A VALUE-ADDED TAX: ITS COMPLIANCE COSTS FOR INDIVIDUAL UNITED STATES NON-RETAIL BUSINESS FIRMS

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Charles J. Gaa
Major professor

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ABSTRACT

A VALUE-ADDED TAX: ITS COMPLIANCE COSTS
FOR INDIVIDUAL UNITED STATES
NON-RETAIL BUSINESS FIRMS

By

Seth Kelly Parker

Adoption of a value-added tax (VAT) has been suggested at both federal and state levels in the United States. The possible VAT compliance costs have not been investigated thoroughly. Thus, any statements by economists, legislators, managers, or accountants concerning the possible compliance costs of a single United States firm, or of United States business as a whole, are conjectures. This study identifies and estimates such costs.

In this study, two hypothetical VAT laws are developed. One law, defined as the invoice method of computing the VAT, is based on the VAT laws in Europe. This law uses the VAT shown on the invoices both issued and received by the firm as the starting point in computing the firm's VAT liability. The other law, defined as the accounts method of computing the VAT, is based on the Michigan Business Activities Tax. This law uses the firm's ledger accounts as the starting point for computing the firm's VAT liability.

Seth Kelly Parker

The treasurers or controllers of six non-retail business firms with sales of $3.8 to $22 million were interviewed and asked to describe their firms' accounting functions. The researcher determines the changes that each firm would need to make in order to comply with each of the laws and identifies a number of possible compliance costs. These costs are categorized as initial compliance costs (costs the firm would incur only once) and continuing compliance costs (costs the firm would incur each year after the effective date of the VAT). The individual possible compliance costs were estimated by each firm's treasurer or controller, or by the researcher. Some of these costs can be estimated more accurately than others.

Although some changes in the accounting function of each firm are required by each of the hypothetical VAT laws, neither law would require a major change in the accounting function of any of the six firms studied. For example, the invoice-type of law sometimes necessitates the rewriting of accounting machine or computer programs. Although such reprogramming is time-consuming, it would not be a new experience or a major change for any of the firms involved. The study shows that neither the total initial or total continuing costs of complying with either of the VAT laws exceed 1 percent of firms' sales.

Since the cost estimating procedures used in this study are time-consuming and therefore not practicable for all accountants, the study tests linear models that could assist accountants in making estimates of costs. Three of these models prove significant: the models for both the initial and continuing compliance costs for the invoice-type of VAT law, and the model for the initial compliance costs for the accounts-type.

Seth Kelly Parker

This study is the first thorough investigation of the possible compliance costs of a VAT for individual United States non-retail business firms.

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By

Seth Kelly Parker

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To my mother,

Evelyn H. Parker

and father,

Willis K. Parker

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CHAPTER I

INTRODUCTION TO THE STUDY, HYPOTHESES STUDIED, AND LIMITATIONS OF THE RESEARCH

Introduction

This chapter presents hypotheses and background material for the study. Subsequent chapters will present the methodology of the study, its conclusions, and implications.

In this first chapter, the value-added tax (VAT) is described and some background is given concerning the proposal and adoption of such a tax. Included is a discussion of reasons that have been advanced for the adoption of a VAT in the United States and a review of literature concerning firms' costs of complying with a VAT. The remainder of the chapter discusses the importance of the present study, the hypotheses that the study will test, and the limits imposed upon or inherent in the study.

Brief Statement of What Was Investigated

The study investigates the effects of a VAT on the operation of the accounting function in individual United States non-retail business firms. It concerns the accounting function's structure (e.g., the number of people employed) and procedures and with both the possible initial and continuing costs of complying with a VAT. Six manufacturing

firms were studied in detail. Within each of these firms, the effect of a VAT on the firm's accounting function was assessed. The researcher noted each change likely to be required and determined the action that a firm would have to take to bring about that change. He estimated the cost, in dollars, of each of these actions and categorized these costs as initial compliance costs or as continuing ones. The study also considers models that would allow a firm to estimate its total initial compliance cost and its total continuing compliance cost without studying the components of those costs in detail and estimating each of them. The study concludes by summarizing and stating the implications of the study including suggesting areas of further research.

General Description of a Value-Added Tax

Types of Value-Added Taxes

The value-added tax is a tax "imposed on the value that a business firm adds to the goods and services it purchases from other firms."[1] There are three types of value-added tax. The main distinguishing characteristic of each type is its treatment of capital outlays. A succinct description of each has been given by Robert Statham:

> Under the "gross product" type of value-added tax, there is no provision for a deduction of the cost of capital outlays, nor is there provision made for the depreciation of such items. . . .
>
> Under the "income" type, provision is made for the deduction of the cost of capital investments through the use of depreciation. . . .

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[1]Carl S. Shoup, Public Finance (Chicago: Aldine Publishing Co., 1969), p. 251.

> Under the "consumption" type of value-added tax, provision is made for the full deduction of capital outlays in the year they are purchased.[2]

The particular type of VAT could affect a firm's decision to invest in capital equipment. With a "gross product" type there is no reduction in the VAT paid to the government as a result of a capital investment, while with the "income" type there is a reduction in VAT paid over some period, and with the "consumption" type the reduction occurs in the year of purchase.

Methods of Computing the Value-Added Tax

The tax may be computed by either the additive or subtractive method. Alan Tait describes the subtractive method as "...value added (V/A), equals total output (O), minus total input (I) of purchases...."[3] Tait continues, "...the difference between output and the inputs of... [purchases]..., is the payments of wages and salaries (W), and the residual, which we will call profit (P)."[4] Thus, O - I = W + P. The summation of the payments to the factors of production to determine the value added, V/A = W + P, is called the additive method.[5] The amount of

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[2]Robert R. Statham, "The Value Added Tax--What it is and How it Works," mimeographed (Washington, D.C.: Taxation Committee, Chamber of Commerce of the United States, 22 February 1972), p. 7.

[3]Alan A. Tait, Value Added Tax (London: McGraw-Hill, 1972), p. 2.

[4]Tait, Value Added Tax, p. 2.

[5]Described by Clara Sullivan, "The addition approach consists of adding various bookkeeping items, specifically the payments made by the firm to the factors of production employed in turning out the product, such as wages, interest, rent, royalties, and profits." Clara K. Sullivan, The Tax on Value Added (New York: Columbia University Press, 1965), p. 7.

value added is the same whether computed by the additive or subtractive method.

$$W + P = V/A = O - I$$

The total value-added tax (V/AT) can be determined in the following six ways:[6]

where: t = the tax rate or rates

W, P, O, and I = individual transactions for wages, profit, output (sales), and input (purchases), respectively

Σ = summation of

direct additive method

(1) $V/AT = t\ (\Sigma\ W + \Sigma\ P)$

(2) $V/AT = t\ \Sigma\ W + t\ \Sigma\ P$

direct subtractive method

(1) $V/AT = t\ (\Sigma\ O - \Sigma\ I)$

(2) $V/AT = t\ \Sigma\ O - t\ \Sigma\ I$

indirect additive method

$V/AT = \Sigma\ tW + \Sigma\ tP$

indirect subtractive method

$V/AT = \Sigma\ tO - \Sigma\ tI$

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[6]Tait in his presentation of the direct and indirect methods omits summation signs. See Tait, Value Added Tax, pp. 3-4. For example, his indirect subtractive method appears as = tO - tI. In attempting to apply this to an individual firm with numerous sales and purchases, it is unclear whether the amount of the individual sales should be summed and the tax calculated on the total or whether the tax should be calculated on each individual sale and the amount of the tax summed. A similar confusion exists concerning purchases.

With the direct additive or the direct subtractive (sometimes called "sales-or cost-subtraction method"[7] and "net turnover tax with prior turnover deduction"[8]) methods a firm's VAT liability would be the firm's total value added times the VAT rate or the VAT rate could be applied to each component used in determining the total amount of value added by the firm. It would thus be possible to tax each component at a different VAT rate. Using either the direct additive or direct subtractive methods, a firm's VAT liability can be determined from its ledger accounts.[9] No VAT computations have to be made with regard to individual invoices and no change in the firm's invoicing process is required in order to determine the VAT owed.

Using the indirect additive method, a firm's VAT liability would be the summation of the VAT applicable to each individual payment to the factors of production (wages, interest, rent, royalties, and profits).

Using the indirect subtractive method (sometimes called "tax credit"[10] and "prior tax deduction"[11]) the VAT rate is applied to each of the firm's sales and the amount of VAT is determined. The individual amounts are summed to determine the tentative tax. The VAT applicable

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[7]Sullivan, The Tax on Value Added, p. 7.

[8]Walter Missorten, "Some Problems in Implementing a Tax on Value-Added," National Tax Journal, 21 (December 1968): 388.

[9]This is demonstrated in Sullivan, The Tax on Value Added, pp. 204-12, and Table 1 of this study.

[10]Sullivan, The Tax on Value Added, pp. 7-8.

[11]Tait, Value Added Tax, p. 4.

to each of the firm's purchases is also summed. The firm's VAT liability is the total VAT collected on sales less the total amount of VAT paid to firms that have sold goods and services to the firm in question.

Tait indicates that the direct methods are sometimes called the "accounts method" and the indirect methods are sometimes called the "invoice method."[12] With the direct methods the amounts of wages or sales, for example, are taken from the invoices and accumulated in the ledger accounts of the firm in the usual fashion. Periodically the VAT rate is applied to the ledger account balances to determine the VAT liability. Thus the firm's VAT liability is determined by reference to the ledger accounts of the firm. With the indirect methods the amount of the VAT must be determined for each transaction and shown on the invoice for that transaction. The amounts of VAT applicable to each transaction are accumulated in the firm's ledger. Thus the firm's VAT liability is determined by reference to the invoices of the firm.

There are, of course, various possible combinations of the direct and indirect methods and this leads to ambiguous terminology. For example, when Shoup describes the "tax credit" method he applies the VAT rate to the firm's total sales ($t \Sigma O$), but for purchases he sums the VAT on each transaction (ΣtI).[13] The "tax credit" method that has gained wide acceptance, particularly in Europe, is the indirect subtractive method described above and by Sullivan,[14] the sum

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[12]Tait, Value Added Tax, p. 4.

[13]Shoup, Public Finance, p. 258.

[14]Sullivan, The Tax on Value Added, pp. 7-10.

of the VAT on individual sales less the sum of the VAT on individual purchases (Σ tO - Σ tI).

The three types of value-added tax (gross product, income, and consumption), the direct additive and direct subtractive methods of computing the tax, and the base(s) to which the value-added tax rate(s) could be applied, are shown in the following example: assume that a firm purchases a capital asset having a two-year life for $40; then assume that for each of two years: the firm's sales total $100; its purchases (excluding capital assets) from other firms total $35 and all of these purchases were resold (to avoid any problem with inventories); and its payroll totalled $30; also assume that there is a single VAT rate of 4%. This example is illustrated in Table 1.[15]

The accounting profit each year would be 15 (sales of 100 - purchases of 35 - payroll of 30 - depreciation of 40 ÷ 2).

The firm's VAT liability in year 1 for an "income" type of VAT under the direct additive and direct subtractive methods as follows:

direct additive method

(1) $V/AT = t(\Sigma W + \Sigma P) = .04\ (30 + 15) = 1.8$

(2) $V/AT = t\ \Sigma W + t\ \Sigma P = .04\ (30) + .04\ (15) = 1.8$

direct subtractive method

(1) $V/AT = t(\Sigma O - \Sigma I) = .04\ (100 - 35 - 20) = 1.8$

(2) $V/AT = t\ \Sigma O - t\ \Sigma I = .04\ (100) - .04\ (35) - .04\ (120) = 1.8$

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[15]For a fuller discussion of the types of value-added taxes and the methods of computing them, see Tait, Value Added Tax, pp. 2-4, Shoup, Public Finance, pp. 250-61, and particularly Sullivan, Tax on Value Added, Chapter 5.

Table 1. Calculation of the Value-Added or VAT Base(s) to Which the VAT Rate(s) Could be Applied for the Direct Additive and Direct Subtractive Methods.

TYPE OF VAT	Direct Additive Method of Computing the VAT			Direct Subtractive Method of Computing the VAT	
	Year 1	Year 2		Year 1	Year 2
"Gross product"					
Payroll	30	30	Sales	100	100
Profit	15	15	Less Purchases	35	35
Depreciation	20	20			
Value Added	65	65	Value Added	65	65
"Income"					
Payroll	30	30	Sales	100	100
Profit	15	15	Less Purchases	35	35
			Less Depreciation	20	20
Value Added	45	45	Value Added	45	45
"Consumption"					
Payroll	30	30	Sales	100	100
Profit	15	15	Less Purchases	35	35
Depreciation	20	20	Less Capital Outlay	40	0
Less Capital Outlay	40	0			
Value Added	25	65	Value Added	25	65

An example showing the three types of value-added tax and the indirect additive and indirect subtractive methods requires the following additional assumptions: the sales consist of a transaction of 60 and one of 40; purchases (excluding capital assets) consist of a transaction of 20 and one of 15; payroll consists of a transaction of 20 and one of 10; and the 40 purchase of the capital asset, 20 yearly depreciation, and the 15 profit were each single transactions. Table 2 shows the accumulation of the VAT that would have been computed for each transaction.

Table 2. Calculation of the Value-Added Tax for the Indirect Additive and Indirect Subtractive Methods

TYPE OF VAT	Indirect Additive Method of Computing the VAT			Indirect Subtractive Method of Computing the VAT	
	Year 1	Year 2		Year 1	Year 2
"Gross product"					
Payroll	.8	.8	Sale	2.4	2.4
Payroll	.4	.4	Sale	1.6	1.6
Profit	.6	.6	Less Purchase	.8	.8
Depreciation	.8	.8	Less Purchase	.6	.6
Tax Due	2.6	2.6	Tax Due	2.6	2.6
"Income"					
Payroll	.8	.8	Sale	2.4	2.4
Payroll	.4	.4	Sale	1.6	1.6
Profit	.6	.6	Less Purchase	.8	.8
			Less Purchase	.6	.6
			Less Depreciation	.8	.8
Tax Due	1.8	1.8	Tax Due	1.8	1.8
"Consumption"					
Payroll	.8	.8	Sale	2.4	2.4
Payroll	.4	.4	Sale	1.6	1.6
Profit	.6	.6	Less Purchase	.8	.8
Depreciation	.8	.8	Less Purchase	.6	.6
Less Capital Outlay	1.6	0	Less Capital Outlay	1.6	0
Tax Due	1.0	2.6	Tax Due	1.0	2.6

The firm's VAT liability in Year 1 for an "income" type of VAT under the indirect additive and indirect subtractive methods is as follows:

indirect additive method

$$V/AT = tW + tP$$
$$= .04\ (20) + .04\ (10) + .04\ (15) \qquad = 1.8$$

indirect subtractive method

$$V/AT = tO - tI$$
$$= .04\ (60) + .04\ (40) - .04\ (20) - .04\ (15) - .04\ (20)$$
$$= 1.8$$

In taxation literature, the indirect subtractive method ("tax credit" method) is frequently presented in a different form to emphasize the flow of goods from one firm to the next in the production process. This other form may be seen in Table 3 for the consumption type of VAT. In Table 3 it is assumed that Firm B produces goods from "thin air" and sells them to Firm A, that the VAT rate is 4% and that the data assumed in Tables 1 and 2 applies to Firm A. The amounts shown for Firm A represent the summation of the following individual transactions: sale of 60+VAT of 2.4 and sale of 40+VAT of 1.6; purchase of 20+VAT of .8 and purchase of 15+VAT of .6; and capital outlay of 40+VAT of 1.6.

While Table 3 represents the indirect subtractive method ($\Sigma\ tO - \Sigma\ tI$) it is very similar to one that would represent the direct subtractive method ($t\ \Sigma\ O - t\ \Sigma\ I$). Were the description "on which VAT was paid" dropped from the purchases title, Table 3 would represent the direct subtractive method applied to a consumption type of VAT. Frequently authors use a table such as Table 3 to illustrate the tax credit method and label the purchases simply as purchases from other firms.[16] Confusion as to how an individual firm would determine its VAT liability would be reduced if authors stated whether it was by the direct subtractive

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[16]For example, see Cambridge Research Institute, Prepared for American Retail Federation, The Value-Added Tax in the United States--Its Implications for Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970), pp. 17-9.

method and the firm referred to their accounts or whether it was the indirect subtractive method and the firm referred to their invoices.

Table 3. Calculation of the Value-Added Tax: Indirect Subtractive Method Applied to a Consumption Type of VAT (Alternative Form of Presentation).

	Year 1				
	Amount Exclusive of VAT	+	VAT	=	Total Amt. Paid or Collected
Firm A					
Sales	100	+	4	=	104
Less Purchases from other firms on which VAT was paid	75	+	3	=	78
Equals Value added	25				
Equals VAT due government			1		
Firm B					
Sales	75	+	3	=	78
Less Purchases from other firms on which VAT was paid	0	+	0	=	0
Equals Value Added	75				
Equals VAT due government			3		

Classification of a Value-Added Tax as a Sales Tax

Confusion over the classification of a VAT has brought about errors in estimating its effects and has thus generated undue criticism of such taxes. The imprecise classification of a VAT becomes important

when statements are made indicating either the amount of VAT that would be passed on to the consumer[17] or the degree of regressivity of the VAT.[18]

The confusion seems to arise from a failure to distinguish among different types of sales taxes, methods of computing the VAT, and types of VAT. For instance, J. Boddewyn and others say that a VAT is or "is essentially" a sales tax differing only in method of collection.[19] Paul Samuelson and others say that the VAT is a tax on consumption expenditures collected in installments.[20] Unless it is assumed that all sales taxes are taxes on consumption, these two statements cannot be reconciled. The AFL-CIO and others state that a VAT is or "is essentially" a retail sales tax.[21] This is countered by Richard Lindholm, "The only

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[17]Hugh Scott, "President vs. Congress--The Outlook Now: Interview with Hugh Scott, Republican Leader in the Senate," U.S. News & World Report, 28 February 1972, p. 33.

[18]Edwin L. Dale, Jr., "Nixon Weighing Revenue Sharing Linked to 'Value Added' Tax," New York Times, 21 December 1970, p. 17.

[19]J. Boddewyn, "Readers Report--Defining Value Added," Business Week, 8 April 1972, p. 5; Commission of the European Communities, Memorandum Concerning Border Tax Adjustments (Brussels: European Economic Community, 2 April 1969), p. 6; and Mel Krauss and Richard M. Bird, "The Value Added Tax: Critique of a Review," Journal of Economic Literature, 9 (December 1971): 1167.

