for the United States.

Other Countries

The value added concept also received considerable attention in Europe in the twenties and thirties but was not adopted by any country during that time. Foreign interest was reviewed when the Shoup Mission to Japan in 1949 recommended a VAT as a primary source of revenue for local governments. The tax was enacted there but repealed before it went into effect [44].

In 1963, the British Government appointed a committee (the Richardson Committee) to consider the possibility of substituting a VAT for either its Purchase Tax or Corporate Income Tax [36]. The committee reported in 1964 and firmly rejected the proposal. They emphasized the administrative difficulties, especially those arising from varied rates and coverage of small businesses. However, Britain's entry into the European Economic Community (EEC) required the adoption of a VAT for harmonization of tax systems of member countries. A VAT was introduced in Britain, effective April 1, 1973. The EEC Commission had adopted in April 1967 the recommendation of its Fiscal and Financial Committee (Neumark Committee) which directed member nations to adopt the VAT

concept to carry out harmonization of tax systems of member countries (Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany) and to serve as a major revenue source. Existing taxes in France and Germany were modified to meet this directive. In January 1968, France expanded its coverage of the VAT. Germany switched to a true VAT in the same year. The Netherlands enacted VAT legislation in 1969, Luxembourg in 1970, Belgium in 1971, and Italy in 1973.

Outside the EEC, other European and South American nations have followed a similar pattern. Denmark was the first country to adopt a truly comprehensive VAT, in July 1967. Sweden followed in 1969. The tax is also in effect in Norway, and Austria and Finland are actively considering such taxes. Other nations, including Greece, Brazil, and Mexico, use modified forms of the VAT.

THE NATURE OF VALUE ADDED TAXATION

Concept of the VAT

Value added taxation emphasizes the business sector of the economy as the originator of wealth, i.e., the source of all incomes. Value added for the economy is equal to the value of final goods produced, or equivalently the total income generated in wages, rents, interest and profits. The imposition of a tax may, depending upon the type VAT considered, reach all incomes arising within a particular taxing jurisdiction. VAT also is similar to a sales tax on final goods.² However, the tax is applied to production as it is created in each stage of the production process, rather than only at point of final sale, so collection is piecemeal.

One possible rationale of the VAT is that government provides services which aid the production activities and improve the efficiency of the business sector. In fact, these services are often considered as a "fifth" factor of production (in addition to land, labor, capital, and management). Business organizations are then expected to pay (in taxes) for the government services. The contribution of government services to the firm's production process is indirectly measured and taxed as the "value added." Advocates claim that one of the principal merits of this form of taxation is that value added provides a reasonable and equitable measure of the amounts of government services absorbed by the business enterprise. Thus, the theoretical foundation of the VAT is the benefits received principle.

The VAT applies to each firm in production and distribution channels. Value added by the firm is the difference between value of its production of goods and services and the cost of goods and services it purchases

²Whether it is identical depends on whether producers at each stage are able to pass on the tax in higher price for their sales, and thus whether consumers ultimately bear the tax. Tax shifting is a subject of controversy. The ability to pass may well vary by industry, being weakest in sectors that are price-takers, such as farming.

from other firms or individuals. The firm adds value by processing or handling these purchased inputs with its own labor, machinery, buildings, and other capital goods plus "gratis" government services which are assumed to be used with its own goods. The difference between sales proceeds and input costs is the tax base of the VAT.

To briefly illustrate the concept of the VAT mechanism, assume a VAT is in effect and all goods and services are subject to a 10 percent rate. Assume further that the existence of the tax has no effect on the price negotiations for goods between buyers and sellers, that full forward shifting occurs, and the invoice method of collection is used. Producer A sells goods with a tax-exclusive value of \$1,000 to Processor B. For simplicity, assume that Producer A paid nothing for raw materials or processing. The price charged B is \$1,100 (\$1,000 for goods plus \$100 tax). B adds value of \$500 by processing the goods with its machines and labor and sells the product to Retailer C, charging him a price of \$1,650 (\$1,500 for the goods and \$150 tax, of which \$100 has been paid through A). The tax liability of B is \$50 (10 percent x \$500). Retailer C adds value of \$400 through processing and sells the product to consumer D for \$2,090 (\$1,900 for the goods and \$190 tax, of which \$150 has been paid through A and B). Retailer C pays tax of \$40 (10 percent x \$400). No deduction is allowed to consumer D, who bears the full tax burden of \$190 (A's tax of \$100 + B's tax of \$50 + C's tax of \$40), which is included in the price of the goods. This simplified mechanism (outlined in Figure 1) shows that each link in the production-distribution process acts as a tax collector for the Treasury and the tax paid at each juncture is passed on in the price each time the product changes hands until it reaches the consumer, who bears the whole tax. The simplified notions of this illustration are complicated in reality by questions of tax incidence (whether the tax affects the price negotiated and all gets pushed on the consumer) and alternative ways of measuring value added.

The VAT is levied and paid on the value added at each successive stage and the sum of the value added is equal to the final product price. This can be contrasted to other general consumption taxes: a sales tax is levied at the retail stage only on final product price, and a cascade tax is levied each time the product is sold during the production process,

VAT 10%

P
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D
U
C
T
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S
T
A
G
E

Payment for goods sold to B

goods	=	1,000
tax (10%)	=	<u>100</u>
Price to B	=	\$1,100

W
H
O
L
E
S
A
L
E
S
T
A
G
E

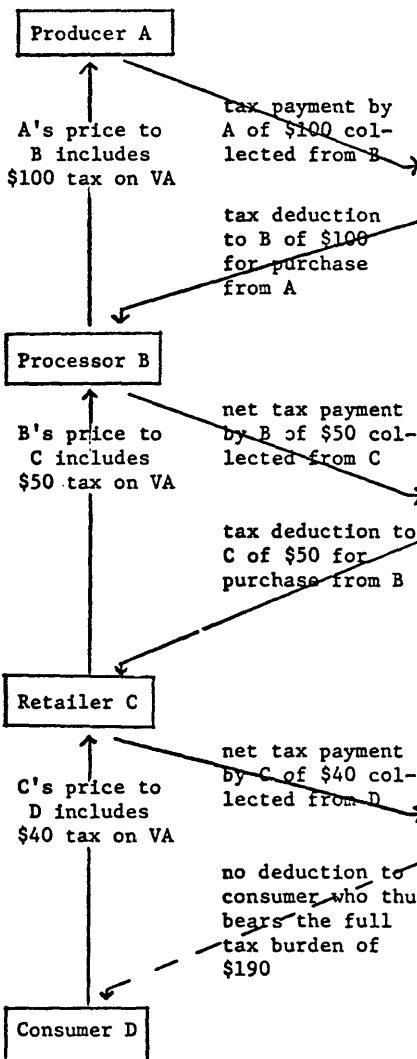
Payment for goods sold to C

goods	=	1,100
value added	=	500
tax (10%)	=	<u>50</u>
Price to C	=	\$1,650

R
E
T
A
I
L
S
T
A
G
E

Payment for goods sold to D

goods bought	=	1,650
value added	=	400
tax (10%)	=	<u>40</u>
Price to D	=	\$2,090



R
E
V
E
N
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Net tax paid to revenue authorities

\$100 from A

\$50 from B

\$40 from C

Total value added:
\$1,000 + \$500 + \$400 = \$1,900

Total tax . \$190

Figure 1. Simplified diagram illustrating collection mechanism of VAT. (The possibility of backward shifting or tax occult is not considered).

Source: This diagram is from [32].

and on the total value each time. Thus, the VAT collection procedure is similar to that of the cascade tax, but the tax yield is the lesser amount identical to yield of a sales tax.

Forms of VAT

The inputs purchased by firms consist of raw materials, services, finished goods, and capital goods. The capital good inputs, such as machinery, buildings, and breeding livestock, are unique in that they are not used up in a single tax period. Thus, there is some question on the appropriate cost to charge as business depreciation. Further, for tax purposes the allowable charge may be changed to encourage or discourage new investments. The differences in type of capital charges permitted result in various forms of value added tax. In addition, inventories of goods produced but not yet sold may be taxed in either the period produced or the period sold.

Four major types or variants of the VAT thus differ in the way they handle capital costs [43]. These are: (1) gross product VAT, (2) income type VAT; and two types of capital exemption VAT, (3) the wages type VAT, and (4) the consumption type VAT. These will be described in turn from a firm viewpoint and then summarized from an economic viewpoint.

Gross Product Type VAT

Capital goods and inventory changes are a part of the tax base and provide no cost to be deducted in determining value of the gross added product type. Firms are not permitted to deduct from the tax base the costs of capital goods purchased from other firms, nor can they depreciate these items. No deduction is allowed for purchases which increase ending tax period net inventories, and in subsequent periods, no offset against sales is allowed for drawing down inventories. This type VAT obviously discourages production techniques requiring capital assets and is unlikely to receive serious widespread consideration. Value added for this type VAT may be expressed symbolically as

$$VA = R - E_{nc}$$

where VA is value added, R is revenue, and E_{nc} is expenditure on non-capital goods.

Income Type VAT

The income type VAT allows depreciation charges on the capital goods to be deducted in subsequent periods, as does the U. S. income tax. And like the income tax, depreciation rates could be varied as a tax policy. It allows deductions for excess of beginning period inventories over ending period inventories, but requires inclusion of excess ending over beginning period inventories in the tax base. Inventory accumulations are thereby discouraged or at least subjected to tax in the period produced. Capital investment may be encouraged if depreciation rules are liberal, discouraged if they are conservative, or unaffected if they are neutral. For this type VAT

$$VA = R - [E_{nc} + D_c]$$

where D_c is depreciation charges on capital goods.

Wages Type VAT

The wages type VAT exempts capital by exempting income from it rather than by charging costs. A deduction is allowed from income equal to net earnings from the firm's capital for the given tax period. This procedure then leaves in the tax base an amount corresponding to wages paid and income from other non-capital factors. Because wages generally constitute the largest part of this remainder, this type VAT is termed the wages type. Shoup [43, p. 253] suggests a more cumbersome but precise term, the investment-earnings-exclusion type VAT. Depending on how capital earnings are computed, the wages type may theoretically be designed to encourage, discourage, or be neutral to capital investments. Value added for the wages variant is

$$VA = R - [E_{nc} + I_c]$$

where I_c is net income from capital goods.

Consumption Type VAT

The consumption type VAT permits a deduction for the full cost of capital goods in the year of purchase as a substitute for depreciation. Investment would thus be expected to be stimulated.

For a given firm, the base of this type VAT may be negative in any given year and a rapidly growing firm may show a negative value added for several consecutive years. The government could either make payment to such firms in the amount of the VAT rate times the negative base or allow a carry-forward credit enlarged by an interest factor. Value added here may be expressed as

$$VA = R - [E_{nc} + E_c]$$

where E_c is expenditure on capital goods.

Aggregate Concepts and Forms

For purposes of analyzing tax policy, it is often convenient to switch from the firm level descriptions used above to economy level or aggregate descriptions. Thus, four forms of VAT may also be shown by utilizing the well known macroeconomic symbolism and accounting identities.³ For an economy without foreign trade, gross national product (GNP) may be divided into consumption (C) plus gross investment (I) plus government expenditures (G). GNP is also equal to payments for inputs (P) plus corporate retained earnings (R)⁴ plus indirect taxes (T) plus depreciation (D). GNP is also equal to gross domestic output (GDO) of all firms less each firm's purchased intermediate inputs (F). These relations may be summarized as:

$$(1) \text{ GNP} = C + I + G$$

$$(2) \text{ GNP} = P + R + T + D$$

$$(3) \text{ GDO} = \text{GNP} + F$$

³ Approaches utilizing tax accounting rather than social accounting relationships might also be used to show these relationships, and would be used in preparing taxpayer instructions, but the current form is more amenable to examining aggregate impacts.

⁴ In national income and product accounting, the sum of factor payments and corporate retained earnings is defined as value added. It is but one of the four possible bases for a value added tax. Specific capital deductions allowable under the various bases are difficult to define, particularly in finance and service industries.

From these relations (and defining E as capital earnings on owned capital stock), the four types of value added bases may be shown as follows,⁵

Gross product type: ⁶	$VA_g = GDO - F = GNP = C + I + G$
Income type:	$VA_i = GDO - T - F - D = GNP - T - D$ $= C + I + G - T - D$
Consumption type:	$VA_c = GDO - F - I = GNP - I = C + G$
Wages type:	$VA_w = GDO - F - E = GNP - E = C + I + G - E$

Origin and Destination Principles

Two additional concepts must be introduced to handle imports and exports in international trade. They are the origin and destination principles and are designed to avoid double taxing goods in both exporting and importing country.

The origin principle VAT taxes according to where goods are produced. It includes export sales in the value added base and excludes imports. Thus, the general formula of all sales less purchases from other firms applies to export as well as domestic sales.