[20]Paul A. Samuelson, "The Value-Added Tax," Newsweek, 6 March 1972, p. 63; and National Economic Development Office, Value Added Tax: A Report by the National Economic Development Office, 2d. ed. (London: Her Majesty's Stationary Office, 1971), p. 9.

[21]AFL-CIO Legislative Department, "The Value-Added Tax--A National Sales Tax," 1972 Fact Sheet No. 2, mimeographed (Washington, D.C.: AFL-CIO, 1972), as reported in Statham, VAT, p. 5; J. Russell Boner, "Miracle Levy Goes Awry," Wall Street Journal, 14 October 1969, p. 38; James A. Papke, "Discussion," National Tax Journal, 24 (September 1971): 415; and Stanley S. Surry, "Value-Added Tax: The Case Against," Harvard Business Review, 48 (November-December 1970): 86.

similarity that a VAT has to a retail sales tax is that under both taxes tax liability develops when a sale takes place."[22] In contrast to the above-mentioned authors, Carl Shoup categorizes taxes as broadly based (e.g., general sales tax or income tax) and narrowly based (e.g., commodity tax).[23] He further subdivides the general sales tax into the following five types: the turnover tax, the manufacturers' sales tax, the wholesale sales tax, the retail sales tax, and the value-added tax.[24] Moreover, he specifies one type of VAT, the consumption type, when he discusses incidence.[25] Most other writers, however, fail to identify the type of VAT or its method of computation.[26] The VAT should be classified as a general

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[22]Richard W. Lindholm, "The Value Added Tax: Rejoinder to a Critique," Journal of Economic Literature, 9 (December 1971): 1175.

[23]Shoup, Public Finance, pp. 7, 9.

[24]Shoup in Public Finance describes each as follows:

turnover tax - a tax on "all transfers for a consideration in the production and distribution of goods and services" (p. 208);

manufacturers' sales tax - a tax on "the value of the commodity as it leaves the last manufacturing firm to process it" (p. 234);

wholesalers' sales tax - a tax on sales by those (wholesalers and manufacturers) who sell directly to retailers and on manufacturers who sell directly to consumers (p. 241);

retail sales tax - a tax on "consumer purchases of goods and services" (p. 244); and

value-added tax - a tax on "the value that a business firm adds to the goods and services that it purchases from other firms" (p. 251).

[25]Shoup, Public Finance, pp. 207, 212-8, 236, 242, 244-5, 264-5.

[26]For example, the references cited in footnotes 19-22 above do not indicate both the type and method of computing the VAT to which they refer.

sales tax for without positive sales the firm would not have positive value added on which to levy the VAT.[27]

Comparisons of a VAT with a sales tax would be more valid if both the type and method of computing the VAT were specified as well as the type of general sales tax with which the VAT is being compared. For example, the tax incidence of a consumption type of VAT computed using the indirect subtractive method may be considerably different from that of a gross product type of VAT computed using the direct additive method, and both may be different from a wholesale sales tax or a retail sales tax. Thus, not all criticism of the VAT as a sales tax is valid, as a comparison of two unspecified items does not yield useful results.

Background Concerning the Proposal and Adoption of Value-Added Taxes

Since a substantial literature exists concerning value-added taxes, this section aims to provide only a brief survey of the background

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[27]With the subtractive method of computing the VAT the value added (V/A) = output (O) or sales - input (I) or purchases from other firms. With the additive method V/A = wages (W) + profits (P). Substituting, W + P = O - I. Rearranging P = O - I - W. The value for sales (O) can be positive, zero, or negative (meaning sales returns exceed sales, an unusual occurrence). The value for expenses (I or W) can be larger than sales, the same size, or smaller than sales. It would be unusual for expenses to be negative (meaning purchase returns exceed purchases). Of the nine possible combinations of sales and expenses the three involving negative sales and the one with sales equal zero and expenses less than zero are unusual. If sales equal zero or are positive and expenses equal sales, the value added equals zero. If sales equal zero or are positive and expenses are larger than sales, then the firm has negative value added. Only if the firm has positive sales in an amount exceeding the expenses does the firm have positive value added. Positive amounts of sales are thus essential for the levying of the VAT.

of such taxation in Europe and the United States.[28] The VAT was proposed for at least thirty-five years before it was first adopted by any government. In the U.S., it was first proposed in 1921 by Thomas Adams, who is thought to have been influenced by Carl von Siemens of Germany. Siemens proposed the use of a VAT in 1918.[29] Senators Reed Smoot and J. C. O'Mahoney proposed federal VAT legislation in 1921 and 1940, respectively.[30] In 1932 the Brookings Institution recommended a VAT for the State of Alabama.[31] In 1949 the Shoup Mission recommended the adoption of this form of tax by Japan. The Japanese Diet passed legislation for a VAT but it was never put into effect.[32] In the 1950's the VAT was adopted in both Europe and the United States. In 1953, Michigan adopted a modified form, which was called

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[28]Chamber of Commerce of the United States, "Value Added Taxation Bibliography," mimeographed (Washington, D.C.: Chamber of Commerce of the United States, 1972), pp. 1-26; Tax Foundation, Incorporated, "Research Bibliography Number 45--Value Added Taxes," mimeographed (New York: Tax Foundation, January 1971), pp. 1-9; and Jeanne-Louise Haviland, compiler, "References on Value-Added Taxation," Tax Policy, 39 (March-April 1972 and October-November-December 1972): 1-12, 135-8.

[29]John F. Due, "Value-Added Tax Proposals in the United States," Public Finance and Welfare: Essays in Honor of C. Ward Macy, edited by Paul L. Kleinsorge (Eugene: University of Oregon Books, 1966), pp. 112-3.

[30]Due, "VAT Proposals," p. 114; and Richard W. Lindholm, "The Value Added Tax: A Short Review of the Literature," Journal of Economic Literature, 8 (December 1970): 1178.

[31]Due, "Vat Proposals," p. 116.

[32]For a fuller discussion see Sullivan, Tax on Value Added, Chapter 3.

the Business Activities Tax.[33] France adopted a consumption type of VAT in 1954.[34] During the next few years the VAT was discussed and considered by other governments but was not adopted by any of them.[35] A major event occurred in 1967 when the Council of the European Economic Community adopted the First Directive of the Council, which stated: "The Member States are to replace their present system of turnover taxation by the common system of tax on value added defined in Article 2."[36] Since the Directive, France has simplified its VAT system. Numerous other countries, both members and non-members of the European Economic Community, have a VAT. These countries include Belgium, Denmark, Germany, Italy, Luxembourg, the Netherlands, Norway, and Sweden.[37] Special committees on

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[33]Michigan, Public Acts of 1953, Act No. 150. For an extensive treatment of the Michigan experience, see: Robert D. Ebel, "Value Added Taxation in the Subnational Economy: An Empirical Analysis and Evaluation," (Ph.D. diss., Purdue University, 1971); Robert D. Ebel, "The Michigan Business Activities (Value Added) Tax: A Retrospective Analysis and Evaluation," Proceedings of the Sixty-First Annual Conference on Taxation (Columbus: National Tax Association, 1969), pp. 90-107; James A. Papke, "Michigan's Value Added Tax After Seven Years," National Tax Journal, 13 (December 1960): 350-63; and James A. Papke, "The Theory and Practice of Value Added Taxation," (Ph.D. diss., Cornell University, 1959). Robert Ebel's dissertation, with some changes, has been published as The Michigan Business Activities Tax (East Lansing: Michigan State University, 1972).

[34]Sullivan, Tax on Value Added, p. 75.

[35]Cambridge Research Institute, VAT, p. 28.

[36]Council of the European Economic Community, "First Directive of the Council of 11 April 1967," European Taxation 3 (November-December 1969): 299-300.

[37]For a discussion of experience with a VAT in Europe, see: Cambridge Research Institute, VAT, Chapter 4; Edwin S. Cohen, "Treasury Says European Experience with Value Added Tax is Favorable," Journal of Taxation 35 (November 1971): 316-8; National Economic Development Office, VAT: Report,

taxation in Canada, the United Kingdom, and the United States all recommended against the adoption of a VAT,[38] although the United Kingdom has since replaced two taxes with it.[39]

In the United States, it has proven much more difficult for a VAT to be accepted. Michigan repealed its Business Activities Tax in 1967 and

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Chapter 4; Maurice E. Peloubet, "European Experience with Value-Added Taxation," Alternatives to Present Federal Taxes, Tax Institute of America (Princeton, N.J.: Tax Institute of America, 1964), pp. 64-75; Stanley S. Surry, "Implications of Tax Harmonization in the European Common Market," Conference Board Record, 5 (April 1968): 14-9; and Alfred Zanker, "Europe's Value-Added Tax: Model for U.S.?" U.S. News & World Report, 6 March 1972, pp. 75-7. In France, see: Cambridge Research Institute, VAT, Appendix B; Georges Egret, "The Value-Added Tax in France," Value Added Tax: The U.K. Position and the European Experience, Edited by T. M. Rybczynski (Oxford: Basil Blackwell, 1969), pp. 20-9; Francesco Forte, "On the Feasibility of a Truly General Value Added Tax: Some Reflections on the French Experience," National Tax Journal, 19 (December 1966): 337-61; Richard W. Lindholm, "The French Value-Added Tax," Oregon Business Review, 27 (February 1968): 1-4; and Sullivan, Tax on Value Added, Chapter 2. In Germany, see: Cambridge Research Institute, VAT, Appendix C; "Value-Added Tax--Is it Blessing or Bane?" Management Accounting (London) 49 (August 1971): 235-7; and Manfred Schirm, "The Value-Added Tax in Germany," Value Added Tax: The U.K. Position and the European Experience, edited by T. M. Rybczynski (Oxford: Basil Blackwell, 1969), pp. 30-43. In Sweden and Denmark, see: Carl S. Shoup, "Experience with the Value-Added Tax in Denmark, and Prospects in Sweden," Finanzarchiv, 28 (March 1969): 226-52; and Martin Norr and Nils Hornhammar, "The Value-Added Tax in Sweden," Columbia Law Review, 70 (March 1970): 379-422.

[38]Committee on Turnover Taxation (Richardson Committee), Report of the Committee on Turnover Taxation, Cmnd 2300 (London: Her Majesty's Stationary Office, 1964), p. 84; President's Task Force on Business Taxation, Report of the President's Task Force on Business Taxation (Washington, D.C.: Government Printing Office, 1970), p. 61; and Royal Commission on Taxation (Carter Commission), Report of the Royal Commission on Taxation, vol. 5 (Ottawa: Queen's Printer, 1966), p. 50.

[39]United Kingdom, Chancellor of the Exchequer, Value Added Tax, white paper (London: Her Majesty's Stationary Office, 1972).

replaced it with a corporate and personal net income tax.[40] After considering and rejecting a VAT in 1967, the West Virginia legislature passed a VAT in 1970, only to have the tax vetoed by the Governor.[41] In 1971, another VAT died in the Minnesota legislature.[42]

On the United States federal level, however, a VAT has been under consideration at least since early 1970.[43] President Nixon spoke about considering it in January 1971.[44] In 1972 there was considerable interest in a VAT including Congressional Hearings.[45] A possible VAT proposal was said to be under consideration with a few of the details being:

> The rate of the tax would be 2-1/2 or 3 percent. It would be paid at every step of the manufacturing and distribution process on all products and nearly all services.
>
> (The tax plan) would provide rebates of at least part of the tax not only to poor families but also to others, ranging well into the upper-middle income category--for example, a family of four with an income of $20,000 a year.[46]

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[40] Michigan, Public Acts of 1967, Act No. 281.

[41] Cambridge Research Institute, VAT, p. 28.

[42] B. Kenneth Sanden, "The Value Added Tax: Its Application and Practice," Proceedings of the Sixty-Fourth Annual Conference on Taxation (Columbus: National Tax Association, 1972), p. 123.

[43] "On the Prowl for New Taxes," Business Week, 3 January 1970, p. 12.

[44] Richard M. Nixon, "Transcript of Four Correspondents Interview with President at the White House," New York Times, 5 January 1971, p. 20.

[45] U.S. Congress, Joint Economic Committee, Hearings before the Joint Economic Committee, The Value-Added Tax (Washington, D.C.: Government Printing Office, 1972) and Tax Institute of America, "A Value Added Tax - Symposium," Tax Policy, 39 (October-November-December 1972).

[46] Eileen Shanahan, "Nixon's Tax Plan Includes Rebates to Most Families," New York Times, 6 February 1972, p. 1.

As of June 1972, however, Gerald Brannon, Acting Director, Office of Tax Analysis, The Department of the Treasury, stated, "I also would like to stress that the Treasury does not have a specific value added tax proposal."[47] During the summer of 1972 various polls reported that people were not in favor of a VAT as a means of reducing local property taxes.[48] From that time to the present (March 1974) virtually no mention has been made of a federal VAT. One group, the Institute for the Future, however, has estimated a 40% probability that a modest (3%) value-added tax will be passed by 1985.[49]

Current Pressure for a Value-Added Tax in the United States

The need and desirability of a VAT, particularly at the federal level, received considerable attention in the U.S. from 1966 to 1972. Perhaps

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[47]Gerard M. Brannon, letter to the author dated June 23, 1972.

[48]A Gallup poll of 1614 adults reported 51% against a national sales tax or a VAT as a means of relieving property taxes; 34% were for the tax; and 15% had no opinion (New York Times, 27 August 1972, p. 20). Over 11,500 replies to a questionnaire of a Congressman from Massachusetts showed 57% did not, "...support the concept of a value-added tax (national sales tax) as a partial substitute for local property taxes," while 43% did (Washington Newsline by Congressman Silvio O. Conte, July 1972, p. 2). The President's Advisory Commission on Intergovernmental Relations was against a VAT (New York Times, 15 December 1972, p. 36) as was the National Governor's Conference (New York Times, 8 June 1972, p. 23), the Platform Committee of the Democratic National Convention (New York Times, 29 June 1972, p. 29) and a poll of persons on the Republican National Committee's mailing list (New York Times, 25 July 1972, p. 18).

[49]"A Think Tank That Helps Companies Plan," Business Week, 25 August 1973, p. 70.

the most frequently mentioned reason for adopting a VAT is that it would improve the U.S. balance of trade, since a VAT on exports may be remitted whereas most other taxes may not be. The General Agreement on Tariffs and Trade (GATT) prohibits export subsidies to industrial and commercial enterprises in the form of the remission of direct taxes or social welfare charges, but a VAT (as well as a single stage retail sales tax) is excluded from all prohibitions.[50] Thus a VAT can stimulate exports to the extent that it replaces other taxes that cannot be remitted. If the VAT replaces a tax, imports would tend to be discouraged as the price of the domestic goods need not include an amount for the replaced tax while imports would continue to include an amount for the taxes of the foreign country as well as the added VAT. The significance of such stimulation would depend, however, on the rate of the VAT,[51] as well as on other factors. While Norman Ture states that the substitution of a VAT for the corporate income tax would result in "quite limited" short run effects on the balance of trade, Maurice Weinrobe concludes that the same substitution would result in "a substantial improvement in the balance of trade."[52]

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[50]General Agreement on Tariffs and Trade, Analytical Index 3rd rev. (Geneva: Contracting Parties to the General Agreement on Tariffs, 1970), Article XVI.

[51]Surry, "VAT: Case Against," p. 92.

[52]Maurice D. Weinrobe, "Corporate Taxes and the United States Balance of Trade," National Tax Journal, 24 (March 1971): 85. Norman B. Ture, 48th Annual Report, National Bureau of Economic Research, Inc. (New York: National Bureau of Economic Research, 1968), p. 52, and this was based on National Bureau of Economic Research and the Brookings Institution, The Role of Direct and Indirect Taxes in the Federal Revenue System (Princeton, N.J.: Princeton University Press, 1964). For a discussion of value-added

A second reason often given for adopting a federal VAT is that it could felicitously reduce the corporate income tax (CIT). The Committee for Economic Development as well as others have endorsed such a replacement of some of the CIT.[53] It has been said that a VAT of 2 to 5 percent would permit the CIT to be reduced 8 to 28 percentage points.[54] A reduced CIT would reduce the amount of pretax profits required for a firm to achieve the same after tax return on a capital investment.[55] This would make capital investment more attractive for

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taxes and U.S. international trade, see: Gordon T. Butler, "The Value-Added Tax: A New $40 Billion Tax for the United States?" Texas Law Review, 50 (January 1972): 267-311; Tax Foundation, Inc., Tax Harmonization in Europe and U.S. Business (New York: Tax Foundation, 1968); Charles E. McLure, Jr. and Norman B. Ture, Value Added Tax: Two Views Washington, D.C.: American Enterprise Institute for Public Policy Research, 1972); and Francis Joseph Pettit, "Effects on Selected Steel Imports of Substitution of a Value-Added Tax for the Corporation Income Tax," (D.B.A. diss., George Washington University, 1970).

[53]Committee for Economic Development, A Better Balance in Federal Taxes on Business (New York: Committee for Economic Development, 1966), p. 10; James D. Phyfe, "The Case for Replacing the Corporation Income Tax with a Value-Added Tax," Public and International Affairs, 5 (Spring 1967): 189; Richard W. Lindholm, "Value Added Tax vs. Corporation Income Tax," Business Economics 5 (January 1970): 62; Maurice E. Peloubet, "Statement," Federal Excise Tax Structure, U.S. Congress, House Committee on Ways and Means, Hearings before the Committee on Ways and Means (Washington, D.C.: Government Printing Office, 1964), p. 1271; Dan Throop Smith, "The Value Added Tax as an Alternative to the Corporate Income Tax," Proceedings of the Fifty-Seventh Annual Conference on Taxation (Harrisburg: National Tax Association, 1965), p. 460; and Dan Throop Smith, "Capital Formation and the Use of Capital," American Economic Review, 53 (May 1963): 318.

[54]President's Task Force on Business Taxation, Report, p. 66.