The destination principle works in the reverse manner. It applies according to where goods are consumed. Export sales are exempt while the tax is imposed on the import (country of destination) purchase.

The origin and destination principles can be applied to the four types of VAT discussed above. The principles do not work equally well, however, for each of the four types of VAT due to computational, administrative, and differential rate difficulties.

⁵Inclusion of government expenditures (G) merely raises the cost to the government of taxed purchases and is in effect paying a tax to itself. Thus, G is effectively excluded from the tax base.

⁶This is the definition of value added used in the U.S. Department of Commerce input-output tables. Logically, the components may be broken into wages and salaries, indirect business taxes, depreciation, and net property income. Such estimates are not currently available.

Approaches to Application

Krause and O'Brien [18] point out that the term "value added tax" refers to a method of tax collection at each production stage, not to a particular tax. As a device for levying taxes, it may take the form of any one of several more familiar types of tax. The gross product type is the counterpart of a general sales tax, the income type resembles an income tax on production, and a consumption type is similar to a tax on all consumption goods. Since the point of tax imposition differs, whether the pairs are identical in effect depends upon tax shifting parameters (to be discussed in the next section).

There are three general conceptual approaches to calculating the VAT: the addition, subtraction, and tax credit (or invoice) methods. However, the one growing in favor appears to be the tax credit or invoice method. Total value of sales of the firm is used as the base for calculation of a tentative tax. From this is subtracted similar tentative taxes shown on invoices for goods purchased. The difference is the net amounts remitted to the government. This procedure amounts to subtracting the tax on purchases from the tax on sales rather than subtracting purchases from sales and applying the rate to the difference, as is done in the addition or subtraction methods. Actual tax payment is made by simply filing a form showing the total of tentative taxes owed on sales, the total tentative taxes paid on goods purchased, and the difference, which is the amount owed or (if negative) the refund due. This method of calculation appears to have several advantages over other methods, particularly with a consumption type VAT which requires no special treatment of capital goods purchased. First, a firm is not required to classify purchases into categories, a task which is difficult and complicates check for compliance. Second, compliance is enhanced. It is to the advantage of each firm buying goods to be certain that the selling firm states the full amount of tax on each invoice, since this amount is subtracted from the taxes owed by the buying firm.

Tax Incidence

It is well known that taxes may not ultimately be paid by the economic unit on which the tax is levied. It may be possible that the tax

is shifted by forcing suppliers to accept lower prices for inputs purchased or buyers to pay more for products sold. These kinds of effects may in turn generate indirect or secondary effects in the marketplace which further affect shifting. The final result determines who actually bears the tax - its incidence.

The ability to shift tax incidence depends on four groups of forces: (1) the degree of competition in the market, (2) the elasticity of demand for product and of supply of inputs, (3) the length of time period being considered and (4) long-run technological developments affecting supply. Each of these involves measurement problems, particularly in trying to trace the indirect effects, and thus discussion of incidence of a specific tax often raises much controversy [25].

The introductory example in an earlier section of this paper assumed the full tax was shifted to the final consumer in the form of a higher price. In reality, the question is complex. Lindholm [21, p. 1183] suggests the established viewpoint that indirect or transaction-based general taxes such as a VAT would ordinarily be shifted forward in higher prices. However, he notes that backward shifting (forcing sellers to absorb) is easier than for a retail sales tax, but less likely than for an individual income tax. The ability to shift also would vary from industry to industry depending on each of the four groups of factors listed above. It would also depend on whether VAT were being used to replace some other tax and on how that tax incidence stood. Any final conclusion further depends on how the revenues generated by the tax are spent by the government. It is possible that groups bearing most of the tax might receive an even higher proportion of the benefits.

Farming generally is characterized by pure competition, suggesting partial shifting to consumers; by inelastic product demand, suggesting substantial shifting to consumer; by rather inelastic supply (especially in the short run), suggesting inability to shift; and by technological development tending to increase long-run supply elasticity which suggests ability to shift. The ultimate incidence of a VAT would involve a complex weighting of these forces and the effect is not clear. It appears that in the short run farmers, as "price takers" (having inelastic product supply), would be unable to shift the tax, but that some shifting

would be possible over the longer run. Relative to other sectors of the economy, Aaron [1, p. 167] has suggested that one plausible assumption is that agriculture and other relatively unconcentrated industries have less ability to shift a VAT forward. Thus we conclude that agriculture would not be in a particularly favorable position relative to some other industries and would probably have to absorb at least part of a VAT, especially in the short run. However, the reader should remember this is a complex topic and consider the question open for further discussion. The purpose here is to make clear that the question of incidence is a difficult and important consideration in evaluating a VAT.

ARGUMENTS FOR AND AGAINST A VAT

One of the early proposals for the VAT in the United States was as a substitute for all or part of the corporate income tax (CIT). More recently it has been suggested as a substitute for property taxes or as an additional source of government revenue. This section briefly reviews arguments for and against the VAT (see also [15]). Various analysis differ on the merits and the relative importance of these arguments, so the order of listing should be considered arbitrary. Many of the arguments have been developed in the context of the discussions on VAT as a replacement for the Corporate Income Tax. In large measure, however, the same issues apply to property tax applications.

Collection and Administration

Sullivan [52] cites simplicity of collection and administration as a major advantage of the VAT over other types of taxes. It is often collected from a smaller number of taxpayers than sales, income, or property taxes, giving a well-defined tax base. Exclusion of smaller firms and farmers would simplify administration of the tax by further reducing numbers. But VAT has a number of other administrative problems in common with taxes it is proposed to substitute for. These include identification of taxpayers, defining taxable economic activity, exemptions and exclusions, treatment of depreciation and inventory accounting, fringe benefits, avoidance of multiple taxing, and establishment of a uniform price basis. Such factors add to complexity, and Forte [12] concluded from the French experience with the VAT that a truly general VAT is nearly impossible to design and difficult to administer. Thus, the proposed advantage of simplicity may not be as great as proponents claim.

International Trade Considerations

Under present international practices based on the rules formulated in the General Agreement on Tariffs and Trade (GATT), indirect

taxes (sales, turnover, value added, excise, or state monopoly taxes) are considered eligible for border tax adjustment while direct taxes (income, profits, payroll, social security and property taxes) are not eligible. Under a border tax adjustment, GATT member countries are allowed to rebate the indirect tax paid by firms on exports, but not the direct tax. Firms in countries having the VAT, rather than a direct tax, may lower export prices due to tax saving, gain a competitive advantage, and increase exports. Imports would still be subject to a VAT and demand for imports would remain unchanged.⁷

Substitution of a VAT for either income or property taxes thus may result in a favorable movement in the balance of payments. It has been argued that American exporters are at a disadvantage in world markets because of the use of direct taxes in this country while foreign trade rivals are relieved of VAT liability on international transactions. Contrarily, it has been argued that increases in cost of materials and wages, etc., following from imposition of a VAT in the United States could lead to large increases in prices of domestic goods and no international competitive advantage could be expected. This is a complex area and at the heart is the controversial issue of the degree of forward shifting of the various kinds of taxes.

Economic Efficiency Effects

Vat offers some encouragement toward economic efficiency as compared to an income tax. Firms that are inefficient in the use of non-purchased resources, as well as those with large exemptions, pay the VAT even though they might owe no income tax. Production rather than net earnings is taxed, so that inefficient as well as efficient firms pay. Since farming has large numbers of small units paying little or no income tax because of exemptions and deductions, or perhaps inefficiency, the impact on exit from farming could be significant without a similarly exempted VAT. Even though such firms produce relatively little in the aggregate, they could be subject to some VAT tax where they had no income tax.

⁷ Assuming both VAT and CIT are shifted forward.

Capital Intensity Effects

The relationship between VAT and capital intensity is two-way. First, the type of VAT adopted determines the kind of capital costs deductible in determining the tax base. Thus, the type may affect capital intensity decisions on new installations. The gross product type discourages capital and favors labor. It permits no capital charges at all. On the other hand, the consumption type allows full cost of capital items to be deducted in year of purchase. This obviously encourages intensification. Between the two, the income type allows depreciation charges and the wages type permits deduction of capital earnings from the gross value before tax is calculated. The net effects would depend on depreciation rates and on methods of determining capital earnings. Second, choice of form of VAT could result in differences in relative amounts of tax owed between agriculture and other sectors, as well as between subsectors of agriculture. Existing capital intensities, annual capital expenditures, and ratios of value added to total sales would point to these impacts.

Tax Base and Revenue Stability

Evaluating Michigan's experience with a variant of the VAT, Papke [33] showed this variant to be a highly productive tax. Since the VAT provides a broad tax base, it can be imposed at a lower rate than other taxes to raise a given revenue. One proponent has estimated that a VAT applied at the 1 percent rate would yield as much revenue as a 5 percent corporate income tax in the United States [39]. It is widely believed that minimizing stated rates improves political palatability of taxing schemes.

The VAT is generally thought to provide "automatic" enforcement and stable revenues. Under a VAT, if payment of tax is successfully avoided at one stage, nothing will be lost if it is picked up at a later stage.

The VAT has also been regarded as a cyclical stabilizer as compared to tax on income. This is because tax yield to the government depends on production, not net income. Thus Federal revenues decline less, and less deficit financing would be required for a given amount of fiscal stimulus to the economy. The recent ineffectiveness of the income tax

as a fiscal policy device also suggests the need for a tax with the attribute of flexible rates. Proponents point out that VAT revenues move in proportion to GNP and the rate could be flexible and changes made without major technical complications. Changes in the rate could act as a signal to consumers to alter their consumption habits accordingly since it has a more direct tie to market exchange processes. However, the effectiveness of the VAT as a stabilizer would depend on a law permitting flexible rates, on the speed of the political process, or how fully the tax is revealed to consumers, on the reaction of labor to price changes, etc. In relation to a property tax, the VAT would not offer any particular advantage on stability. It would, however, tax current production rather than wealth accumulated from past production.

Savings, Investment, and Growth

A special form of economic efficiency argument is sometimes made for VAT in relation to the corporate income tax. It does not apply in relation to real property taxes. Thus we discuss it last.

Income taxes currently reach distributed corporate profits twice, once when they are earned via corporate income tax (CIT) and when they are paid to stockholders as dividends (personal income tax). Unincorporated business profits are taxed only through the latter. Some analysts would argue that the result may be to direct money into a sector of small unincorporated businesses and to at least some relatively inefficient firms which may be using obsolete methods. If so, the less efficient firms are kept in the industry.

The CIT, which is a tax on income from equity capital, discourages the use of capital relative to labor. It does not double-tax corporate interest payments (as they are deductible); thus it also may generate a preference for debt rather than equity (e.g., retained earnings) financing. Conversely, it has been argued that the CIT may improve efficiency by encouraging firms to enter the markets for new capital. This may make them more cognizant of the explicit costs of capital as opposed to use of retained earnings where costs are not so explicit.

Since the CIT is based on profits, it directly reduces the amount of savings available to be used as investment capital by growing firms.

The VAT aids efficient and productive firms by requiring firms to pay taxes on output, regardless of whether produced in a way to make efficient use of the firms' own resources, rather than profit. If efficient firms are encouraged, then economic growth through expanded investment may occur.

On the other hand, it should be noted that the VAT may make it harder for new and struggling firms that have not yet developed efficiency or competitive strength. Also, the VAT may act as an impediment to entry into certain industries.

Substitution of a VAT for some of the CIT would affect different businesses in varying ways. Presumably, it would aid corporate businesses because more diverse and lesser contributors to GNP would be called upon to share the burden currently carried by CIT. Companies with high rates of return and financing with equity instead of debt would be favored. Other companies would not fare as well. In the aggregate, however, the reallocation of the tax burden could lead to greater efficiency benefitting the entire economy.

Regressivity

One other argument concerning the VAT should be noted. Some economists have argued that the VAT is regressive. That is, the tax burden falls more heavily upon the poor than upon those who are more affluent. Since the VAT, to the extent it is passed on in higher prices, is a consumption tax and the poor consume a greater proportion of their income than higher income groups, the VAT could be expected to fall relatively more heavily upon them. The use of exemptions and special provisions is frequently suggested as a remedy for these problems. However, it should also be noted that the effect cannot be determined solely by examining the tax. While utilization of tax proceeds is not necessarily a function of the taxing method, the way in which the proceeds are utilized must be considered before a judgment is reached. Thus, the burden falling upon different groups must be considered along with the benefits received by these groups. Further, the VAT should be viewed as part of a system of income, property, and other taxes, rather than in isolation.

TREATMENT OF AGRICULTURE UNDER VAT SYSTEMS IN EEC
AND OTHER EUROPEAN COUNTRIES

In general, the VAT taxes in Europe are the consumption type and follow the destination principle in treating foreign trade. The VAT is used at rates which produce from 24 to 40 percent of EEC member revenues [21]. VAT tax rates applicable to agriculture are in the range of 3.5 to 6 percent on the tax base.