[55]Norman B. Ture, "Economic Aspects of a United States VAT," Tax Policy, 39 (October-November-December 1972): 37-8 and Shoup, Public Finance, pp. 298-302.

corporations, and this would stimulate the economy.[56] With higher profits the corporations would tend to pay higher cash dividends thus affecting stock prices.[57]

The VAT, in contrast to the CIT, is often described as a neutral tax. The CIT lacks neutrality in respect to form of ownership (corporation vs. proprietorship), financing (debt vs. equity), and efficiency (profitable vs. unprofitable firms).[58]

Stanley Surry attacks the VAT's neutrality by arguing that business simply collects the VAT; the incidence of the tax falls entirely on the consumer. Therefore, the neutrality of the tax towards business is irrelevant to the question of the neutrality of the tax toward taxpayers.[59]

Another reason for adopting a federal VAT is that it could substitute for some or all of the payroll taxes used to finance the social security system, since payroll taxes are regressive and tax only a single factor of production, labor.[60] However, this use of a

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[56]Others are less sure about the amount of stimulation the substitution would provide. See John F. Due, "Discussion," National Tax Journal, 24 (September 1971): 418; and Richard E. Slitor, "The Value-Added Tax as an Alternative to Corporate Income Tax," Alternatives to Present Federal Taxes, Tax Institute of America (Princeton, N.J.: Tax Institute of America, 1964), pp. 41-2.

[57]Joseph A. Pechman, "Fiscal Federalism for the 1970's," National Tax Journal, 24 (September 1971): 281.

[58]Dan Throop Smith, "Value Added Tax: The Case For," Harvard Business Review, 48 (November-December 1970): 79-80.

[59]Surry, "VAT: Case Against," p. 89.

[60]President's Task Force on Business Taxation, Report, pp. 69-70.

VAT was rejected in 1970 by the President's Task Force on Business Taxation.

Still another reason for adopting a federal VAT is what Arnold Harberger calls "the most important advantage of a value-added tax: its potential as an instrument of flexible fiscal policy."[61] Rates of change in the tax could be made easily, would be felt directly throughout the entire economy, and would begin to impact immediately on individual buying decisions.

The editor of the Christian Science Monitor has stated that the "most valid argument for the VAT is to raise additional revenues at the federal level."[62] Edwin Dale feels that our means of raising large amounts of revenue are so depleted that the VAT may be "the last practicable means" of doing this.[63] With no reduced rates, exemptions, or rebates, it has been estimated that each percentage

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[61]Arnold C. Harberger, "A Federal Tax on Value-Added," The Taxpayer's Stake in Tax Reform, compiled by the Chamber of Commerce of the United States (Washington, D.C.: Chamber of Commerce of the United States, 1968), p. 28, and Arnold Harberger, "Statement on the Value Added Tax," Tax Changes for Shortrun Stabilization, U.S., Congress, Joint Economic Committee, Hearings Before the Subcommittee on Fiscal Policy of the Joint Economic Committee (Washington, D.C.: Government Printing Office, 1966), pp. 66-9. Henry C. Wallich ("The Brewing Interest in VAT," Fortune, 83 (April 1971: 115) indicates that a VAT could be used as an income stabilizer.

[62]Editorial, "A Way to Fund Revenue Sharing?" Christian Science Monitor, 2 March 1971.

[63]Dale, "Nixon Weighing Revenue Sharing," p. 17.

point of VAT rate would yield $6 billion in revenue.[64] With reduced VAT rates for food and exemptions for charity, or tax rebates to low income persons, each percentage point of VAT rate would yield approximately $4 billion.[65] By comparison, increasing all personal income tax rates 10% would yield $9 billion.[66] Expenditures that have been cited as requiring additional revenue are "galloping federal spending," paying "the cost of new incentives for business investment," and revenue sharing with the states for property tax relief and school financing.[67]

In summary, the reasons that have been given for adopting a federal VAT include the improvement that a VAT would effect in the balance of trade, the reduction of corporation income and payroll

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[64]Cambridge Research Institute, VAT, pp. 74-7; and Shanahan, "Nixon's Tax Plan," p. 1. Using 1972 data, Allen Sinai indicates $7.8 billion per percentage point of VAT rate (U.S., Congress, The Value-Added Tax, p. 133). For comparison, 1971 Federal budget receipts in billions of dollars totalled 188, with individual income taxes 86, corporation income taxes 27, employment taxes and contributions 42, excise taxes 17, unemployment taxes 4, estate and gift taxes 4, customs duties 3, contributions for other insurance and retirement 3, miscellaneous (and rounding) 2 (Richard M. Nixon, Economic Report of the President (Washington, D.C.: Government Printing Office, 1972), p. 271.)

[65]Cambridge Research Institute, VAT, p. 76 and the Brookings Institution, New York Times, 25 May 1972, p. III-3.

[66]American Bar Association, A Report of a Subcommittee of the Special Committee on Value-Added Tax, "Should the United States adopt the Value-Added Tax? - A Survey of the Policy Considerations and the Data Base," Tax Lawyer, 26 (Fall 1972): 52.

[67]"Newsgram," U.S. News & World Report, 3 April 1972, p. 10; "How to Revive Capital Spending," Business Week, 22 August 1970, p. 58; and "Shultz Confirms 'Value-Added Tax' Studied as Means to Avert School Financing Crisis," Wall Street Journal (Midwest), 7 January 1972, p. 3.

taxes, the use of the VAT as an instrument of fiscal policy, and the power of the VAT to raise additional revenues.

Criticism of a federal VAT has been made by numerous people.[68] Much of the criticism is that it is regressive.[69] Occasionally mentioned is that a federal VAT invades the sales taxation field, a field that traditionally has been left to state and local governments.[70]

One of the reasons that a former governor of North Carolina is against a federal VAT is "...I do not believe the national system of appropriations and budget management can be trusted to allocate wisely the...[monies that]...could be raised from this last great source of new public revenue."[71] Some criticism of a VAT seems to stem only

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[68]AFL-CIO Legislative Department, "VAT," p. 5; Samuelson, "VAT," p. 63; Surry, "VAT: Case Against," p. 94. Others critical of a Federal VAT include: Senators Russell Long (D. La.), George McGovern (D. So. Dak.), and Henry Jackson (D. Wash.) in Raymond Lahr, "Nixon Seeks Full Study of Value-Added Tax Impact," Herald Traveler (Boston), 6 February 1972; Senator Fred Harris (D. Okla.) in James M. Naughton, "Connally Tells Senators Nixon Seeks Tax Reform," New York Times, 29 January 1971, p. 12; Senator Edmund Muskie (D. Maine) and Joseph Pechman (Brookings Institution) in "The Simmering VAT," Time, 28 February 1972, p. 20; Senator William Proxmire (D. Wis.) in "Proxmire Glares at Any Value-Added Tax: Vows Searching, Critical Look by Panel," Wall Street Journal (Midwest), 13 January 1972, p. 2; and the American Federation of Teachers and the Communication Workers of America in U.S., Congress, The Value-Added Tax, pp. 219-21.

[69]These critics seem to equate a VAT with a retail sales tax although they usually do not specify the type nor method of computing the VAT to which they refer. Neither do critics mention the possibility of VAT relief provisions for low income people. They evaluate the progressiveness of the VAT alone, rather than the progressiveness of the tax structure as a whole.

[70]Editorial, "A Way to Fund Revenue Sharing," Christian Science Monitor, 2 March 1971.

[71]Terry Sanford, "Balancing the Revenues," Tax Policy, 39 (October-November-December 1972): 128.

from self-interest. Joseph Barr, former Secretary of the Treasury and now vice-chairman of American Security and Trust Company, for example, opposes a VAT because "banking is in a favored position with respect to the corporate tax..." and might not receive favorable treatment under a VAT.[72]

Despite the validity of the reasons for adopting a VAT or of the criticisms of a VAT, some people say "the whole issue is a political one and political considerations will dominate the outcome."[73] As was stated in Business Week, "There is no painless tax."[74]

Pressure for adopting a VAT at the state level exists because of the states' revenue needs. State expenditures are expected to grow.[75] Courts in four states have struck down systems of financing public elementary and secondary education through local property taxation.[76] Use of a form of VAT at a state level has been tentatively approved by the Greater Detroit Chamber of Commerce and by Burns Stanley of the Ford

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[72]Joseph W. Barr, "Will the Value-Added Tax Solve Our Foreign Trade Problems?" Banking, 61 (May 1969): 44.

[73]Edward A. Sprague and Lillian W. Kay, "New Federal Revenue Source?--II," NAM Reports, 24 April 1972, p. 10.

[74]Editorial, "There is No Painless Tax," Business Week, 26 February 1972, p. 90.

[75]Pechman, "Fiscal Federalism," pp. 281-2.

[76]"The Coming Change in the Property Tax," Business Week, 12 February 1972, pp. 50-1. Although voters in California, Michigan, Colorado, and Oregon voted against sharply limiting the property tax as a source of funds for public education ("Yes to Tax on Property," New York Times, 12 November 1972, p. IV-7) and the U.S. Supreme Court declined to interfere ("School Taxes: Fair Enough?", Newsweek, 2 April 1973, p. 97) the State Supreme Court rulings of California and Michigan still stand as to the invalidity of school financing by property taxes (Newsweek, 2 April 1973, p. 97).

Motor Company, if local business property taxes used for school tax purposes are to be eliminated.[77] Brian O'Keefe of the Chrysler Corporation opposes a state VAT, however.[78] It has been suggested that states drop their sales taxes and piggyback on a proposed federal VAT (consumption type, indirect subtractive method).[79] Objection has been raised to this idea, however. With state income taxes moving closer to federal definitions, eliminating state sales taxes for a federal VAT with revenue sharing would further reduce the discretion that state and local taxing authorities could exercise over their fiscal structures.[80]

Review of Existing Literature Concerning the Cost to a Firm of Complying with a VAT

While the literature on compliance costs of taxes in general provided some assistance to the conduct of this study, little has been

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[77]Greater Detroit Chamber of Commerce, Board of Directors, "Official Policy on the State's Revenue System," mimeographed (Detroit: Greater Detroit Chamber of Commerce, July 6, 1971), pp. 4-5; Burns Stanley, "The Value-Added Tax and Its Effect on Business--Pros and Cons," Speech at CPA State Tax Forum, Detroit, November 8, 1971.

[78]Brian T. O'Keefe, "The Value Added Tax and Its Effect on Business--Pros and Cons," Speech at CPA State Tax Forum, Detroit, November 8, 1971.

[79]Richard W. Lindholm, "Integrating a Federal Value Added Tax With State and Local Sales Levies," National Tax Journal, 24 (September 1971): 403-11; and Naughton, "Connally Tells Senators," p. 12.

[80]Papke, "Discussion," p. 414. See also Due, "Discussion," pp. 417-9.

written that is directly applicable to the precise subject matter of the study.[81] The literature in value-added taxes usually includes no specific statements quantifying actual or possible compliance costs that a firm would incur. This section categorizes the existing literature that discusses VAT compliance costs.

To date, the most detailed studies of the actual or estimated cost to a firm of complying with a VAT are those by Phyllis Barker and by the Cambridge Research Institute.[82] The Barker study estimated the compliance costs for six United States

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[81]For studies on compliance costs of taxes in general, see: Aaron K. Neeld "Interim (Final) Report of the Committee on Cost of Taxpayer Compliance and Administration," Proceedings of the Fifty-Third (through Fifty-Eighth) Conference on Taxation (Harrisburg: National Tax Association, 1961-66), pp. 298-9, 402-28, 289-311, 475-6, 141-2, 369-94; J. L. Fisher, "How Much Does it Cost to Collect Sales Taxes?" Proceedings of the Fifty-Fourth Annual Conference on Taxation (Harrisburg: National Tax Association, 1962), pp. 619-24, 643, 650; Kenneth Stanton Johnston, Corporations' Federal Income Tax Compliance Costs (Columbus: Bureau of Business Research, Ohio State University, 1963); Fred J. Mueller, The Burden of Compliance: A Study of the Nature and Costs of Tax Collections by the Small Business Firm (Seattle: Bureau of Business Research, University of Washington, 1963); Burkhard Strümpel, "The Disguised Tax Burden Compliance Costs of German Businessmen and Professionals," National Tax Journal, 19 (March 1966): 70-7; U.S., Congress, House Committee on the Judiciary, Report of the Special Subcommittee on State Taxation of Interstate Commerce, vols.1 and 2--H.R. 1480, 88th Cong. 2nd sess., 1964, and vols. 3 and 4--H.R. 565 and H.R. 952, 89th Cong., 1st sess., 1965; Tax Foundation, Inc., State and Local Sales Taxes (New York: Tax Foundation, 1970), pp. 40-2; John H. Wicks and Michael N. Killworth, "Administrative and Compliance Costs of State and Local Taxes," National Tax Journal, 20 (September 1967): 309-15; and James C. Yocum, Retailers' Costs of Sales Tax Collection in Ohio (Columbus: Bureau of Business Research, Ohio State University, 1961).

[82]Phyllis A. Barker, "The Value-Added Tax - The Cost to the Businessman," Journal of Accountancy, 134 (September 1972): 75-9; Phyllis A. Barker, "Letters - Value-Added Tax," Journal of Accountancy, 135 (March 1973): 37; and Cambridge Research Institute, Prepared for American Retail Federation, The Value-Added Tax in the United States--Its Implications for Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970).

firms (a portion of the results of which are shown in Table 25). The hypothetical VAT law with which the firms were to comply was described as the indirect subtractive method, having one rate of VAT, and having no sales exempt from the tax. Little else was said about the hypothetical law. Thirteen sources of compliance costs were estimated, although the sources of the time estimates of each were not stated. The compliance costs estimated were what this study defines in Chapter II as continuing compliance costs. No dollar estimates were made of what this study defines as initial compliance costs. The results do not permit one to estimate the amount of fixed and variable compliance costs for any of the firms investigated. Neither do they offer assistance to a business firm attempting to estimate its compliance costs.

The Cambridge Research Institute estimated compliance costs (of retailers) to be 2 to 4 percent of the VAT collected.[83] The data for the Cambridge Research Institute study is taken from James Yocum's Retailers' Costs of Sales Tax Collections in Ohio.[84] However, the suitability of Yocum's data for estimating VAT compliance costs may be questioned. The Yocum study lists individual cost items, but the figures (e.g., wage rate and time) used in calculating the totals are not indicated. Individual cost items are grouped for reporting purposes and the compliance cost reported as a percent of tax liability, not in dollar amounts. This makes it necessary to know the tax liability of a firm before one could begin to estimate its compliance costs. In addition, the Ohio Sales Tax used tax stamps and the costs

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[83]Cambridge Research Institute, VAT, pp. 12, 137.

[84]Cambridge Research Institute, VAT, Appendix E.

related to them cannot be completely separated from the remaining costs. Indeed, the existence of a relationship between VAT liability and VAT compliance costs should not be assumed necessarily. While the studies by the Cambridge Research Institute and Yocum assist in the identification of possible VAT compliance costs, they are of little assistance in measuring those costs.

General Statements concerning the costs due to a VAT abound. These statements range from "substantial increase in the recordkeeping and compliance procedures"[85] to "hard to imagine that a VAT could present any really significant problems."[86] While the titles of some articles imply a precise statement of the problems of complying with a VAT, most of these articles do not live up to their titles.[87] Some articles do state some of the problems, but no articles calculate the cost these problems would engender.[88]

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[85]Commerce and Industry Association of New York, Inc., Value Added Tax--A Business View (New York: Commerce and Industry Association of New York, 1970), p. 19.

[86]Smith, "VAT: Case For," p. 74.

[87]For example, see Earl F. Davis, "The Value-Added Tax: Implications For Accountants," National Public Accountant, 16 (July 1971): 12-6; and E. C. Stephenson, "The Michigan Business Activities Tax: A Retailer's Viewpoint," Proceedings of the Forty-Eighth Annual Conference on Taxation (Sacramento: National Tax Association, 1956), pp. 29-34.

[88]For example, see: John S. Bradley, "Planning for VAT," Accountancy, 82 (August 1971): 437-9; R. G. Bassett, "Planning for VAT," Accountant, 166 (29 June 1972):852-3; K. S. Carmichael, "VAT: The Work Involved," Accountancy, 83 (September 1972):15-7; Thomas D. Lynch, "Taxation Reform--IV (Indirect Taxation--Value Added Tax)," Accountant's Magazine, 75 (September 1971): 486-9; Thomas D. Lynch, "VAT Approaches,"

Statements from the United Kingdom prior to its recent adoption of a VAT described initial compliance costs in terms no more specific than "particularly heavy,"[89] "intolerably heavy,"[90] and "greater than the switch to decimal currency."[91] The Allied Accountancy Bodies (U.K.) "point out that VAT is a far more complicated conversion operation than that faced by a business on the introduction of decimal currency--for which five years' notice was given in principle, and two years' notice of the details."[92] One of the books published just prior to the date the United Kingdom VAT took effect, lists on two pages a timetable for action and does not mention the costs of compliance.[93] Some articles about the

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Accountant's Magazine, 74 (March 1972): 130-3; Ronald Edwards and Walter F. O'Connor, "New German Added-Value Tax Requires Immediate Action By U.S. Taxpayers," Journal of Taxation, 27 (November 1967): 294-7; and Schirm, "VAT in Germany," pp. 30-43. For a discussion of VAT and its impact on a computer system, see A. Young, "Computers and VAT," Accountancy, 83 (November 1972): 33-4; "BETA on VAT," Accountant, 166 (2 November 1972): 563-4; and K. J. Neville, "VAT and The Effect on Computer Systems," Accountant's Magazine, 76 (February 1972): 69-71. For the impact of a VAT on cash flows see Andrew Likierman, "VAT Effects on Cash Flows," Accountancy, 83 (April 1973): 23-6 and Cambridge Research Institute, VAT, pp. 98-136.

[89]"Accountants' Concern Over VAT," Accountancy, 82 (September 1971): 492.

[90]"Problems With VAT," Accountant, 165 (18 November 1971): 676.

[91]"Business Brief: VAT is Coming," Economist, 240 (4 September 1971): 54.

[92]"Accountant's Concern Over VAT," Accountancy, 82 (September 1971): 492.

[93]John Chown, VAT Explained: The Business Man's and Manager's Guide to Value Added Tax, 2d. ed. (London: Kogan Page, 1973), pp. 32-3.

European experience with value-added taxes contain only general statements about compliance problems.[94] Since they are so general, they do not materially assist a U.S. accountant in foreseeing the problems he may face. Other articles on the European experience are somewhat more helpful.[95] One article describes a German survey that reports "the amount of extra administrative work [to the firm] caused by the introduction of the value-added tax as from 5 to 20 percent."[96] What the article omits is the base on which the percentage is calculated. In addition, since the German VAT replaced a turnover tax, the base for a U.S. firm would not be comparable to the German one. An interesting turnabout concerning compliance costs of a VAT was made by Rudolf Niehus, a German CPA. Prior to the adoption of the German VAT he stated, "It may be said, therefore, that the new law will not place an undue burden on the accounting department."[97] Less than two years after the VAT's adoption he stated, "This disadvantage cannot

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[94]For example, see: Egret, "VAT in France," pp. 20-9; Forte, "Feasibility of a VAT," pp. 337-61; and Missorten, "Problems Implementing a VAT," pp. 396-411.