The general procedure under all the VAT systems is the invoice or tax credit method. Each business pays tax on inputs at the time inputs are purchased, and receives an invoice from the seller showing the cost of goods as well as the amount of tax. Similarly, on sales, the business collects the tax on the total value of sale as well as price of the goods and furnishes the buyer an invoice. Each business keeps a record of both purchase and sale invoices, and each accounting period pays to or collects from the government the difference between tax owed and tax collected. Payments may be due monthly, quarterly, or annually.

Within these uniform general procedures, provisions relating to certain segments of the economy and certain sizes of business vary considerably from country to country. A large number of special provisions apply to agriculture. The systems vary from relatively simple and all-inclusive (Denmark) to complex and full of special provisions (especially France).

This section describes the treatment of farmers under VAT systems in operation in 1971 in Belgium, Denmark, France, Germany, Luxembourg, the Netherlands, Norway and Sweden.⁸ The special provisions in various

⁸The discussion is based on unpublished information obtained from summarizing systems in operation in 1971. A VAT system became effective in Italy in 1973. The general principles of the tax instituted also provide for a special system for farming. That is, for specified agricultural products, the special system includes untaxed direct sales by farmers to final consumers, farmers subject to a reduced rate, special calculation of the tax to be incorporated in production costs, and the payment of such tax by the producer.

countries are first categorized, and then a discussion of the treatment within each category follows.

Special Provisions Applying to Farming

The treatment of farmers under the various VAT systems may be roughly categorized under three types of provisions.

- (1) They may be subject to the standard system (Sweden), and at their option may choose it in other countries.
- (2) They may be allowed exceptions to certain rules or even forgiven tax liability within the standard system (Denmark, France, and Norway).
- (3) They may be provided relief from standard administrative record keeping obligations on sales (Belgium, Germany, Luxembourg, and the Netherlands), or on purchases (France and Germany).

Reasons for special treatment include relieving groups of extensive record-keeping requirements, simplifying administration of the tax by excluding or having standard rules for small firms providing little tax yield, helping relieve groups not able to transfer tax incidence, and achieving other social goals. Administrative problems are a very important consideration in Western Europe because of the large number of relatively small farms, each yielding only a little tax revenue.

Standard VAT System

In most countries, farmers may choose to be subject to the standard VAT (in France, the simplified VAT). They will need to do so in order to obtain rebate: (1) under the destination principle if they are producing for export, and (2) in years of heavy capital purchases when tax paid may exceed tax owed under the consumption-type of VAT. In addition, farmers larger than specified sizes in sales may not be eligible for any of the special systems.

Those initially choosing the standard VAT cannot change systems for three years in Belgium and France, and five years in Germany and the Netherlands. Only 1.5 percent of the 1.3 million farmers in Germany and 308 of the 250,000 farmers in the Netherlands have chosen the standard system. In France, of the one million full-time farmers, 20 percent chose the simplified VAT, 55 percent the uniform repayment and 25 per-

cent the simple rebate system. Including the 400,000 part-time farmers changes these figures to 14, 39, and 47 percent, respectively.

Exceptions or Relief within the Standard System

Exceptional treatment within the standard system is provided in Denmark, France, and Norway. Variations may be allowed by reduced reporting frequency, excluding certain sales, allowing delayed payments, and even complete relief of liability for tax to small farmers.

In several countries, farmers may submit less frequent returns than required of other businesses: every six months instead of quarterly in Denmark, quarterly instead of monthly in France, and annually instead of bi-monthly in Norway.

In Denmark, qualified farmers may exclude interfarm sales from their taxable base. In addition, they may be given a payment respite, after the end of the tax period: of up to five months and 20 days for one-half of the tax liability and up to eight months and 20 days for the remainder. The normal rule is that total tax is due one month and 20 days after end of taxable period, or twice that long for farmers.

In France, the tax may be paid according to turnover each quarter, or the farmer may "tax average" by paying an estimated fixed amount each quarter, with annual adjustment at year end. Further, the tax is considered due when the farmer makes cash payment, rather than when he takes delivery of purchases. Normally, deductions for purchases in the previous month are allowed against sales for the current month. However, a farmer can delay the tax on purchased inputs until he receives payment from a buyer of his products. France also offers tax relief to small producers who derive at least 80 percent of their income from farming. If their annual turnover (gross sales) is (a) less than 10,000 Francs (\$2,085), they pay no tax, (b) between 10,000 and 13,500 Francs (\$2,815), they are relieved of 60 percent of the tax, and (c) if between 13,500 and 17,000 Francs (\$3,545), they are relieved of 30 percent of the tax.⁹

⁹Conversions into dollars are at exchange rates prevailing as of January 3, 1974.

Relief from Administrative Obligation

In a number of countries, farmers may be relieved of usual requirements to maintain records of either purchases or sales and of tax invoices. Instead, they are allowed to use a standard rule in calculating tax owed. Such a procedure is simpler for the taxpayer and reflects the belief that there is little point in tax auditing of small returns which collect only minor amounts of tax.

In Belgium, Germany, Luxembourg, and the Netherlands, eligible farmers are not required to keep records of sales unless they opt for the standard system. In effect, this means they are not liable for tax on their sales, so need not keep records of sales. They must keep purchase invoices, however. No tax is charged on the value they add, but, except for Belgium, they receive no rebate of tax paid on their input purchases when their sales are in the domestic market. Farmers whose products are exported must use the standard system to receive rebates under the destination rule for tax paid on their purchased inputs.

To fit into the rest of the Belgian VAT system, farmers are re-funded taxes included in the price of purchased inputs by the seller at the uniform rate of 5 percent of gross sales (to be increased to 6 percent by 1975) on agricultural products, or 2 percent on forestry products. If the rate of the tax applying to a specific product is higher than the uniform rate, the seller owes the difference to the Treasury.

A similar standard rule is used in Germany. Statistical surveys of 8,000 farmers found the average tax paid on purchased inputs by farmers to be 4 1/2 to 5 percent of the turnover (gross sales) for farming, and 3 percent for forestry operations.

The tax rate applicable to product sales by agriculture has been set at 5 percent, so farmers generally do not owe any tax other than that already paid in the price of purchased inputs. However, exceptions apply to German farmers selling wine, other alcoholic beverages, fruit juice, and sawmill products. To prevent these farmers from enjoying a competitive advantage over other firms selling similar products due to a different value added as a percentage of sales, their sales are subject to the normal tax rate of 11 percent, from which they may deduct the standard 5 percent prior stage tax. These farmers are required to keep records. German farmers whose annual turnover exceeds 250,000 D.M.

(\$90,225), or whose annual profit exceeds 12,000 D.M. (\$4,331), are required to maintain records for income tax purposes even though they may be subject to the special system.

The Luxembourg system, in practice, is very similar to that of Germany. Farmer sales are subject to a reduced tax of 4 percent (2 percent for forestry). The farmer is relieved of all sales recordkeeping. The purchaser of farm products maintains an accounting document which shows separation of price paid to the farmer into price of goods and tax. The farmer's liability to the government for tax collected on his product sales is deemed to offset the claim he would have for tax paid on the inputs he bought.

In the Netherlands, qualifying farmers are not, even in principle, liable to tax on their sales. Furthermore, firms who purchase goods from exempt agricultural firms are permitted to credit 4/104ths of the purchase price against their VAT liability. This fraction of the sales income of farms is, on the average, the VAT included in purchase price of goods and services paid by farmers.

French farmers may, instead of choosing the easements within the standard system, choose to come under a system where they keep no purchase records but do maintain sales records. They receive a uniform credit for VAT on their purchases calculated as a percentage of their sales. This percentage varies by the type of agricultural production, irrespective of the farmer's actual purchases. In 1969, this was set at 3.5 percent for livestock and poultry products and 2.4 percent for other products. These percentages have purposefully been set low in relation to rates under the standard system to encourage farmer selection of the simplified VAT. This simplifies tax auditing and administration.

ELIGIBILITY FOR SPECIAL PROVISIONS

To be eligible for treatment under special tax systems, farmers must meet certain requirements. These are generally set forth in a list of permitted and non-permitted activities. The following is a list of permitted activities, in addition to farming and forestry, by country.

- Belgium - Horticulture, flower and fruit growing, vine growing, silviculture, cattle and poultry production, and bee-keeping. Primary processing of products is allowed if it is processing normally done by farmers.
- Denmark - Animal husbandry, fishing, fish farming, fur farming and fruit growing.
- France - No legal definition established and the special system may apply to anyone recognized as engaged in animal or vegetable production.
- Germany - The systematic exploitation of natural soil resources and the utilization of products obtained. The decisive criterion is that cultivation and utilization are by the same farmer. Livestock raising is considered farming if the farmer is able to feed his livestock from his own produce.
- Luxembourg - Cultivation of seeds, vegetables and fruit, forestry, horticulture, animal production and use when directly connected to cultivation, and honey production.
- The Netherlands - Livestock production, horticulture and fruit production along with other goods used in connection with the business.
- Norway - Activities related to farming (undefined) and fishing.

The regulations generally provide some limitation on the amount of other activities a farmer may be involved in and still have a right to file under one of the special treatments.

1. Providing custom services such as tillage, fertilizer application, harvesting and artificial insemination do not qualify for the special systems, except in Norway. In Germany and Denmark, they are permitted if ancillary to the farming operation proper.
2. In Denmark and the Netherlands, sales from non-permitted activities may not exceed 5,000 Danish Kr. (\$780) and 10,000 Dutch Florin (\$3,490), respectively, per annum.
3. In France, sales from these activities must not exceed 10 percent of total sales.
4. In Germany, purchases in connection with these activities must not exceed 20 percent of total purchases.
5. In Norway, sales from these activities must not exceed 18,000 Kr. (\$3,064) per annum.

Businesses in Denmark, France, and Norway that exceed the limits on non-permitted activities may have two tax accounts -- one for farming and one for nonfarming activities. This is not allowed in Germany or the Netherlands.

Tax Rebates to Farmers

Repayment to farmers of tax collected when they purchased inputs is seldom done and then only to those under standard VAT systems or special exceptions. Overpayments would result because of farmers exporting or having unusually heavy capital purchases during an accounting period.

In France, rebates are made only annually, while in Sweden, exporters may elect monthly (instead of the standard two-month period) accounting periods. Rebates are made only when the claim exceeds Kr. 1,000 (\$213).

Private Sales of Farmers

All countries tax the private sales ("farm gate sales") of farmers, subject to the VAT, with the exception that Danish farmers may sell tax-free to other farmers. Records are subject to audit in Germany. Farmers in all countries subject to the standard system must keep records of such sales. Belgium requires delivery of invoice (including tax) for such sales.

Distinction between Livestock and Crop Production

Generally, no distinction is made. However, in France, a special control applies to cattle and hogs which includes a special accounting, and in Germany livestock must not be "excessive in relation to acreage."

Treatment of Agricultural Co-ops

In Norway, cooperative members are not required to calculate VAT on sales to co-ops, even if the co-ops are not registered under the VAT system. No other distinction in the tax treatment relating to agricultural co-ops appears to exist.

VALUE ADDED IN U.S. AGRICULTURE AND OTHER SECTORS

Effects of the different forms of VAT on sectors of the economy depend on their value-added tax bases. Aggregate data from several sources were assembled to compute the U.S. value added base for three of the four types of VAT. The latest data available for making these comparisons are the 1963 input-output tables, published in 1969, and no attempt has been made to make any adjustments to 1973 conditions. However, 1963 was a fairly normal expansion year, so one would expect the relationships among industries to be reasonably appropriate. Still, the present results should be used only to establish the general situation. Too, both handling of exports and imports for tax purposes (col. 10, Table 1) and price level changes can have important impacts for certain sectors.

A compilation of data from various sources provides only fragmentary benchmarks, but these indicate that the proposed VAT would have important consequences for the agricultural sector, and that the form of the tax used greatly affects the relative well-being of different sectors. These calculations are shown by sectors as well as for subsectors in agriculture in Tables 1-3. They assume a closed economy and are adjusted to eliminate government purchases (footnote 5). These data are also useful in analyzing other possible uses of a VAT. Additional information would be required, however, to study various possible special treatments of agriculture, such as those described in the preceding section. From these data several distinctive aspects of agriculture may be noted.