[95]For example, see: Peloubet,"European Experience with VAT," pp. 64-75; Peloubet, "Statement," pp. 152-73; and B.F. Reynolds, "Some Administrative Problems of a Value-Added Tax," Value Added Tax: The U.K. Position and the European Experience, Edited by T.M. Rybczynski (Oxford: Basil Blackwell, 1969), pp. 44-52.

[96]Schirm, "VAT in Germany," p. 40. Reporting on a similar (or the same) survey an average increase in paperwork caused by the VAT of 20% was noted by Alfred Zanker, "Europe's Value-Added Tax: Model for U.S.?" U.S. News & World Report, 6 March 1972, p. 76.

[97]Rudolph J. Niehus, "New German Added Value Tax Law," Taxes, 45 (November 1967): 746.

be overlooked: an added value tax law greatly increases the administrative burden on the taxpayer."[98]

Considering that the Michigan Business Activities Tax was in effect from 1954-1967, it is surprising that more was not written about the compliance costs of firms. Clarence Lock, then Deputy Commissioner, Michigan Department of Treasury, spoke of the "relative ease of compliance and low cost of administration."[99] T. P. Stapchinskas, of Ford Motor Company, said, "We have found the tax to require minimum of additional accounting records and to be simple in computation."[100] Robert Ebel says "no special accounting procedures were necessary."[101] Peter Firmin agrees, "no additional accounting burden is imposed."[102] These views are contradicted by Howard Preston of Preston Shoes, Inc., reporting the views of another small businessman "that the business activities tax imposed additional burdens on the businessman...".[103] Although those who say the tax was an

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[98]Rudolf J. Niehus, "German Added Value Tax - Two Years After," Taxes, 47 (September 1969): 566.

[99]Clarence W. Lock, Donovan J. Rau, and Howard D. Hamilton, "The Michigan Value-Added Tax," National Tax Journal, 8 (December 1955): 366.

[100]J. P. Stapchinskas, "Taxation of Business in Michigan: Viewpoints of Business Men," Proceedings of the Forty-Eighth Annual Conference on Taxation (Sacramento: National Tax Association, 1956), pp. 27-8.

[101]Ebel, "Michigan Business Activities Tax," p. 103.

[102]Peter A. Firmin, The Michigan Business Receipts Tax, Michigan Business Report No. 24 (Ann Arbor, Michigan: Bureau of Business Research, University of Michigan, 1953), p. 140.

[103]Howard A. Preston, "The Michigan Business Tax as Viewed by Operators of Small Establishments," Proceedings of the Forty-Eighth Annual Conference on Taxation (Sacramento: National Tax Association, 1956), p. 34.

additional burden may be criticized for not quantifying the compliance costs, those who say that there was no additional burden can also be justly criticized. They ignore costs that in fact were incurred, e.g., the cost of filing returns even though no tax might be due.

In summary, available VAT literature offers little guidance in identifying the problems a firm would encounter should a VAT be adopted in the U.S. It would be of little assistance to a firm in foreseeing the actions it would need to take or the compliance costs it might incur.

Importance of This Study

It is important to assess the possible effects of a VAT on the accounting of U.S. firms because such an assessment could enable economists, legislators, and businessmen to more realistically appraise the effects of whatever actions they may be considering in relation to a VAT. Economists have been criticized for building extensive models when "indispensable primary data" is lacking.[104] Statements about the possible compliance problems and costs of a VAT can be similarly criticized because, as has just been indicated, the literature offers little guidance about its effects and costs. This study provides some data on the effect of a VAT and could enable economists, legislators, and accountants to make wiser decisions concerning it.

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[104] Wassily Leontief, "Theoretical Assumptions and Non-Observed Facts," American Economic Review, 61 (March 1971): 3.

Economists should find this study useful in assessing the nationwide effect of a VAT since compliance costs are part of the burden of the tax. The study will show that the compliance costs for an invoice type of VAT are related to the number of invoices processed. The study will also show the regressive impact of compliance costs for an accounts type of VAT.

Legislators will need to know the effects of a VAT, both so as to frame their legislation wisely, and so as to assess its impact on their constituents. Admittedly, legislators may be more interested in the burden of the tax among consumers than in the burden of the compliance costs. However, given the political activity of businessmen, it seems unrealistic to expect legislators to ignore the burden on business. The study will show that most of the compliance costs of a VAT relate to the whole law, rather than to any particular provisions. Changing a few provisions of the VAT law will not mitigate the compliance costs.

Accountants and managers should find this study helpful in forming a realistic expectation of the changes in the accounting function and costs that might be caused by a VAT. This study can assist a firm in estimating its own compliance costs. It could also be used as a planning guide to indicate the actions the firm would need to consider, and possibly take, to comply with a VAT should one be adopted.

Hypotheses

The study investigated the following hypotheses:[105]

Hypothesis 1

It is not possible to determine the changes that a VAT would require within the accounting function of each firm subject to the tax.

Hypothesis 2

The total initial compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

Hypothesis 3

The total continuing compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

Hypothesis 4

A dollar amount can be estimated accurately for the VAT initial compliance costs identified in Hypothesis 2.

Hypothesis 5

A dollar amount can be estimated accurately for the VAT continuing compliance costs identified in Hypothesis 3.

Hypothesis 6

The model $TICC = a + gP$ can be used by a firm to estimate its total initial compliance costs for the stated VAT.

Where P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices

a = a fixed amount in dollars (to be determined)
g = a coefficient (to be determined)

TICC = Total Initial Compliance Costs in dollars

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[105]For the definitions of the terms used within this section see chapter 2.

Hypothesis 7

The model TCCC = b + hN can be used by a firm to estimate its total continuing compliance costs for the stated VAT.

Where N = the number of sales invoices plus the number of suppliers' invoices processed per year, but not by a computer

b = a fixed amount in dollars (to be determined)
h = a coefficient (to be determined)

TCCC = Total Continuing Compliance Costs per year in dollars

Limitations of the Study

The study did not attempt to:

1. Investigate the experience of Michigan or of various countries that have a VAT except as that experience relates to compliance costs of firms.[106]

2. Answer broad taxation questions, e.g., whether direct and indirect taxes are shifted.[107]

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[106]For example, see Cohen, "Treasury Says European Experience is Favorable," pp. 316-8; and Ebel, "VAT in Subnational Economy," pp. 1-299.

[107]For example, see Samuel B. Chase, Jr., "Summary of Conference Discussion," The Role of Direct and Indirect Taxes in the Federal Revenue System, National Bureau of Economic Research and the Brookings Institution (Princeton, N.J.: Princeton University, 1964), pp. 295-313; Jon Thomas Cauley, "The Short-Run Shifting of the Corporate Income Tax," Dissertation Abstracts International, 32 (October 1971): 1727-A; William H. Oakland, "A Survey of the Recent Debate on the Short-Run Shifting of the Corporation Income Tax," Proceedings of the Sixty-Second Annual Conference on Taxation (Columbus: National Tax Association, 1970), pp. 525-47; Frederick David Sebold, "An Investigation of the Short-Run Shifting of the Corporation Income Tax," Dissertation Abstracts International, 31 (May 1971): 5640-A; and Joan Lee Turek, "Short Run Shifting of the Corporate Income Tax in Manufacturing 1935-1965," Dissertation Abstracts International, 30 (November 1969): 1732-A.

3. Project the effects of a VAT on any aspects of the economic situation in the U.S. or in any state, e.g., its effects on the balance of payments, tax incidence, and tax shifting.[108]

4. Forecase the short or long run effects of a VAT on such industrial activity as growth, investment, efficiency, production, and pricing.[109]

5. Evaluate the merits of a VAT as measured against standards for taxation.[110]

6. Compare the merits and effects of a VAT with those of any other type of tax, e.g., the corporate income tax.[111]

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[108]For example, see Henry M. Levin, "An Analysis of the Economic Effects of the New York City Sales Tax," (Brookings Institution Repring 127), Financing Government in New York City, Edited by Dick Netzer (New York: Graduate School of Public Administration, New York University, 1966); Earl R. Rolph, "The Economic Effects of a Value-Added Tax," in Excise Tax Compendium, U.S., Congress, House, Committee on Ways and Means, Compendium of Papers on Excise Tax Structure (Washington, D.C.: Government Printing Office, 1964), pp. 99-107; and Shoup, Public Finance, pp. 207, 212-8, 236, 242, 244-5, 264-5.

[109]For example, see John F. Due, "Is the Perfectly Competitive Model Useful for Analysis of Price Reactions to Tax Changes," National Tax Journal, 21 (June 1968): 224-6; James Stuart Fralick, "A Micro Econometric Analysis of the Impact of Tax Policy on Investment Expenditures," Dissertation Abstracts International, 32 (July 1971): 67-A; James Edwin Pitts, "The Impact of Tax Policy on Investment Behavior in the Chemicals and Allied Products Industry," Dissertation Abstracts International, 30 (October 1969): 1310-A; and Nancy D. Sidhu, "The Effects of Changes in Sales Tax Rates on Retail Prices," Dissertation Abstracts International, 32 (February 1972): 4219-A.

[110]For example, see Tax Foundation, Inc., Federal Non-Income Taxes: An Examination of Selected Revenue Sources (New York: Tax Foundation, 1965), pp. 62-7.

[111]For example, see Smith, "VAT: Case For," pp. 77-85.

7. Determine the effect of a VAT on the managerial decisions of individual firms.[112]

8. Survey the opinions of businessmen and voters concerning the VAT.[113]

9. Estimate the costs of a taxing authority to administer a VAT.[114]

The study had to develop and use hypothetical VAT laws since there is no VAT in effect in the United States and because it seems unlikely that the United States government or any state would adopt unchanged the law of another country. Estimates for times spent in the performance of certain VAT related actions were made and used, as no actual performance times for those actions were available. Wage rate estimates were developed and used because the actual wage rates of the individuals involved were unavailable. Additional, more detailed, limitations are indicated as appropriate in the chapters on methodology.

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[112]For example, see Dan Throop Smith, Tax Factors in Business Decisions (Englewood Cliffs, N.J.: Prentice-Hall, 1968); Aaron John Alton, "Formation of Prices by Wholesalers in Specified Lines of Business," Dissertation Abstracts International, 16 (1956): 2333; John F. Due, "Studies of State-Local Tax Influences on Location of Industry," National Tax Journal, 14 (June 1961): 163-73; and James Lawrence Gibson, "Accounting and Economics in Decision Making: A Case Study Approach," Dissertation Abstracts International, 31 (October 1970): 1453-A.

[113]For example, see "Which Tax to Raise? An Opinion Poll," U.S. News & World Report, 29 May 1972, p. 88.

[114]Phillip Lifschultz in U.S., Congress, The Value-Added Tax, p. 85. For a discussion of some of the possible problems of the taxing authority administering a VAT see Tait, Value-Added Tax, pp. 124-32; Donald W. Bacon, "Administrative and Compliance Procedures Under a Value-Added Tax," Tax Policy, 39 (October-November-December 1972): 87-92; and Eugene F. Bogan, "A Federal Tax on Value Added--What's Wrong With It? Plenty!" Taxes, 49 (October 1971): 604-7.

CHAPTER II

METHODOLOGY - DEFINITIONS, ASSUMPTIONS, AND SELECTION OF THE MODELS TESTED

Definition of Terms

In this study the following terms have been used as defined herewith:

1. A firm is an organization whose owner(s) desire profit. Ownership may be held by one individual or multiple individuals, incorporated or not. One or more persons including the owner may work in the firm.

2. Compliance costs are the firm's costs, exclusive of the tax itself, which result from a VAT. If the VAT were not in existence, the compliance costs would not be incurred by the firm.

3. Initial compliance costs are those compliance costs the firm would incur only once. They include costs incurred previous to the date the VAT would take effect and some costs during the first year of the VAT (e.g., personnel training costs).

4. Continuing compliance costs are those compliance costs which would be incurred each year after the effective date of the VAT (e.g., invoice preparation, data accumulation, and preparation of reports for government).

5. Compliance savings comprise the value of those benefits to the firm occurring because of a VAT. Compliance savings would occur, for example, should the VAT require information that the marketing department could use, but does not currently receive. Compliance savings will be subtracted from gross compliance costs to compute net compliance costs. A net compliance saving could occur were the VAT to replace another tax.

6. The term accounting function includes the structure (e.g., people, office machines, forms, and reports) and procedures (e.g., the flow and timing of data) within the accounting department, as well as that portion of other departments processing information related to accounting.

7. Persons in the accounting function involved in the processing of sales invoices and suppliers' invoices include: those directly preparing or processing sales invoices and suppliers' invoices; those involved in posting those invoices to the ledger accounts; supervisors of the invoicing process including the treasurer; and those computer programmers, computer operators, and keypunchers who are involved in invoicing. Members of the cost and payroll departments are thus excluded.

8. The components of the total compliance costs resulting from a VAT are the new actions to be taken by each person affected by the VAT and the additional items to be purchased.

9. Information readily available to a firm's accountant is information that the accountant would know already (e.g., accounting forms used), to which he would have ready access (e.g., employee wage

rates), that he could determine easily (e.g., reprinting costs for forms), or which he could be expected to estimate reasonably (e.g., the time he would need to familiarize himself with VAT legislation).

10. A dollar amount can be estimated accurately if the estimate would fall within narrow bounds which enclose the expected true value. The degree of accuracy of an estimate depends upon the process by which the estimate was made, how the estimate will be used, and the relationship of the estimate to the estimate of primary interest.[1] The estimate is not considered accurate if the information is not readily available to a firm's accountant or if the estimate is subject to wide variability. The individual cost estimates are summed to determine the total initial and total continuing compliance costs of the VAT.

11. Sales and suppliers' invoices not processed by a computer are invoices for which the computer (including its printer) is not used to compute, prepare, or check the computations on the invoice.

12. The accounts method of computing the VAT is the use of the firm's ledger accounts as the starting point for computing the firm's VAT liability. The accounts method of computation can be done using either the direct additive or direct subtractive methods described in chapter 1 (pp. 4-6). The hypothetical accounts-type of VAT law developed in chapter 4 will compute the VAT using the direct subtractive method. The Michigan Business Activities Tax also used the direct subtractive method.

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[1]As discussed in Yuji Ijiri, The Foundations of Accounting Measurement (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), pp. 142-5.

13. The invoice method of computing the VAT is the use of the VAT shown on the invoices both issued and received by the firm as the starting point in computing the firm's VAT liability. The invoice method of computation can be done using either the indirect additive or indirect subtractive methods described in chapter 1 (pp. 4-6). The hypothetical invoice-type of VAT law developed in chapter 3 will compute the VAT using the indirect subtractive method. The VATs in Europe also use the indirect subtractive method.

14. An organization, a good or service, or a transaction is zero-rated if the VAT rate applied to its sales is 0%. In effect the seller is not required to collect VAT on the sales. When the organization, good or service, or transaction is zero-rated, the seller is permitted a refund for VAT invoiced on purchases related to those sales.

15. An organization, a good or service, or a transaction is exempt from VAT if the seller is not required to collect VAT on its sales. When the organization, good or service, or transaction is exempt, the seller will not receive a refund from the government for the VAT for which he has been invoiced on purchases related to those sales. A low value transaction, for example, might be exempt to reduce the costs of collecting the VAT.

16. Routine sales are those sales that would be reported as sales in the firm's income statement.

17. Non-routine sales are sales that are not routine. VAT may be collected on non-routine sales, as, for example, on the sale of fixed assets.

18. A major change is a change requiring new structures and procedures within the accounting function, as well as requiring that

some employees have to learn a new set of skills, or that new employees with those skills have to be hired. An example of a major change is computerization of what had been performed by accounting machines or by hand, or the use of accounting machines for what had been performed by hand. Hiring persons to make extensions or percentage calculations on sales invoices is not a major change. Neither is the addition of more accounts to the firm's ledger.

Assumptions Made

The following assumptions were made in this study:

1. In estimating the total compliance costs of a VAT for an individual firm, the estimation and summation of a large number of elements of the total compliance costs will yield an amount nearer what the actual cost will be than will the estimation and summation of a few elements of the total compliance costs or than will a single estimate of the total compliance cost.

2. Compliance costs due to the VAT can be identified. If certain information required by a VAT is already being generated, generation of the information will not be considered a compliance cost of the VAT. This study will make no joint cost allocations.

3. Although the rates of existing taxes may change, the introduction of a VAT will not result in significant savings in the costs of complying with existing taxes. This is based on the assumption that no existing tax would be abolished if a VAT were put into effect.[2]

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[2]This assumption is supported by: Economic Research Division of the Chase Manhattan Bank, N.A., "Another Tax (VAT)," Business in

4. The most recent year for the firm is a reasonable representation of the level of economic activity of each firm.

5. All people are working at capacity, unless the firm indicates the amount of unused capacity in each instance. To assume otherwise would involve the researcher in attempting to measure the unused capacity in each firm, a study in itself. None of the firms interviewed indicated that any personnel were working at less than capacity.

6. Accounting machines and computers have sufficient unused capacity that the VAT would not require the purchase of additional equipment. In none of the firms interviewed were the accounting machines or computers regularly used outside of the 8 a.m. - 5 p.m. working hours.

7. Additional time required of salaried and hourly personnel can be valued at an hourly charge rate.

8. The VAT and the added personnel it might require will result in only negligible costs for internal support activities (e.g., the personnel department).

9. The most recent available prices are a reasonable basis for use in costing the elements of compliance activities.

10. Existing fixed costs for such things as office space and depreciation are not allocable as compliance costs of a VAT. These costs would continue whether a VAT were in existence or not.

Brief, 103 (April, 1972):4; "The Coming Change in the Property Tax," Business Week, 12 February, 1972, p. 51; and Cambridge Research Institute, Prepared for the American Retail Federation, The Value-Added Tax in the United States - Its Implications for Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970), p. 65.

11. If the VAT requires the purchase of fixed assets, a reasonable basis for depreciation will be determined.

Selection of the Models Tested in Hypotheses 6 and 7

Simple models were chosen since the number of firms examined was small and they were not selected according to a scientific sampling plan. Linear models were chosen because the relationships were assumed to be simple rather than complex. The particular variables tested in the models were chosen because they usually change in the same direction as changes in the firm's size or level of activity. The VAT compliance costs for the firms were expected to vary in the same direction as changes in size or level of activity.