1. Gross receipts are not an acceptable indicator of value added. Value added as a percentage of gross receipts (Table 2, cols. 8-10) is low in agriculture and manufacturing and high in wholesale and retail trade and finance. Within agriculture, percentages are low for livestock and about average for crop farms.
2. Agriculture is a relatively capital intensive sector, and also has relatively short-lived capital. These mean that the capital de-

34 Table 1. Value added tax base for alternative forms of VAT, 1963, closed economy basis

Sector	Value added tax base			Gross receipts (GDO)	Indirect taxes (T)	Depreciation (D)	Gross investment (I)	Purchased intermediate inputs (F)	Federal government purchase (C)	Net exports (E)
	Gross product VA _G	Income VA _I	Consumption VA _C							
	[1]	[2]	[3]							
(million dollars)										
Agriculture, forestry & fisheries	22,944	17,674	17,798	57,473	1,328	3,841	5,146	34,772	-242	3,012
Mining	10,762	9,349	7,131	20,570	402	1,011	3,631	9,519	289	536
Construction	31,597	29,019	28,737	85,313	1,159	1,419	2,860	48,292	5,424	2
Manufacturing	145,918	119,479	133,622	466,415	13,037	13,402	12,296	295,444	25,053	16,413
Trade	87,680	78,135	80,919	120,613	5,442	4,143	6,801	32,165	728	1,735
Transportation, communications, utility services	48,543	35,455	36,082	84,678	5,173	7,915	12,461	34,210	1,925	3,141
Finance, insurance and real estate	79,937	72,535	76,525	117,587	3,917	3,485	2,412 ^b	37,451	199	434
Services	57,073	51,429	47,556	103,038	1,733	3,911	9,517	42,079	3,886	548
Total tax base^a	484,494	413,175	428,370	(1,055,687)	(32,191)	(39,127)	(55,124)	(533,932)	(37,262)^c	(25,821)^c

^aTotals may not add due to small amounts not allocated to sectors in source data.

^bExcludes \$25,843 million private residential construction in original data.

^cFrom private domestic sectors.

Source: Cols. 1-3 calculated from data in cols. 4-8; cols. 4, 8, 9, 10 from [57] and [58]; cols. 5 and 6 from [60] Table I, J and K; col. 7 from [56].

Table 2. Percent of total base, percent change in base and value added as a percent of gross receipts, by sectors and types of VAT, U.S., 1963, closed economy basis

Sector	Sector share of total base			Change in sector's base			Base as a share of gross receipts		
	Gross product	Income	Consumption	GP to income	GP to consumption	Income to consumption	Gross product	Income	Consumption
				(percent)					
Agriculture	4.74	4.28	4.15	-23.0	-22.4	+0.7	39.9	30.8	31.0
Mining	2.22	2.26	1.66	-13.1	-33.7	-23.7	52.3	45.4	34.7
Construction	6.52	7.02	6.71	- 8.2	- 9.1	- 1.0	37.0	34.0	33.7
Manufacturing	30.12	28.91	31.19	-18.2	- 8.4	+11.8	31.3	25.6	28.6
Trade	18.10	18.91	18.89	-10.9	- 7.1	+ 3.6	72.2	64.8	67.1
Transportation, communication, utilities	10.02	8.58	8.42	-27.0	-25.7	+ 1.8	57.3	41.9	42.6
Finance	16.50	17.55	17.86	- 9.3	- 4.0	+ 5.5	68.0	61.7	65.1
Services	11.78	12.44	11.10	- 9.9	-16.7	- 7.5	55.4	49.9	46.2
8 Sectors	100.0	100.0	100.0	-14.7	-11.6	+ 3.7	45.9	39.1	40.6

Table 3. Agricultural sector - value added tax base for alternative forms of VAT, 1963

Subsector	Value added to base ^a			Gross receipts (GDO)	Indirect taxes ^b (T)	Depreciation (D)	Gross investment (I)	Purchased inter-mediate inputs (P)	Federal government purchase (G)	Net exports
	Gross product (VA _g)	Income (VA _i)	Consumption (VA _c)							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
	(million dollars)									
1. Livestock & livestock products										
Dairy farm products	1,848.8			5,777.4				3,928.7	--	--
Poultry & eggs	632.2			3,708.6				3,073.2	3.2	11.2
Meat animal & misc.	4,206.6			17,198.4				12,990.1	1.7	27.2
Subsector total	6,687.6		5,856.4	26,684.4			831.1	19,992.0	4.9	38.4
2. Other ag. products										
Cotton	1,017.5			3,093.2				1,658.6	417.1	521.8
Food, feed grain & grass seed	7,575.7			13,869.3				6,737.8	-444.1	1,726.1
Tobacco	918.0			1,490.5				572.5	--	15.0
Fruit & tree nuts	1,379.1			2,099.1				718.0	1.9	66.1
Veg., sugar & misc.	1,945.1			3,285.4				1,332.1	8.2	121.8
Oil bearing crops	1,255.6			2,290.7				1,110.0	-74.9	452.8
Forest, greenhouse & nursery	830.4			1,138.0				307.7	--	13.7
Subsector total	14,921.4		10,773.5	27,266.2			4,147.8	12,436.7	-91.8	2,917.3
Total subsectors 1&2	21,609.0	16,686.0	16,629.9	53,950.6	1,260.4	3,662.4	4,978.9	32,428.7	-86.9	2,955.7
3. Forestry & fishery products	770.1		730.5	1,751.0			39.6	1,152.8	-171.9	46.0
4. Ag. forestry & fishery services	564.9		437.3	1,771.9			127.6	1,190.1	16.9	10.7
Total subsectors 3&4	1,335.0	1,088.7	1,167.8	3,522.9	67.5	178.8	167.2	2,342.9	-155.0	56.7
Sector total	22,944.0	17,774.7	17,797.7	57,473.5	1,327.9	3,841.2	5,146.1	34,771.6	-241.9	3,012.4

^aNumbers differ from calculations based on macro formulas in text because Federal Government purchases have been netted out. See footnote 5 in text.

^bIncludes all taxes allowed as "ordinary and necessary business deduction" by U.S. Internal Revenue Service.

Source: Cols. 1-3 by calculation from Cols. 4-8; Cols. 4 and 8 from [57]; Cols. 5 and 6 from [60]; Col. 7 from [58].

ductions allowable under various forms of VAT are of great importance.

3. Consequently, agriculture's proportion of the total tax base is highest under the gross product VAT, 4.74 percent, and successively decreases to 4.28 and 4.15 for the income and consumption types, respectively. The type of VAT chosen is thus quite important to agriculture as well as to other sectors. Agriculture's base is lowest for the consumption VAT, which is the one reported to be under consideration by the Treasury Department.

Because of the different structure of the various sectors, not all are affected alike. Unlike the agricultural sector, the manufacturing and finance sector bases increase for the consumption VAT as opposed to the income VAT. Thus, there would not be unanimous agreement among sectors as to type of VAT base preferred.

4. Within the agricultural sector, the subsectors are likely to be affected differently (Table 3). Generally, the crop production subsectors have heavier annual capital investment and depreciation than livestock subsectors. Thus the choice of a form of VAT base is of more importance to them. In addition, under all three forms the base from crops is more than twice that for livestock. These results contrast starkly with rankings based on gross receipts (Table 3, col. 4).

TAX LIABILITY OF AGRICULTURE

As noted earlier, one use proposed for a VAT has been to relieve inequities imposed by the corporate income tax (CIT). More recently, it has been suggested as a replacement for all or part of taxes on real estate.

VAT Versus Corporate Income Tax

The substitution, in part, of a VAT for the CIT would have special significance and would create special problems for farms and other forms of unincorporated business since they could be subject to the new tax but receive no relief from any existing taxes. Such a proposal involves a new tax on business activity, regardless of the legal form of organization -- corporate or noncorporate. But reducing the CIT provides relief only for those that are incorporated. This is one reason why such proposals sometimes suggest that agriculture and other small businesses be exempted from a VAT instituted to replace a CIT. Of course, the VAT could also be combined with relief of other than corporate taxes.

If used as a general revenue source, the VAT would affect agriculture as well as other sectors. But if it were designed as a substitute for all or part of the CIT and no relief were provided for agriculture, the impact could be quite significant. For the agricultural sector as a whole, corporations comprised less than 1 percent of all business forms in 1967 (Table 4), and 18 percent of total business receipts. A VAT as a replacement of part of the CIT (with no exemption for agriculture) would mean that 99 percent of farming businesses and 82 percent of total agricultural business receipts would be subject to an additional tax. Most other sectors would get more offsetting relief from CIT. As noted from Table 4, agriculture has the lowest percentage of corporations of all sectors. Manufacturing has the highest (49.1 percent) with 98 percent of gross business receipts being generated by

corporations. Aaron [1] has shown that a gross product type of VAT, substituting for the CIT to produce equal yield, would increase the tax burden more for farming than for any other sector. This would not reflect any increases in farm net income and, in fact, could affect consumer purchase decisions somewhat adversely.

Suggestions are frequently made to exclude farming from the VAT. Two reasons are cited: (1) the lack of offsetting tax relief for most of farming if VAT were substituted for a CIT, and (2) the administrative difficulties with a large number of small tax units. But not paying the tax directly does not necessarily mean that the sector escapes its effects. Since both those selling to and buying from farmers would be taxed, the effect on farmers depends upon whether there is either backward or forward shifting of the tax through price adjustments. If, at least in the short run, farmers are price takers, one might expect farmers to be bearing a portion of the tax on value added in other sectors. Apparently this is the reason for some EEC countries having explicit rebates and credit systems to remove the tax impact on price of farmer purchases.

Another kind of alternative treatment in vogue in the EEC is relieving small farms of many of the administrative and record keeping requirements (discussed above) through special "standard deduction" procedures, permitting less rigid reporting and payment dates, or directly excluding farmers from part or all of the tax. Though these may ease the jolt, they do not relieve the tax obligation.

The effects on agriculture of substituting VAT for a CIT could include (depending upon assumptions about incidence): (1) an increased tax burden on the farming sector and unincorporated agricultural business, (2) a tendency to stimulate movement toward the corporate form of organization to escape double taxation on business income, and (3) a possible increase in the cost of production by the amount of VAT paid on purchased inputs, which probably would not be recoverable in the short run, assuming inability to shift the tax forward (i.e., to include the tax in higher output price).

Table 4. Number of businesses, percent corporations and receipts, U.S., 1967

Sector	Number - all businesses	Percent corporations	Total busi- ness receipts (1000 dollars)	Percent all corporations
Agriculture, forestry and fisheries	3,352,683	1.0	49,576,426	17.9
Mining	73,361	19.7	15,123,041	84.3
Construction	855,982	14.4	92,291,540	72.4
Manufacturing	401,014	49.1	588,682,221	97.9
Transportation and public utilities	359,088	18.4	106,040,278	93.5
Wholesale trade	434,137	32.8	213,195,861	85.7
Retail trade	2,046,209	15.4	320,750,967	67.4
Finance, insurance and real estate	1,222,496	32.6	86,669,635	82.8
Services	2,713,942	8.1	97,738,340	47.7
Total	11,566,624	13.3	1,574,394,661	81.6

Source: From [58], Table 1.1.

Various estimates have been made of the total revenue which a VAT might yield. Assuming a few exclusions and exceptions as are necessary for proper administration, a trillion dollar GNP has been estimated to yield between 3-1/2 and 5 billion dollars for each percentage point. A VAT rate of 10 percent has been advanced on this basis as being necessary to yield adequate revenues in replacement of the CIT.

VAT Versus Real Property Tax

A VAT is now being viewed by some proponents as a replacement for real property taxes to finance education. These possibilities have been given impetus by court rulings against current procedures by which real property taxes are distributed to finance local schools. This topic has recently been discussed by Stam and Hady [48].

In 1963 taxes on farm property amounted to \$1.43 billion [49]. At one extreme, one might ask how much of a VAT would be required on the entire economy to eliminate farm property tax only. Assuming a VAT yield of \$5 billion per percentage point, a VAT rate of approximately 0.3 percent would accomplish farm property tax relief. Under a consumption type VAT, agriculture would owe 4.15 percent of the bill (Table 2) with the balance being transferred to other sectors.

More realistically, the VAT might be used to relieve all property taxes, not just those in agriculture. The total of all such taxes paid in the United States in 1963 was \$19.8 billion [56]. Agriculture's \$1.43 billion was 7.2 percent. Since agriculture would pay 4.15 percent of a consumption type VAT, substitution for property tax would decrease total tax liability of the farm production sector, assuming government tax yield is kept constant. This saving amounted to slightly over 5 percent of realized farm income in 1963.

All farm land owners currently pay real property taxes, and the tax is generally believed to be reflected in rents paid by tenant operators. Whether or not a VAT without exemptions would bear upon all owners and tenants in the same proportion as the property tax depends on whether real property taxes are roughly proportional to value added. This is unlikely to be true, so one would expect groups of farmers to be affected unequally. If a VAT were imposed with exemptions for small farmers and were to replace the real property tax, the small farmers would benefit. They would be relieved from VAT and also the real property tax they now pay.

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