CHAPTER III

METHODOLOGY - DEVELOPMENT OF HYPOTHETICAL INVOICE-TYPE VAT LAW AND ITS RAMIFICATIONS

Development of the Law

Since a VAT has not been adopted by the United States Government and since none is in effect in any state, it is necessary to develop hypothetical VAT laws and hypothetical accounting requirements for the purposes of this study. This study briefs proposed and existing foreign VAT laws as a basis for constructing hypothetical VAT laws. The form of presentation used for discussions of value-added taxes in European Taxation is followed in this survey, although it seems unlikely that the United States would adopt unchanged the law of any other country. Certain details in existing VAT laws are not needed for this study (e.g., appeal procedures) and are therefore omitted from the provisions of the hypothetical VAT laws constructed in this chapter and the next. The hypothetical laws are not drafted in legal form, as this seems unnecessary for the purposes of the study.

The invoice method of computing the VAT (defined in chapter 2) can be done using either the indirect additive or indirect subtractive methods (described in chapter 1). The indirect subtractive method would probably be chosen by the United States Government if it were to adopt a VAT. As discussed in chapter 1, one of the reasons for adopting a VAT is to improve the United States balance of trade. To do so

would require the indirect subtractive method, as the indirect additive or the direct additive or direct subtractive methods do not identify the amount of the VAT in the total sales price of a particular good. As the indirect subtractive method adds the amount of the tax to the good at the time of sale, it is simply omitted on goods exported.

While a VAT using the indirect additive method is possible, there seems to be no advantage to computing the tax on each individual payment when the same result could be obtained by using the direct additive method and computing the tax on the sum of the payments. This is particularly true if all of the payments of a particular type are to be taxed at the same rate. In addition, there is the problem concerning exports referred to above. For these reasons the indirect additive method is not found in practice.

The invoice-type of VAT law developed in this chapter and referred to throughout the rest of this study uses the indirect subtractive method of computing the VAT. The term invoice, rather than indirect subtractive, was used throughout the study as it more easily describes the starting point in computing the firm's VAT liability, the invoices.

The accounts-method of computing the VAT (defined in chapter 2) would probably be chosen by a state government, if a state were to adopt a VAT. If the invoice method were used, a sales invoice would have to be prepared for each sale within the state and for each export (shipment across the state line). These invoicing requirements would be a nuisance for firms that make intrafirm shipments into or out of a state with a VAT. Also, if shipments out of the state were not zero-

rated, firms could avoid taxes by putting a low value on the intrafirm shipments thus indicating little value was added by the firm in the state with the tax. For these reasons a state would probably use the accounts method of computing the VAT.

In this chapter a hypothetical VAT law is developed for an invoice-type of VAT law at the federal level. In chapter 4 a hypothetical VAT law is developed for an accounts-type of VAT law at the state level. For each law, the discussion also indicates how certain business events would be treated and what the accounting requirements of the law would be. The compliance costs for individual firms of an invoice-type of VAT are discussed in chapter 6 and those of an accounts-type of VAT in chapter 7.

Since discussion of the hypothetical invoice-type law requires many references to literature concerning the VAT laws of various countries, abbreviations have been devised for convenience in referring to this literature (see Table 4).

Scope of the Tax

Subject of Tax

E.E.C. 1 (Art. 2) indicates that a VAT is a general tax on consumption. Austria (p. 140), Germany (p. 25), and Netherlands (p. 2) refer to VAT as a turnover tax on value added. It is not necessary to determine the incidence of the VAT since for the purposes of this study the incidence of the tax was not included as part of a firm's compliance cost (see chapter 1, Limitations of the Study, and chapter 2, Definition of Terms).

Table 4. Abbreviations and References Concerning Value-Added Taxation

Abbreviation	Reference[a]
E. E. C. 1	Council of the European Economic Community, "First Directive of the Council of 11 April 1967," European Taxation 8 (November-December 1968): 299-300.
E. E. C. 2	Council of the European Economic Community, "Second Directive of the Council of 11 April 1967," European Taxation, 8 (November-December 1968): 301-9.
Austria	"Austria: Proposals for a Tax on Value Added," European Taxation, 11 (June 1971): I/139-47.
Belgium	Arthur Young & Company, Principles of the Added-Value Tax (T.V.A.) in Belgium (Brussels: Arthur Young & Company, February 1971).
Denmark	"The Turnover Tax on Value Added in Europe-Denmark," European Taxation, 8 (November-December 1968): 251-7.
France 1	"The Turnover Tax on Value Added in Europe-France," European Taxation, 8 (November-December 1968): 258-68.
France 2	"France: Simplification of the TVA and Reduction of Certain Rates," European Taxation, 10 (January 1970): I/26-30.
Germany	H. Karsten Schmidt, Wulf H. Döser, and Christoph Bellstedt (Translators), Added Value Tax Law: English-German Text with Short Introduction (Chicago: Commerce Clearing House, 1967).
Ireland	Ireland, "Proposals for a Value-Added Tax in Ireland" (Extract of the White Paper), Bulletin for International Fiscal Documentation, 25 (May 1971): 175-85.
Israel	Ben-Ami Zuckerman, "Proposals for a Value-Added Tax in Israel," Bulletin for International Fiscal Documentation, 26 (June 1972): 241-3.

Table 4. Continued.

Abbreviation	Reference[a]
Italy	"Italy: Tax Reform," European Taxation, 11 (November 1971): I/282-4.
Luxembourg	"Luxembourg: Bill for Introduction of Turnover Tax on Value Added," European Taxation, 9 (June 1969): 119-26.
Netherlands	Netherlands, "Netherlands: Tax on Value Added-Text of the Turnover Tax Law 1968 (unofficial translation)," Bulletin for International Fiscal Documentation, Supplement D/E, 23 (July-August-September 1969): 2-19.
Norway	"Norway: Bill for the Introduction of Turnover Tax on Value Added," European Taxation, 9 (June 1969): 127-33.
Sweden	"The Turnover Tax on Value Added in Europe-Sweden," European Taxation, 8 (November-December 1968): 293-8.
U.K.	United Kingdom, Chancellor of the Exchequer, Value Added Tax, Cmnd. 4929 (London: Her Majesty's Stationary Office, 1972).

[a]Other literature concerning VAT includes: Ernst & Ernst, Belgium, France, Netherlands, and West Germany - A Digest of Principal Taxes, International Business Series (Cleveland: Ernst & Ernst, 1966-1970); Price Waterhouse & Co., Information Guide for Doing Business in Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, and Sweden, Information Guide for Doing Business Series (New York: Price Waterhouse, 1969-1971); and Committee on Value Added Turnover Taxation, Report of the Committee on Value Added Turnover Taxation (Rhodesia) (Salisbury, Rhodesia: Government Printer & Stationer, 1967). These sources, however, are older or less detailed than those in Table 4.

Deliveries of Goods and Rendering of Services

E.E.C. 2 (Art. 2, 5, and 6) states that all deliveries (". . . transfer of power to dispose of . . .") of goods (new or used, movable or immovable) and rendering of services by a taxable person are subject to the tax. Various exemptions are provided. The countries that do not conform to this are Belgium (pp. 15, 20), which excludes immovable goods from the general statement and Denmark (p. 252), Norway (p. 129), and Sweden (p. 294) which list only those services that are taxable.

This study assumes that a United States VAT would apply to all deliveries of goods and rendering of services by a taxable person, with the exception of the exemptions and zero-ratings indicated starting on page 59.

Taxable Persons

Each country defines a taxable person. The E.E.C. 2 (Art. 4) definition is ". . . any person who independently and regularly engages in transactions within the scope of the activities of a manufacturer, a trader or a person who renders services, whether or not for profit." Non-profit organizations, corporations, partnerships, and individuals are included.

This study assumes that a United States VAT would include a similar broad definition of taxable person and that it would afford special treatment to certain taxable persons, as is done in Europe (e.g., farmers and small fishermen, Ireland, pp. 181-3).

Territorial Limits

Each of the countries states that the VAT law applies to deliveries of goods and rendering of services within the country. This statement concerning territorial limits plus the statement that the VAT is a tax on consumption means that the VAT is applied where the goods are consumed (destination principle) rather than where they are produced (origin principle).[1]

It is assumed that a United States VAT would apply to deliveries of goods and rendering of services within the United States. The implications of this assumption are that VAT will be collected on imports and that it will not be collected on exports.

Importation of Goods

Each of the European countries with a VAT collects VAT on goods imported into the country. They do so at the border, at the time of importation, rather than at the time of delivery. This prevents persons from evading a VAT on goods they import and then consume. It also means that a taxable person purchasing imported goods will pay VAT to whomever clears the goods through customs.

This study assumes that a United States VAT would also subject imports to VAT at the time of entry into the country.

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[1]Carl S. Shoup, Public Finance (Chicago: Aldine Publishing Co., 1969), pp. 262-4.

Tax Mechanism

Type of VAT

All the countries permit the immediate deduction of VAT on capital outlays that are used for purposes which are subject to the tax. This is the consumption type of VAT, which was illustrated in Table 1 along with the gross product and income types. Since it is probable that United States business would lobby for a similar deduction, it is assumed in this study that a United States VAT would be of the consumption type.

Method of Computing Tax

All of the European VAT countries use the invoice method of computation. Since this method allows the countries to identify the VAT due on each good, it makes it possible for them to remit the VAT collected (or to avoid collecting it) on goods that are exported, according to the provisions of the GATT (as discussed in chapter 1). Under the accounts method, the amount of VAT in an export price would be difficult to identify and therefore to remit. That the United States would for this reason choose the invoice method has been suggested by Gerard Brannon, Acting Director, Office of Tax Analysis, The Department of the Treasury.[2]

It is assumed, therefore, that the United States would use the invoice method.

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[2]This was indicated by Gerard M. Brannon, letter to the author dated June 23, 1972.

When Tax Assessment Occurs

A firm may assess the VAT on its sales at the time the sales invoice is issued or at the time cash is collected. Similarly, a firm may determine the amount of VAT credit at the time it receives the supplier's invoice or at the time it makes cash payment.[3] All countries except Sweden assess the VAT when an invoice is issued or received. Sweden (p. 297), assesses the VAT when payment is collected or made. In any of these cases the good must be delivered or the service rendered before the tax may be assessed.

If the VAT is assessed at the time cash is collected, problems arise in determining the proper amount of VAT if partial payments are made on an invoice including goods or services taxed at two or more rates. This is not a problem in Sweden, because the country assesses VAT at only one rate. However, since the United States is likely to tax at more than one rate, this study assumes that the United States VAT would be assessed at the time an invoice is issued or received. As the invoice may be issued before or after the title is passed or the service is rendered, this study assumes that for financial statement purposes the date title passes will still determine the existence or non-existence of a VAT liability. This procedure does allow a firm to take a credit on its VAT return for VAT invoiced by its suppliers even though that amount has not yet actually been paid to the supplying firm.

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[3]A fuller discussion can be found in Cambridge Research Institute, prepared for the American Retail Federation, The Value-Added Tax in the United States - Its Implications for Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970), p. 41.

Deductions and Refunds

In Europe, when a firm determines its VAT liability to the government, it may deduct most of the VAT that is shown on the invoices received from suppliers from the VAT it shows on its own sales invoices. Except for France, the European countries permit the deductible VAT that is shown on suppliers' invoices received in a period to be entirely deductible on the VAT return for that period. France 1 (p. 266) permits the deduction of VAT on capital outlays on the return for the period in which they were acquired. VAT on other goods and services acquired is deductible on the return for the period following that in which they were acquired. Some VAT is non-deductible, as discussed starting on page 59.

If a firm's VAT on purchases exceeds VAT on sales the government owes the firm the difference. In Austria (p. 146) and Belgium (p. 68), the amount due from the government is carried forward to the next period. The Netherlands will refund the amount on request. In some countries, exporters who regularly have VAT refunds due them are often permitted shorter accounting periods so they may obtain their payment sooner.

It is unlikely that United States business would be willing to extend credit to the government in the way that French business does. For this reason, this study assumes that the United States would permit the deduction of all deductible VAT on the return for the period in which the taxed goods and services were acquired. The study further assumes that VAT due a firm from the United States Government will be carried forward, as in Austria and Belgium, except for refunds regularly

due to exporters. These refunds are assumed payable upon the filing of a period return by the exporter.

Tax Rates

The number of VAT rates varies from one European country to another, as is permitted by the E.E.C. 2 (Art. 9). Belgium (p. 35) has four rates of tax and also exempts some goods and services. The U.K. (p. 2) has two rates of tax (one of which is zero) and exemptions for some items. Sweden (p. 297) has one rate and exemptions, but the tax base for certain goods and services is only either 60% or 20% of the consideration, which, in effect, creates multiple rates. It is hard to generalize about European laws in regard to any one good or service and to say where in the range of rates its tax always falls. It does seem that many food items are taxed at a relatively low rate and that financial transactions (e.g., depositing or receiving funds) are usually zero-rated or exempt.

A VAT may be calculated so that the tax rate is applied to the price either excluding tax (tax exclusive) or including tax (tax inclusive).[4] For example, where the before tax price = 100 and the tax = 25, then the tax exclusive rate (TER) = 25 ÷ 100 = 25%, while the tax inclusive rate (TIR) = 25 ÷ (100 + 25) = 20%. Using TER the seller can price his goods in his usual manner and at the time of sale determine the amount of VAT due. Using TIR the seller needs to price

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[4]Richard W. Lindholm, "The French Value-Added Tax," Oregon Business Review, 27 (February 1968):2 and Alan A. Tait, Value-Added Tax (London: McGraw-Hill, 1972), pp. 3-5.

the goods above his usual price so as to include the VAT. At the time of sale, sales would need to be accumulated by applicable VAT rate if there are more than one. Thus under TER the cost of pricing would not be higher, but the costs at the time of sale would be. Under TIR the cost of pricing would be higher, and the time of sale costs could be slightly higher also. The European countries, except Sweden (p. 296), generally use a TER. Taxes are sometimes calculated at both the TER and TIR within one country. In the Netherlands (p. 12), for example, prices quoted to consumers must be tax inclusive. In Germany (p. 77), small traders do not have to invoice the VAT separately and may therefore calculate the tax using TIR.

A question that is important in determining compliance costs is the number of digits included in the tax rate. Ireland (p. 179) and France 2 (p. I/27) have rates consisting of four digits. Denmark (p. 255) has a maximum of three digits, and the other countries a maximum of two digits. However, the number of digits may change if a TER is figured inclusively, i.e., as the equivalent TIR, or vice-versa. Were the tax exclusive rate 25%, the tax inclusive rate would be easy to calculate and use, TER ÷ (1 + TER) = .25 ÷ (1 + .25) = 20% = TIR. Were the tax exclusive rate 4%, then the tax inclusive rate = .03846153 . . . (repeating), which is cumbersome.

Even though the rates of a United States VAT may be below 10%,[5] this study assumes that at least three VAT rates will exist, a reduced rate, a regular rate, and a zero-rate. Since there will

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[5]Eileen Shanahan, "Nixon's Tax Plan Includes Rebates to Most Families," New York Times, 6 February 1972, p. 1.

probably be political pressure toward mitigation of the regressiveness of the VAT, this study assumes that goods to be eaten by man or beast will be taxed at the reduced rate and that all other goods and services will be taxed at the regular rate. For demonstration purposes on the VAT return (Figure 1) and sales invoice (Figure 2) the rates are assumed to be 2% and 4%, respectively. The study assumes that the United States VAT rate will be tax exclusive. However, small retailers might be permitted to use special tax inclusive rates. In addition, tax schedules might be used to avoid the rounding problem in calculations. Since thirty-eight states now use a one-digit sales tax, while only three use a two-digit sales tax,[6] this study assumes that the rates of a United States VAT would consist of just one digit, and that additional rates will not be created by allowing reductions in the taxable base.

Exemptions and Zero-Ratings

The European VAT laws exempt particular organizations, goods and services, and transactions from collecting VAT on its sales. In some instances, an organization may recover VAT that they have paid on the purchases relating to exempt sales. In other instances they may not. These two meanings for exempt cause confusion. To avoid it, zero-rated was defined in chapter 2 as the VAT rate applied to sales is 0%, and the seller is permitted a refund for VAT invoiced on purchases related to those sales. Exempt was defined as no VAT is to be collected

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[6]Commerce Clearing House, Inc., All-State Sales Tax Reporter (Chicago: Commerce Clearing House, 1972), pp. 601-6.

on the sales, and no refund is permitted for VAT invoiced on purchases related to those sales. If the sale is exempt, the organization will need to raise its selling price by the amount of the unrecovered VAT, if the firm is to maintain its payments to its factors of production at the same level as the payments would be if the sale were zero-rated.

Special Treatment for Particular Organizations and Persons

The E.E.C. 2 (Annex A, 2) permits exemptions and zero-ratings for certain types of organizations, and all of the countries have such exemptions or zero-ratings. Small business, agriculture, government, and certain non-profit institutional activities are frequently exempted or zero-rated.[7] Belgium (p. 6) exempts doctors, dentists, and lawyers, but not accountants.

In Europe the purchases of governments (at all levels) are generally subject to the VAT.[8] In at least one state of the United States, Michigan, governments and non-profit organizations do not pay the state sales tax on their purchases.[9] It is probable that a United States VAT might not require certain organizations to pay VAT on their

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[7]For a discussion of the treatment of the government under a VAT, see: Francesco Forte, "On the Feasibility of a Truly General Value Added Tax: Some Reflections on the French Experience," National Tax Journal, 19 (December 1966):353-6; and Eitan Berglas, "The Effect of the Public Sector on the Base of the Value Added Tax," National Tax Journal, 24 (December 1971):459-64.

[8]This was indicated by B. P. Dik, International Bureau of Fiscal Documentation, in a letter to the author dated April 25, 1972.

[9]Michigan, Department of the Treasury, Monthly Sales, Use, and Withholding Tax Return (Rev. 9-70).

purchases. Alan Tait states that, "There is no reason why government should pay the VAT. To pay the tax would involve a great increase in work simply to achieve a transfer of funds."[10]

It is assumed in this study that in the United States the goods and services provided by governments, not-for-profit organizations, medical establishments, and private schools will be exempt from VAT or zero-rated, but that certain of their "business-like" activities may be taxable. The study also assumes that these organizations will not be subject to VAT on their purchases, as this would require them to file for refunds or have their costs increased by the amount of the VAT.

It is assumed that sales by small business and agriculture will be exempt from VAT in order to reduce their compliance costs and to eliminate from their selling prices the VAT on the value they added. However, since small business and agriculture will be subject to VAT on their purchases, it may be to their advantage to give up their exemption and add VAT on their sales, so that they can take the credit for VAT paid on their purchases.

Table 5 illustrates the various possible combination of ways in which a VAT may or may not apply to the sales and purchases of an organization.

Exemptions or Zero-Ratings for Particular Goods and Services

The E.E.C. 2 (Art. 13) allows for exemptions in order to simplify collection or to prevent fraud. All countries have exemptions

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[10]Tait, Value Added Tax, p. 39.

Table 5. Possible Applications of a VAT and the Resulting Action Required of an Organization.

	Sales Taxable - X VAT Collected	Sales Zero-Rated - 0 VAT Collected	Sales Exempt - 0 VAT Collected
Purchases Subject to VAT - Y VAT Paid	Pay X minus Y to Government	Recover Y from Government	No Action
Purchases Not Subject to VAT - 0 VAT Paid	Pay X to Government	No Action	No Action

for particular goods and services. Leasing and hiring of real estate is exempt in some countries, Germany (p. 39) and the Netherlands (p. 5), for example. The sale of land is exempt in Belgium (p. 23) and Ireland (p. 178). Israel (p. 242) will exempt the rentings of real property, but tax the sale of it. All the countries with a VAT have exempted the activities of commercial banks even though it is possible for a VAT to "be applied to commercial banks without double taxation or tax avoidance."[11] The U.K. (pp. 47-51) has zero-rated a number of goods and services that might have been exempted. If a firm's sales are both subject to VAT and exempt, only that portion of VAT invoiced by suppliers which is assignable to sales subject to VAT is deductable by the firm. This is the pro rata rule (E.E.C. (Art. 12)).

This study assumes that depositing and receiving funds, discounting, and granting credit will be exempt, as will be the leasing and renting of real estate and the sale of land.

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[11]Nabil Aboulfadl, "The Value-Added Tax: An Application to the Commercial Banking Industry," (Ph.D. diss., University of Oregon, 1970), 176.

Zero-Rating for Particular Transactions

Certain sales of goods (or services) by an organization that ordinarily would be taxable may be exempted or zero-rated. The GATT and E.E.C. 2 (Art. 10) permit exports to be exempt from VAT, and every European country with a VAT exempts exports. The firm must be able to document the exportation of goods for which it does not collect VAT. Every country also permits the deduction of all VAT paid to other firms in connection with the production of the exported good. In the terminology of this study, exports are "zero-rated."

As one of the reasons for adopting a VAT is to encourage exports, this study assumes that exports would be zero-rated by a United States VAT.

Summary of the Types of Purchases and Sales a Business Firm Might Make

An individual business firm, then, may purchase from taxable, zero-rated, and exempt organizations. It pays no VAT on what it purchases from zero-rated or exempt organizations. The individual firm may purchase goods and services taxable at a positive rate, ones taxable at a zero-rate, and ones that are exempt.

The business firm may sell to organizations whose purchases are subject to VAT and to organizations whose purchases are not subject to VAT. The goods and services sold may be taxed at a positive rate, taxed at a zero-rate, or exempt. Certain sales transactions will be zero-rated because they are exports.

How Certain Business Events Would be Treated

Certain business events are examined to determine if the hypothetical VAT law developed affects that event and thus creates a possible compliance cost for the firm. This section examines the events, and chapter 6 examines the amounts of possible compliance costs for the firms studied.

Transitional Measures

In most cases in Europe, a VAT was adopted as a replacement for a turnover tax described in chapter 1. In the U.K. (p. 1) it replaced the selective employment tax (SET) and the purchase tax. Each country provided transitional measures particularly for inventory and fixed assets on hand at the time of the change to VAT. This was necessary to avoid taxing inventory under both VAT and the turnover tax it replaced. It was also necessary to avoid temporary changes in industrial buying patterns, because an item might be taxed at different rates under the turnover tax and VAT. Since it has been assumed in chapter 2 that no tax would be abolished, were a VAT adopted, this study concludes that United States firms would not need to make any special adjustments to their inventory or fixed assets on hand at the time of transition to VAT. The substitution of a VAT for an excise tax, for example, could require special adjustments to the inventory on hand.

Leases and contracts would be affected by the VAT since each is a sale of services (of property or of persons). Where an existing agreement states who will pay any increased taxes, no problem arises.

However, if the VAT legislation does not state who must pay the amount of the VAT, disagreement will result in those instances in which the existing agreements do not include provisions concerning increased taxes.

If both the lessee and lessor are taxable persons, however, any additional VAT that either might have to pay would be deductible on their VAT return. Thus, the disagreement and the costs incurred by the VAT might not be serious.

Taxable Base and Discounts

In E.E.C. 2 (Art. 8) the taxable base to which the VAT rate would be applied, as shown on the invoice, includes all costs, including freight, excluding the VAT itself. Quantity discounts would be taken before establishing the base. Belgium (p. 30), and Ireland (p. 176) reduce the taxable base by any financial discounts which are offered, even if they are not taken. The other countries do not reduce the taxable base for financial discounts offered or taken.

Because of the possibility of firms offering very large financial discounts which could never be taken for some reason and thus reducing the taxable base, this study concludes that a United States VAT would determine the taxable base before considering whether financial discounts were offered or taken. Whether the financial discount applies to the price including or excluding the VAT would probably be left to the individual firm offering the discount. The taxable base would remain the same in either case.

Sales of Used Goods Including Capital Assets

In general, the European countries do not provide any special rules for the sale of used goods or for infrequent sales, such as the sale of capital assets. Belgium (p. 92) has special rules for second-hand goods, but excludes motor cars and some other items from them.

This study assumes that the United States would not treat the sale of used goods including fixed assets any differently from the sale of new goods.

Returns of Merchandise

In the absence of statements to the contrary in the European laws, the VAT on the return of merchandise is just the reverse of the way it was handled in the sale. The VAT on returnable containers would be handled similarly. It is concluded that a United States VAT law would have similar provisions.

Uncollectible Accounts

Under the law assumed for this study, a seller establishes a VAT liability to the government when he prepares his sales invoice. Should the receivable for the sale prove uncollectible, the seller is still liable for the invoiced amount of VAT. Some European countries, for example, Belgium and the United Kingdom, provide no relief for VAT purposes to the seller for VAT invoiced, but never collected. Michigan does not permit the deduction of sales-tax billed, but not collected.[12]

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[12] Commerce Clearing House, Inc., State Tax Reporter: Michigan (Chicago: Commerce Clearing House, 1972), p. 321.

Denmark (p. 256) and Germany (p. 73) provide relief for the seller.

This study assumes that a United States VAT would not penalize the seller for VAT billed but uncollectible. It would permit the invoiced but uncollectible VAT to be deducted on the VAT return for those accounts written-off for income tax purposes. The seller would have to list which invoices were unpaid and the VAT related to each invoice.

Disappearance of Inventory

The European countries do not provide for any special adjustment for the VAT paid on purchases of inventory that subsequently disappears or is destroyed. No adjustment is necessary, because the VAT paid would have been shown as a deduction on the VAT return in the period the purchase was made. The loss to the firm is only the purchase price exclusive of the VAT. It is assumed that a United States law would be similar to the European ones in this respect.

All VAT Paid by a Firm will be Deductible by the Firm, with Exceptions

Since a federal VAT would be of the consumption type, all VAT paid on the purchase of fixed assets would be deductible entirely in the period of purchase. In Germany (p. 71), if an asset is used for exempt purposes during the first five years after its purchase, then the amount of VAT deductible will be recalculated and reduced. This study assumes that a United States VAT would have a similar provision.

In Europe the VAT on certain business expenditures is not deductible. Belgium (p. 66) excludes motor cars; food, lodging, and drink consumed on the premises; and entertainment. Ireland (p. 177) and the United Kingdom (p. 6) exclude private cars and business entertaining. Since many United States salesmen have company cars, this study concludes that the United States will not have similar special provisions for cars, entertainment, etc. If the expenditure is deductible for income-tax purposes by the firm, then the VAT paid on the expenditure will be deductible. Conversely if the expenditure is not deductible for income-tax purposes, any VAT paid will not be deductible. Assets which are purchased and then later switched to personal use or the production of exempt goods and services will require a retroactive adjustment to the amount of VAT which was deducted on the VAT return.

Self-Deliveries

The E.E.C. 2 (Art. 5) provides that goods and services withdrawn from a firm for personal use, or given gratuitously are to be considered taxable deliveries. Personal consumption by individuals in the firm could also be self-deliveries. It is possible that the law would allow the firm to treat such self-deliveries as an exempt item, to identify any VAT paid relating to those self-deliveries, and to treat that VAT as non-deductible. An alternative method would be to require the firm to establish a value for the self-delivery, to determine the appropriate amount of VAT, and to be liable for that amount.

It is assumed that a United States VAT would consider self-deliveries taxable and similar to a sale. Income-tax law would govern what constituted a self-delivery and its valuation.

Miscellaneous

Each country provides for the registration of taxable persons. In the United Kingdom (p. 4), a group of associated companies may apply to be registered as one person for VAT purposes, and a company can apply to have its various divisions registered separately. The effect of the VAT on the firm's cash flow would determine how companies would wish to be registered. This study assumes that a United States VAT would base registration on legal entities, although parent and subsidiary corporations might be combined for VAT purposes to change the impact of the VAT on their cash flow.

The European VAT's provide no special treatment for capital gains if they exist. The sale price including the gain is taxed. This study assumes that the United States VAT would be similar to the European ones in this respect, even though this is "quite defective from an economic standpoint."[13] Such treatment taxes increases in the selling price which are due to inflation.

In some cases, as in Belgium (p. 16), transactions involving intangible assets, such as shares of companies, are not considered as the deliveries of goods and services. This study assumes that a United States VAT law would not consider the purchase and sale of shares a

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[13]Forte, "Feasibility of a VAT," p. 349.

taxable event. The exchange of goods for shares, instead of cash, would be taxable under VAT. It is assumed that the sale of control of a firm through the transfer of ownership of shares would not be taxable. However, even if this were taxable, the event is so infrequent for any one firm that the VAT compliance costs due to it would probably be negligible.

Accounting Required by the Hypothetical Law

Based on the previously developed hypothetical VAT law and on the description of the treatment of certain business events, this section specifies: the frequency of VAT returns and payments, what information would be required on the VAT returns, the special annual listings of VAT invoiced to customers and by suppliers that a firm might be required to prepare, and the information that would be required on a sales invoice. It also lists the ledger accounts that would enable a firm to determine easily the amount of the periodic payment to the government and to complete the quarterly returns.

Frequency of VAT Returns and Payments

This study assumed that eleven monthly returns would be filed and payments made; that three quarterly returns would be filed; that an annual return would be filed with the twelfth payment; that special annual listings of VAT invoiced by customers and suppliers would be filed; and that the firm would have a reasonable length of time after the close of the taxable period to make the payment and file the return for that taxable period. Because of the special annual listings of VAT

invoiced by customers and suppliers, it was also assumed that the VAT year starts on January 1 and ends December 31. The quarterly returns requirement is like that of the corporation income tax. Monthly payments were assumed because it seems unlikely that a business would wish to pay the VAT to the government before the cash has been collected from its credit customers. Based on the trend to more frequent payment of payroll taxes it seems unlikely that the Government would permit the VAT to be paid less frequently than monthly.

Information Required on the Quarterly and Annual VAT Returns

European VAT quarterly and monthly returns vary from the simple one in Denmark, where the firm enters the amount of VAT invoiced, less the amount of tax deductible, equaling the amount of tax owed, to the complex one in France, where a firm might have over forty-five entries plus calculations and totals.[14]

The following specimen VAT return (Figure 1) was developed after considering what information might be reported and reasons for reporting it. The right half of the return is used to determine the amount of VAT liability to the government. The left half of the return is to provide information to the government for enforcement and statistical purposes. For simplicity, certain information to be copied from the monthly and quarterly returns and sub-totals have been omitted. Following the VAT return the items on the return are discussed and the reasons for their inclusion stated.

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[14] Cambridge Research Institute, VAT, pp. 42-44.

NAME ..... VAT REGISTRATION NUMBER .....

ADDRESS ..... PERIOD .....

For Routine Sales of Goods and Services			
Sales (Net of Returns, exclusive of VAT)		Add VAT Invoiced (Net of Returns)	
Domestic @ Rate 0	[ ]	@ Rate 0	[-0-]
@ Rate 1	[ ]	@ Rate 1	[ ]
@ Rate 2	[ ]	@ Rate 2	[ ]
Of Exempt Goods and Services	[ ]		
Exports	[ ]		
To Organizations Whose Purchases are not Subject to VAT	[ ]	Add VAT Invoiced	
For Non-Routine Sales of Goods		@ Rate 1	[ ]
		@ Rate 2	[ ]
Self Deliveries		Add VAT Applicable	[ ]
Amount exclusive of VAT	[ ]		
VAT Invoiced by Other Firms		Less VAT Deductible	[ ]
Non Deductible	[ ]		
Uncollectible Accounts		Less VAT Invoiced But Never Collected	[ ]
Amount exclusive of VAT	[ ]		
		Adjustment for VAT related to assets switched to or from exempt production	[ ]
		Balance Due Government	[ ]

Figure 1. Specimen Quarterly and Annual VAT Return for the Invoice-Type of VAT.

Sales and self-deliveries of firms may be categorized in numerous ways. Several of the following may be applicable simultaneously: it is a routine sale, non-routine sale, or a self-delivery; it is sold or issued to an organization or person whose purchases are taxable, or to one whose purchases are not taxable; the good or service may be exempt, or taxable at the zero rate, rate 1 or rate 2; and the transaction may be taxable or exempt, e.g., an export.[15] Of the forty-eight possible combinations, shown in Table 6, on only six should the seller collect VAT. No amount of VAT would be invoiced in the other instances, because the purchases of the buying organization are not subject to VAT, because the goods are exempt or zero-rated, or because the sale is an export.

Routine Sales

A portion of the return reports the amounts for six categories of routine sales. This enables the Internal Revenue Service to relate the firm's VAT to its income tax returns. The reporting of routine sales as a total (Row 1 plus Row 2 in Table 6) would not by itself suffice, since the Internal Revenue Service could not multiply this amount by one of the VAT rates to verify the total amount of VAT invoiced. Not all sales are taxed at the same rate, and some sales are exempt. Routine domestic sales by the applicable rates would be reported. These amounts represent the sales for the cells in Row 1, Columns 3, 5, and 7 of Table 6. Exempt sales need to be segregated from taxable sales, so

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[15] Routine and non-routine sales are defined in chapter 2. The tax rates, exemptions, and self-deliveries are discussed above in chapter 3.

Table 6. Summary of Possible Sales and Self-Deliveries for a Business Firm

			EXEMPT GOODS AND SERVICES		TAXABLE GOODS AND SERVICES					
				EXPORTS	Zero Rated	EXPORTS	Rate 1	EXPORTS	Rate 2	EXPORTS
ROW 1	ROUTINE SALE	Sold to an Organization or Person Whose Purchases are Subject to VAT	0	0	0	0	x	0	x	0
2		Sold to an Organization or Person Whose Purchases are not Subject to VAT	0	0	0	0	0	0	0	0
3	NON-ROUTINE SALE	Sold to an Organization or Person Whose Purchases are Subject to VAT	0	0	0	0	x	0	x	0
4		Sold to an Organization or Person Whose Purchases are not Subject to VAT	0	0	0	0	0	0	0	0

Table 6. Continued.

			EXEMPT GOODS AND SERVICES		TAXABLE GOODS AND SERVICES					
				EXPORTS	Zero Rated	EXPORTS	Rate 1	EXPORTS	Rate 2	EXPORTS
ROW 5	SELF-DELIVERY	Issued to an Organization or Person Whose Purchases are Subject to VAT	0	0	0	0	x	0	x	0
6		Issued to an Organization or Person Whose Purchases are not Subject to VAT	0	0	0	0	0	0	0	0
		COLUMN	1	2	3	4	5	6	7	8

0 = No VAT would be invoiced on the sale.

x = VAT would be invoiced on the sale.

that the pro rata rules (discussed above in this chapter) can be applied. Exempt sales would be the total sales for the cells in Row 1, Columns 1 and 2, and Row 2, Columns 1 and 2 in Table 6. Sales of taxable exports, which would be the sum of the cells in Row 1, Columns 4, 6, and 8, and Row 2, Columns 4, 6, and 8, in Table 6, would be reported. Routine sales corresponding to the cells in Row 2, Columns 3, 5, and 7 in Table 6 would be reported as sales to organizations whose purchases are not subject to VAT. An exempt export might be reported under either exempt sales or export sales. The regulations would need to state which. However, since the choice would not affect compliance costs, this study does not make a choice. To report its routine sales, then, the firm would be required to maintain six different sales accounts. While reporting in greater detail than the six categories indicated would provide statistical information for the government, it would not be of value in determining a firm's VAT liability.

Non-Routine Sales

The study assumes that the amounts of non-routine sales (Table 6, Rows 3 and 4) do not need to be reported. The accounting entry for such a sale credit an asset account rather than a sales account. To report the dollar amounts of these non-routine sales would require a memo entry for each transaction, or a separate analysis each time the return is prepared. It is therefore assumed that the United States Government would conclude that the compliance problems of firms would outweigh the benefits of reporting the amount of non-routine sales on the VAT return.

Self-Deliveries

For self-deliveries, it is assumed that the firm would have to prepare a schedule showing the individual deliveries as well as the VAT applicable to each. On the return, the amount of the self-deliveries (Table 6, Row 5 plus Row 6) would be reported. The total amount of VAT applicable to those self-deliveries would also be reported. As the VAT may be at various rates the total VAT may not be easily related to the amount of self-deliveries reported.

VAT Invoiced on Routine and Non-Routine Sales

It is expected that the firm would need to keep four separate accounts for recording the VAT invoiced on routine and non-routine sales. They comprise VAT on routine sales at rate 1 and at rate 2 and VAT on non-routine sales at rate 1 and at rate 2. A check on the accuracy of the VAT invoicing and recording process would be to multiply routine sales at rate 1 times VAT rate 1 and the result should equal the VAT invoiced at rate 1. Similarly, with routine sales at rate 2. The separation of VAT invoiced on non-routine sales into rates 1 and 2 would be to maintain consistency with the treatment of VAT on routine sales.

Deductible and Non-Deductible VAT Invoiced by Other Firms

The total amount of VAT invoiced by other firms (suppliers) consists of VAT that is deductible for VAT purposes and VAT that is non-deductible. The VAT invoiced by other firms that is deductible could be reported in total only, or it could be accumulated and reported by

rate of VAT, by whether it applied to domestic purchases or imports, or by whether it was invoiced on purchases that were capitalized or expensed. Reporting other than the total VAT paid would provide the government with statistical information, but this information could not be directly related to any other information appearing on the VAT return nor to amounts accumulated in the ledger accounts currently maintained by firms. Statistical purposes alone would not seem to justify forcing the firms to report the amount of VAT paid and deductible in greater detail than the total VAT invoiced.

While the study assumes that the amount of VAT that is not deductible will be reported on the return for informational purposes, there does not seem to be any reason to report the non-deductible VAT in greater detail.

Expenses and the Purchase of Assets

To require the firm to report the amounts of each type of its purchases would require a considerable amount of accounting work. A business firm may purchase from organizations that are taxable, zero-rated, and exempt. The goods and services may be exempt or taxable at a zero or at positive rates. To accumulate the amount of the expenditure by the rate of VAT applicable would require the firm to make a memo entry with each transaction or to add expense accounts to its ledger (e.g., supplies-taxed at VAT rate 1, supplies-taxed at VAT rate 2). Given this burden on the firms, and the lack of a way in which this information would assist the Internal Revenue Service in enforcing the

VAT law, this study assumes that the VAT return would not require any amounts to be reported concerning purchases the firm capitalized or expensed.[16]

VAT on Uncollectible Accounts

For VAT on uncollectible accounts, the study assumes that the firm would have to prepare a schedule showing the debtor's name and VAT registration number and to list for each invoice unpaid the invoice number, amount of VAT, and the total amount of the invoice. This schedule would have to agree with the write-off of uncollectible accounts on the income tax return. The VAT return itself would show the amount of VAT invoiced but never collected, and, for informational purposes, the total uncollected amount exclusive of the VAT.

Adjustment for VAT Related to Assets Switched to or from Exempt Production

As has been discussed above in hapter 3, VAT paid on the purchase of assets used for exempt purposes would not be deductible by the firm. Should the firm use the asset for non-exempt purposes, then a portion of the VAT paid on the asset would become deductible. Conversely, if an asset whose VAT has been deducted by the firm is switched to a use exempt from the VAT, then the firm must repay the government a portion of the VAT previously deducted.

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[16]Neither Denmark nor France require the amount of expenses or asset purchases to be reported on the VAT return; see Cambridge Research Institute, VAT, pp. 42-4.

Information Required on the Monthly VAT Return

This study assumes that payments to the Government would be required monthly along with a brief form showing the firm name, VAT registration number, and amount paid.

Special Annual Listings of VAT Invoiced to Customers and by Suppliers

United States firms could be required to prepare annually a listing of VAT invoiced to customers and a listing of VAT invoiced by suppliers.[17]

Lists of total VAT invoiced both to customers and by suppliers would provide a tool that could be used in checking the accuracy of VAT returns. Where a firm has to furnish both lists, the Internal Revenue Service could verify that a business was not inflating its VAT deductions or deflating the VAT they invoiced by comparing the amount of VAT on their list with that of the list of the other taxable firm.

This study treats as two separate reporting requirements the possibility that firms might have to prepare such annual listings. The list for VAT invoiced on sales would include the name of the customer firm, his VAT registration number, and the total VAT invoiced to that customer. The list for VAT invoiced by the firm's suppliers would include the name and VAT registration number, and the total amounts of

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[17] At the end of a VAT year in Belgium (p. 81), each firm is required to furnish to the government a list with the name, address and VAT registration number of each taxable customer during the year, as well as the total sales and VAT invoiced to that customer.

deductible and non-deductible VAT invoiced by that supplier. There is no need to report the amount of sales by customer or purchases by supplier, since the amount of the sale cannot be related directly to the amount of VAT invoiced because of the multiple VAT rates. The annual listing requirement was included since at least one country has one, although it may not be feasible for the Internal Revenue Service to match up the returns of customers and suppliers in an economy as large as that of the United States.

Information to be Required on Sales Invoices

The VAT return requires six items of information concerning the amount of routine sales, two concerning VAT invoiced on routine sales, and two concerning VAT invoiced on non-routine sales. Whatever process the firm uses for summarizing sales for posting to the sales and VAT accounts, certain information must appear on the sales invoice in order for the firm to properly complete its VAT return. If the customer is a taxable firm, he also requires certain information on the sales invoice in order to determine his VAT paid deduction. For these reasons, a sales invoice is required for each sale to a taxable firm. A review of the sales invoicing requirements of various European countries reveals that one country or another requires almost all of the items indicated on the following specimen VAT sales invoice (Figure 2). However, what the European countries do is not used as sole justification for items on the specimen sales invoice. The necessity for those items depends on the hypothetical VAT law developed and on information that must be reported on the hypothetical VAT return.

(1) Seller Firm Name and Address
(2) VAT Registration Number of Seller
(5) Buyer Firm Name and Address
(6) VAT Registration Number of Buyer
(3) Invoice #
(4) Invoice Date
(7) Order #
(8) Place of Delivery
(9) Date of Delivery

Description	Qty.	Unit Price	Amt.	Qty. Discount	Net Amount	0 Rate 0%	VAT Rate Rate 1 (2%)	VAT Rate Rate 2 (4%)	Exempt
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
GOOD A	11	2	22	2	20	20			
GOOD B	2	25	50	0	50		50		
GOOD C	2	20	40	0	40			40	
GOOD D	1	10	10	0	10				10
FREIGHT					10			10	
		(20)			(21)(26)	(22)	(23)	(24)	(25)
	Subtotal (before VAT added)				130	20	50	50	10
		(29)			(30)		(27)	(28)	
		VAT			3		1	2	
		(31)			(32)				
	Total (amount of invoice)				133				
(33)							(34)		
	Discount Terms 2/10 net 30							SPECIAL NOTES	

Figure 2. Specimen Sales Invoice for the Invoice-Type of VAT.

NOTES:

Index Number	Description
(1)	Name and address of the selling firm.

Figure 2. Continued.

(2)	VAT registration number of the selling firm. This could be pre-printed on the invoice. It precisely identifies the VAT registrant and is also necessary if firms have to report the VAT on their purchases by supplier.
(3)	Invoice number.
(4)	Invoice date.
(5)	Name and address of the buying firm.
(6)	VAT registration number of the buying firm. This might be required on each sales invoice. It precisely identifies the buyer for VAT purposes. Were the selling firm to report VAT invoiced by customers, it is possible that the seller could record the buyers VAT number on the accounts receivable record, and omit it on each sales invoice.
(7)	Order number.
(8)	Place of delivery. If the sale was exported this is important to indicate why no VAT was invoiced.
(9)	Date of delivery. Used for VAT purposes for the same reasons as for financial accounting.
(10)	Description of goods and/or services. This is necessary to ensure that the goods are taxed at the proper VAT rate.
(11)	Quantity sold.
(12)	Unit price.
(13)	Total price of each good and/or service.
(14)	Quantity discounts.
(15)	Net amount after quantity discounts for each good and/or service.
(16)(17)(18)(19)	Rate of VAT applicable to the net amount of each good and/or service, or exemption. These are necessary to both the buyer and the government to show that the seller has applied the proper VAT rate. These are necessary for the seller to accumulate the sales by reporting rates and to calculate the VAT.

Figure 2. Continued.

(20)	Total consideration due before VAT added. Where there is no VAT in existence, this would be the total of the invoice, therefore (31) and (32) are present because of the VAT. Since it is not the total of the invoice the letters Sub would need to be added, prefixing total.
(21)	Total of the net amount column.
(22)(23)(24)(25)	Total sales by VAT rate 0, 2%, 4%, and exemptions. Each is required by both the buyer and seller to support the VAT calculation, and by the seller for reporting purposes.
(26)	Crossfooting of the VAT sales by rate and of the exemptions. Required by the seller to ensure that the detail and total are in agreement.
(27)(28)	VAT applicable to goods and/or services taxable at the 2% VAT rate, and at the 4% VAT rate. These are required by both the buyer and seller to show how the total VAT was determined, and by the seller for reporting purposes.
(29)(30)	VAT title and crossfooting of the amounts of VAT by rate. The government would require that this be shown on all sales invoices for which the buyer will treat the VAT as a deduction on his VAT return.
(31)	Total amount due before financial discounts.
(32)	Sum of the total before VAT added and the VAT.
(33)	Financial discount terms.
(34)	Special notes. These would indicate if the sale were a non-routine sale, a self-delivery, an export, or if the buyer's purchases were exempt from VAT. The non-routine designation is needed so the VAT will be recorded in the two accounts maintained for VAT invoiced on non-routine transactions. The self-delivery designation indicates the nature of this special transaction. Use of the special note "exports" would alert the accounting function that the total of the zero rated column is not to be accumulated as routine sales rate zero since the amount of exports are to be reported separately from the amount of sales at the zero rate.

Figure 2. Continued.

The study assumed above in chapter 3 that only exports would be zero-rated. A United States VAT might well include zero-ratings for certain goods and services, and the need to differentiate exports from sales at the zero rate would be important.

The special note "organization purchases exempt from VAT" would indicate why no VAT was invoiced on the sale.

As indicated previously in this chapter, the regulations would need to state how sales that could be categorized several ways (e.g., zero-rated exports) are to be reported.

The specimen sales invoice is the invoice for a transaction between two taxable firms. It assumes that other taxes, e.g., an excise tax, do not apply. On the invoice, the various entries are indexed by consecutive numbers in parentheses. The index numbers of the entries which would not appear were it not for a VAT are outlined. For demonstration purposes, VAT rates of 2% and 4% have been used on the invoice. Following the specimen, each indexed entry is identified, and the reason for each VAT required entry is given. Firms that do not regularly have sales taxable at VAT zero-rate, or 2% rate, or 4% rate, or exempt from VAT could omit the respective columns from their sales invoice. In fact, if virtually all sales are of the same rate, the rate could be stated on the invoice and all four VAT rate columns (0% - Exempt) could be omitted. With the omission of these columns the entries therein also could be omitted [(16)-(19), (22)-(25), (27), and (28)].

Ledger Accounts

This study assumes that the VAT law would not specify a chart of accounts for the firm to maintain. Determining the amount due the government monthly and preparing the quarterly and annual returns would be a relatively simple matter if the ledger accounts in Table 7 were maintained.

Table 7. Ledger Accounts Needed for the Invoice-Type of VAT

Account Title			Usual Balance in the Account
Routine Sales - VAT Invoiced	Rate 1		Credit
Routine Sales - VAT Invoiced	Rate 1	Returns	Debit
Routine Sales - VAT Invoiced	Rate 2		Credit
Routine Sales - VAT Invoiced	Rate 2	Returns	Debit
Non-Routine Sales - VAT Invoiced	Rate 1		Credit
Non-Routine Sales - VAT Invoiced	Rate 2		Credit
VAT Invoiced by Other Firms	Deductible		Debit
VAT Invoiced by Other Firms	Non-Deductible		Debit
VAT on Self Deliveries			Credit
VAT Invoiced but Never Collected			Debit
VAT Owed to the Government			Credit
VAT Paid to the Government			Debit
Adjustment for VAT related to assets switched to or from exempt production			Debit or Credit
Routine Sales	Domestic	Rate 0	Credit
Routine Sales	Domestic	Rate 1	Credit
Routine Sales	Domestic	Rate 2	Credit
Routine Sales	Exempt Goods		Credit
Routine Sales	Exports		Credit
	To Organizations whose Purchases are not Subject to VAT		Credit
Self Deliveries - excluding VAT			Debit
Uncollectible accounts - Excluding VAT			Debit

CHAPTER IV

METHODOLOGY - DEVELOPMENT OF HYPOTHETICAL ACCOUNTS-TYPE VAT LAW AND ITS RAMIFICATIONS

Development of the Law

In chapter 3 it was indicated that the United States Government would probably choose the invoice method of computing the VAT and that a state government would probably choose the accounts method of computation (both methods were defined in chapter 2). The reasons a state would select the accounts method are twofold. Firstly, the invoicing requirements would be a nuisance. Sales within the state, sales shipped out of the state, and intrafirm shipments into or out of the state would all require an invoice with the amount of VAT calculated. Secondly, firms could avoid the VAT if shipments out of the state were not zero-rated by placing a low value on the intrafirm shipments going out of the state. This would indicate that little value was added in the state with the VAT.

In this chapter a hypothetical VAT law is developed for an accounts-type VAT law at the state level. The form of the presentation is like that of chapter 3. The hypothetical law uses the direct subtractive method of computing the VAT (discussed in chapter 1), and its provisions are similar to those of the Michigan Business Activities Tax (BAT), which was repealed in 1967. Since the firms in this study had

experience with the BAT, the researcher was able to question each firm concerning compliance with a law similar to a law with which the firm was already familiar.

A law could have been developed using the direct additive method of computing the VAT (discussed in chapter 1). After reviewing the compliance costs resulting from the direct subtractive method, the author does not feel that the compliance costs using the direct additive method would be materially different.

The accounts-type of VAT law, developed in this chapter and used throughout the rest of this study where an accounts-type is referred to, applies the direct subtractive method of computing the VAT. The term accounts, rather than direct subtractive, was used throughout the study as it more easily describes the starting point in computing the firm's VAT liability, the accounts of the firm.

Scope of the Tax

The subject of a state VAT would be the value added within the territorial limits of the particular state. The value added would come about through sales or the performance of service. The BAT used the word "activities" to describe this value-adding process.[1] An actual VAT law would have to define a taxable person. For the purpose of this study, each of the firms interviewed is considered a taxable person. Since only the value added within a particular state is to be taxed, a means is needed for apportioning among the states overhead costs

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[1]Michigan, Public Acts of 1953, Act No. 150, sec. 1.

(e.g., the president's salary, which benefits all parts of the firm regardless of location) and profits (which are realized as a result of the sale, but are not necessarily generated by the sale). It seems unrealistic to expect firms to accurately allocate their profits among the states, for example, when reporting the location as a state with a VAT may result in higher taxation. It is assumed that a formula would be used to apportion the firm's value-added among the states in which the firm does business. The formula assumed is that presently used for Michigan business income tax purposes. It includes equally weighted factors for property, payroll, and sales (which includes all other business receipts).[2] The BAT used the same apportionment formula (see Figure 3, Schedule H).[3]

Tax Mechanism

Type of VAT

The VAT could be of the "gross product" type, the "income" type, or the "consumption" type (all discussed in chapter 1 and illustrated in Table 1). Were the VAT of the "consumption" type and business were able to deduct capital outlays entirely in the year of purchase,

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[2]Michigan, Department of the Treasury, Michigan Income Tax Return-Corporation (1971), p. 4. For a fuller discussion of interstate taxation see, for example: "Taming Interstate Taxes," Business Week, 2 May 1970, pp. 54-6. Owen Clarke, "Taxation of Multi-State Business," Massachusetts CPA Review, 45 (January-February 1971): 12-3. Clarence W. Lock, "A Moderate's Viewpoint on State Taxation of Interstate Commerce," Tax Executive, 17 (July 1965): 321-8; and Steven Jay Weiss, "Uniform Formula Apportionment of Corporate Income for State Taxation," Dissertation Abstracts International, 32 (October 1971): 1732-A.

[3]Michigan, Department of the Treasury, Business Activities Tax-Annual Return (Rev. 7-67), Schedule H.

Figure 3.

B.A. 10 (Rev. 7-67)
State of Michigan

DEPT. OF TREASURY
Dep't. of Revenue Div.

DO NOT WRITE ABOVE THIS LINE

Calendar Year

BUSINESS ACTIVITIES TAX - ANNUAL RETURN

OR FISCAL YEAR
Beginning _____ 19 ____
Ending _____ 19 ____

ACCOUNT NUMBER

Individual ____
Partnership ____
Michigan Corporation ____
Foreign Corporation ____
Other ____
Check One

RETURN IS DUE →

ACCOUNT NUMBER	T K	COUNTY	CITY	FILE DATE

PLEASE COMPLETE FULLY – If the name of owner or partners' names are not part of the above address or it is incorrect in any other way, please show below the owner(s) complete name, trade name and address

Federal Employers Identification Number _____ Social Security Number _____
Sales Tax Number _____
Name of Owner(s) _____
Trade Name _____
Address _____ ZIP CODE _____
Occupation or type of business _____
DID YOU FILE FOR LAST YEAR? _____ YES _____ NO
If this is your first return show date business was started _____
If return covers less than a full year show period covered FROM _____ TO _____
If this is a final return show name of successor(s) _____

COMPUTATION - SEE INSTRUCTIONS

1. Taxable balance (from page 3) ..... $ _____
*2. Tentative tax at 7-¾ mills (.00775) ..... _____
3. Less net income credit (line 2 above) $ _____ x _____ % (line 32-page 2) _____
4. Tax ..... _____
5. Less amounts paid with declaration, quarterly or tentative returns ..... $ _____
   Add any overpayment on previous year's tax not refunded ..... $ _____ _____
6. If your tax (line 4) is larger than payments (line 5) enter the balance due here ..... _____
7. If your tax (line 4) is less than payments (line 5) enter overpayment here
   ..... OVERPAYMENT $ _____
8. Penalty Plus interest if filed after due date (of amount on line 6)
   Penalty 5% per month or fraction thereof to a maximum of 25% ..... $ _____
   PLUS interest at the rate of 1% per month ..... $ _____ _____
9. Total tax, penalty and interest ..... TO BE PAID WITH THIS RETURN. → $ _____

* Taxpayers qualifying as public utilities use 2 mills (.002).

I declare under the penalties imposed by Act No. 150, P. A. 1953 As Amended, that this return, including any accompanying schedules and statements, has been examined by me and to the best of my knowledge and belief is a true, correct and complete return.

Return prepared by _____ Signed _____ Taxpayer

Address _____ Title _____

Make all remittances payable to State of Michigan and mail to:
MICHIGAN DEPARTMENT OF TREASURY
Department of Revenue Division
Lansing, Michigan 48922

Return must be signed by taxpayer. State whether individual owner. Member of firm, executor, administrator, trustee, etc. or give title if officer of a corporation.

Reviewed _____ Calculated _____

Figure 3. Continued.

SCHEDULE A - GROSS RECEIPTS AND EXCLUSIONS

1. Total Gross Receipts ..... $ _____
   Less: (a) Sales of capital assets ..... $ _____
   (b) Amounts received as an agent solely on behalf of another ..... _____
   (c) Refunds on returned merchandise ..... _____
   (d) Cash discounts allowed ..... _____
   (e) Other _____ ..... _____
   Explain
   Total Exclusions ..... $ _____

2. Gross receipts for tax purposes (Carry to line 1-Schedule D or F) ..... $ _____

SCHEDULE B - ALLOWABLE BUSINESS DEDUCTIONS - SEE INSTRUCTIONS

3. Inventory beginning of period ..... $ _____
4. Merchandise purchased for manufacturing or resale ..... _____
5. Total ..... _____
6. Less inventory end of period ..... _____

7. Cost of goods sold ..... _____

8. Rent paid (Business expense only) ..... _____
9. Interest paid on business indebtedness ..... _____
10. Taxes (Do not deduct federal excise and sales tax unless they are included in reported gross) ..... _____
11. Depreciation (From Schedule E) ..... _____
12. Repairs (Do not include capitalized improvements) ..... _____
13. Power, Heat, Light and Water ..... _____
14. Freight ..... _____
15. Postage, telephone and telegraph ..... _____
16. Advertising ..... _____
17. Insurance ..... _____
18. Supplies ..... _____
19. Travel expense ..... _____
20. Dues to business associations ..... _____
21. Other _____ ..... _____
22. Other _____ ..... _____
23. Other _____ ..... _____
24. Other _____ ..... _____
25. Total allowable deductions (Add lines 7 through 24) ..... $ _____
26. Difference (Subtract line 25 from line 2 and complete lines 2 and 3 of Schedule D or Schedule F) ..... _____

SCHEDULE C - NET INCOME CREDIT PERCENTAGE

27. Salaries and wages (do not include amounts paid to proprietor or partners) ..... $ _____
28. Personal property depreciation ..... $ _____
29. State and city income taxes ..... $ _____
30. Total of lines 27 thru 29 (Subtract this amount from line 26) ..... $ _____
    (If line 30 is equal to or greater than line 26, see instructions)
31. Net income for year for credit computation ..... $ _____

32. Computation of net income credit percentage $ _____ divided by $ _____ = _____ %
    1% of line 3 page 3 — line 31 — Not to Exceed 25%

Figure 3. Continued.

SCHEDULE D - TO BE COMPLETED BY TAXPAYERS WITH MICHIGAN RECEIPTS ONLY

1. Gross receipts for tax purposes (From line 2-Schedule A) ..... $ _____
2. Less allowable deductions - use the greater of (1) 50% of line 1 above; (2) line 25-Schedule B (page 2); or (3) line 6-Schedule G (page 4) ..... _____
3. Adjusted receipts for computation of tax - line 1, less line 2 ..... _____
4. Less statutory exemption ($12,500 for full year or $1,041.66 per month) ..... _____
5. Taxable balance - Carry to line 1-page 1 ..... _____

SCHEDULE E
ALLOWANCE FOR DEPRECIATION ON REAL PROPERTY ONLY

To be Prepared by those Taxpayers Claiming Depreciation on Schedule B, Line 11.
(Do Not Claim Depreciation on Furniture, Fixtures, Equipment or any Other Tangible Personal Property).

1. Kind of Real Property	2. Date acquired	3. Cost or other basis	4. Depreciation allowed (or allowable) in prior years	5. Method of computing depreciation	6. Rate (%) or life (years)	7. Depreciation for this year
		$	$			$

Total (to be shown as Line 11-Schedule B-Page 2) ..... $ _____

Total Depreciation Per Federal Return (Real & Personal) ..... $ _____
(Attach additional schedules if necessary)

SCHEDULE F - TO BE COMPLETED BY TAXPAYERS USING THE APPORTIONMENT FORMULA

1. Gross receipts for tax purposes (From line 2-Schedule A) ..... $ _____
2. Less allowable deductions - use the greater of (1) 50% of line 1 above; (2) line 25-Schedule B (page 2); or (3) line 6-Schedule G (page 4) ..... _____
3. Adjusted receipts for computation of tax - line 1, less line 2 ..... _____
4. Apportionment percentage (From page 4-Schedule H) ..... _____
5. Apportioned adjusted receipts (Multiply line 3 by apportionment percentage) ..... _____
6. Less statutory exemption ($12,500 for full year or $1,041.66 per month) ..... _____
7. Taxable balance - Carry to line 1-page 1 ..... _____

Figure 3. Continued.

SCHEDULE G - EXCESS PAYROLL

To be used only by taxpayers whose allowable deductions are less than 50% of reported gross receipts but whose payroll exceeds 50% of reported gross receipts.

1. Gross receipts for tax purposes (from line 2-page 2) ..... $ _____
2. Deduction (50% of gross receipts) ..... $ _____
3. Annual payroll ..... _____
4. Payroll excess (line 3 less line 2) ..... _____
5. 50% of line 4 – or 10% of line 1 whichever is the lesser amount ..... _____
6. Total allowable deductions. Add lines 2 and 5 and forward to line 2-page 3 ..... $ _____

SCHEDULE H - APPORTIONMENT FORMULA

To be used only by those taxpayers doing business in Michigan and one or more other states or foreign countries and who are taxable both within and without this state. (See instructions)

Computation of apportionment percentage:

* Property Factor –(A) Michigan property ..... $ _____
(B) Total property ..... _____
(C) Percentage (Divide Michigan property by total property) ..... _____ %

Payroll Factor –(D) Michigan payroll ..... $ _____
(E) Total payroll ..... _____
(F) Percentage (Divide Michigan payroll by total payroll) ..... _____ %

**Sales Factor –(G) Michigan receipts ..... $ _____
(H) Total receipts ..... _____
(I) Percentage (Divide Michigan receipts by total receipts ..... _____ %

(J) Total percentage (Total of percentages shown in C, F, I) ..... _____ %

(K) Apportionment percentage (J divided by 3. Carry resulting percentage to line 4-Schedule F-page 3) ..... _____ %

* Property owned is to be valued at original cost. Annual rental expenses for the use of real and tangible personal property less any annual subrental receipts are to be multiplied by 8 and included in the property factors.

**Sales factor includes sales of merchandise, services rendered, income from rents and royalties and all other business receipts.
SEE INSTRUCTIONS CONCERNING THE COMPUTATION OF MICHIGAN RECEIPTS.

IF RECEIPTS ARE DERIVED FROM TRANSPORTATION SERVICES OR TAXPAYER IS AUTHORIZED BY STATUTE TO USE ONE OF THE SPECIAL FORMULAE, EXPLAIN ON LINES PROVIDED BELOW.

(a) Numerator ..... _____
(b) Denominator ..... _____

Divide numerator by denominator to obtain apportionment percentage.

Apportionment percentage ..... _____ % (Carry to line 4-Schedule F-page 3)

organized labor would probably complain that the use of labor was being discouraged. Were the VAT the "gross product" type and business unable to deduct any depreciation on assets, business would complain that productivity was being discouraged. For these reasons, it is assumed that the VAT would be of the "income" type with depreciation being permitted as a deduction. The BAT was initially a "gross product" type of VAT and did not permit deduction for depreciation, but it was amended in 1955 to do so and thus became an "income" type of VAT.[4]

Method of Computing Tax

As was mentioned above, the accounts method of computing the VAT could use either the direct subtractive or the direct additive method. The two direct methods yield the same amount of value-added for a particular type of VAT (see Table 1) and one method could be used to check the amount determined utilizing the other method. However, the more complex the law, the more complex the problem of reconciling the two amounts. The direct additive method was rejected because it would require the computation of a profit, which by its nature is residual (revenue less expenses). This study concluded that the direct subtractive method would be used to calculate the VAT base. The BAT used this method.[5] It is assumed that expenses, representing purchases from other

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[4]Michigan, Public Acts of 1955, Act No. 282, sec. 205.551(3).

[5]Michigan, BAT Annual Return, Schedules A and B. In "Value Added Taxation in the Subnational Economy: An Empirical Analysis and Evaluation," (Ph.D. diss., Purdue University, 1971), p. 278, Robert D. Ebel implies that the direct additive method could easily have been used to calculate the VAT base on the BAT return. In fact, the profit (net income) amount on the BAT return is determined using the direct subtractive method (Figure 3), Schedule C, line 31).

firms, which are deductible for income tax purposes would also be deductible for VAT purposes.

When Tax Assessment Occurs

Due to the way the tax is determined for each firm, the tax could be assessed for any period and it is not necessary that the VAT year end be the same date for all firms. To minimize compliance costs it is assumed that a firm's VAT year end would coincide with its financial year end. As the amount of VAT due the taxing authority is not readily determined, as it was with the invoice method of computing the VAT, it is assumed that each firm would file three quarterly estimated returns and an annual return. The BAT had the same filing requirements.[6]

Tax Rates

Under the accounts method of computing the VAT the compliance problems for a firm would be greatly increased were a firm's value-added taxed at more than one rate. For example, the value-added related to food might be taxed at one rate and that related to non-food at another rate. To determine the VAT base on which to calculate the VAT a retailer would need to maintain separate sales and expense accounts relating to each VAT rate. In addition, it would be necessary to allocate such overhead expenses as electricity to the two categories of sales. There would be a tendency for firms to allocate expenses such that the firm's value-added would be taxed at the lower of the two rates. Because of

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[6]Michigan, Public Acts of 1961, Act No. 89, sec. 205.555.

compliance problems and possible tax avoidance, it is assumed that the value-added of a firm would not be taxed at more than one rate. For the purpose of this study the rate is immaterial. The BAT rate was .00775 for all but utility companies, which were taxed at a lower rate.[7]

Special Treatment for Particular Organizations, Goods and Services, and Transactions

The VAT law could exempt certain organizations, such as not-for-profit organizations, from the VAT, thus reducing their compliance costs. Certain goods and services, such as the receipt or payment of interest, rent, and insurance monies might also be exempt from the VAT. This would mean the firm could be taxed at multiple rates on its value-added with the accompanying problems referred to above. Certain transactions, such as shipments out of the state ("exports"), might also receive special treatment. Were shipments out of the state exempt, firms could avoid VAT by placing a low value on intrafirm shipments leaving the state.

A reason why the accounts-type of VAT is likely to have fewer tax rates and less special treatment for particular goods and services than does the invoice-type is the manner in which the tax is passed on to the consumer. The invoice method of computing the tax directly relates the amount of the tax to the amount of each sale and the tax is frequently segregated on the consumers bill. With the accounts method the firm passes the tax along to the consumer in the form of higher prices. The price increase need not necessarily be related to the

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[7]Michigan, BAT-Annual Return, Computation, line 2.

value added to the good by the firm. The consumer's bill would not identify the portion of the total price that is VAT. Thus, with the invoice method the consumer can identify the amount of VAT and lobby his governmental representatives for relief. With the accounts method it is difficult for the consumer to ascertain the amount of relief to seek.

It was concluded that each firm in this study would be subject to the VAT, would have its value-added taxed at only one rate, and would not receive any tax rebate or reduction on sales or shipments leaving the state.

The BAT exempted banks, insurance companies, non-profit organizations and others from the tax.[8] Banks and insurance companies were exempted, because they were specially taxed.[9] Public utilities were taxed at a lower rate.[10] Firms whose payroll exceeded 50 per cent of gross receipts also had special treatment,[11] as did firms with adjusted receipts of less than $12,500.[12]

How Certain Business Events Would be Treated

If the hypothetical law required certain events to be treated differently than they are treated in the firm's financial statement or

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[8]Michigan, Public Acts of 1953, Act No. 150, sec. 205.554.

[9]Donald K. Barnes, "The Business Receipts Tax," Michigan State Bar Journal, 32 (October 1953):33.

[10]Michigan, Public Acts of 1953, Act No. 150, sec. 205.552.

[11]Michigan, BAT-Annual Return, Schedule G.

[12]Michigan, Public Acts of 1961, Act No. 89, sec. 205.554.

for income tax purposes, the firm's compliance costs would be increased, of course. This study assumes that such things as depreciation calculations used for financial statement or income tax purposes could also be used for VAT purposes.

Firms would have to take a trial balance, including determining an inventory valuation, as of the date the hypothetical law took effect in order to account accurately for the value added after that date. While other transitional measures are possible, such as requiring an appraisal of fixed assets and inventory to determine the market (as opposed to book) value on the date the VAT took effect, this study assumes none.

Accounting Required by the Hypothetical Law

The adoption date of the VAT was assumed to be January 1. As was indicated above, it was assumed that the VAT year end of the first and subsequent years would coincide with the financial year end of each firm and that each firm would file three quarterly estimated returns and payments and an annual return and payment. The returns could require as few as four items: (1) revenues, less (2) deductions, to determine the (3) value-added, and the (4) amount of VAT due.[13]

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[13]For a proposed return containing only nine items, see: Maurice E. Peloubet, "Statement," Federal Excise Tax Structure, U.S., Congress, House, Committee on Ways and Means, Hearings Before the Committee on Ways and Means (Washington, D.C.: Government Printing Office, 1964), p. 163; or Maurice E. Peloubet, "European Experience with Value-Added Taxation," Alternatives to Present Federal Taxes, Tax Institute of America (Princeton, N.J.: Tax Institute of America, 1964), p. 74. For a four-page return see Michigan, BAT-Annual Return (Figure 3).

It is expected that the quarterly VAT return would require an estimate of sales, an estimate for deductions, and the computation of the estimated tax. The firm could obtain these by referring to the year-to-date figures in its trial balance. The apportionment formula and depreciation calculation from the prior year could be used in preparing the three quarterly estimates. The three quarterly BAT returns required estimates of gross receipts, total deductions, taxable balance, and the tax due.[14]

It is expected that the annual return would be more complex than the quarterly return. It would need to include, for example, the apportionment formula that the firm used to allocate its value-added among the states in which it did business. Since the firms in the study had had experience with the BAT annual return, it was assumed that the hypothetical law would require an annual return like that of the BAT. This permitted the time to prepare the hypothetical annual VAT return (used in chapter 7) to be that of the firm to prepare the BAT. A copy of the BAT return is included as Figure 3. The BAT return also had three pages of instructions which are not included.

The only additional requirement necessitated by the hypothetical VAT law would be a VAT payable account to be added to the ledger.

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[14]Ebel, "VAT in Subnational Economy," p. 205.

CHAPTER V

METHODOLOGY - COLLECTION OF DATA AND COST ESTIMATES

Collection of Data

Type and Number of Firms Studied

In selecting the firms to be studied there were two important limiting factors. To include firms which sold primarily at retail would have meant making assumptions about how the provisions of the VAT law overlapped or differed from the present sales tax laws of the various states. Were the VAT and sales tax laws in harmony the retailer's VAT compliance costs might be a small amount. For example, VAT would simply add a few percentage points to a present sales tax. Were the VAT and sales tax laws not in harmony, the VAT compliance costs for the retailer could be considerable, as would happen if, for example, there were multiple rates of VAT for goods that are taxed at one rate under a present sales tax.[1] Although the lists of possible compliance costs (see Tables 19, 20, 27, and 28) probably identify most of the compliance

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[1]The retailers VAT compliance problems and costs can be imagined if, as in France prior to 1970, three different VAT rates applied to the bakery products sold by a French supermarket. Cambridge Research Institute, prepared for the American Retail Federation, The Value-Added Tax in the United States - Its Implications for Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970), p. 59.

costs that a retail firm would incur, the problems of measuring those compliance costs seemed sufficiently unique and difficult to warrant a study of their own. For these reasons, it seemed wise to omit retail firms from the study.

The second limiting factor was the selection of the firms to be studied. A firm might refuse to participate in the study because of the time required by the firm's treasurer or controller or the firm's assumption that confidential information might be divulged.[2] Because of these reasons a scientific sampling plan would not be successful as it would include a non-response bias stemming from refusal of firms to participate in the study. Therefore, the firms were selected primarily on the basis of their willingness to participate in the study. The non-randomness of the sample is a limitation of this study.

The firms interviewed in this study are described in the following tables: Table 8--Description of the Firms Studied; Table 9--Description and Volume of Accounting Activity Per Year Per Firm; Table 10--Number of Persons in the Accounting Function Involved in the Processing of Sales and Suppliers' Invoices; and Table 11--Summary of Method of Processing Sales and Purchases Within Each Firm.

Conducting the Interviews

Based on the literature concerning value-added taxes and on the hypothetical laws developed, the researcher prepared a list of

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[2]One of the firms contacted, a subsidiary, was denied permission to participate by its parent because of the parent's concern about confidentiality.

Table 8. Description of the Firms Studied.

Firm Designation	Standard Industrial Classification (S.I.C.) Code[a]	S.I.C. Description	Approximate Total Sales Per Year (millions of dollars)[b]	Number of Employees[c]	
				Total	Mean of Total
A	2037	Manufacturing - Frozen fruits, fruit juices, vegetables, and specialties	4-5	80-200	140
B	7699	Services - Repair Shops and related services	3.8	154	154
C	3519[d]	Manufacturing - Internal combustion engines[e]	7	100-200	150
D	3714	Manufacturing - Motor vehicle parts and accessories	4	129	129
E	3842	Manufacturing - Orthopedic, prosthetic and surgical appliances and supplies	6.25	320	320

Table 8. Continued.

Firm Designation	Standard Industrial Classification (S.I.C.) Code[a]	S.I.C. Description	Approximate Total Sales Per Year (millions of dollars)[b]	Number of Employees[c] Total	Number of Employees[c] Mean of Total
F	3079	Manufacturing - Miscellaneous plastic products	20-22	700	700

[a]Dun & Bradstreet, Inc., Reference Book (New York: Dun & Bradstreet, 1971), pp. XII-XV.

[b]This information was obtained from an interview with the firm's treasurer or controller.

[c]Ibid.

[d]Based on the controller's description of the company, the Standard Industrial Classification (S.I.C.) shown in Dun & Bradstreet, Reference Book appears incorrect. A more accurate description would be provided by a S.I.C. of 3519.

[e]Ibid.

Table 9. Description and Volume of Accounting Activity Per Year Per Firm.

Description	Firm A	B	C	D	E	F
Sales						
Number of Sales Invoices Processed for Routine Sales:						
Rate 0	0	0	0	0	0	0
Rate 1	375	0	0	0	0	0
Rate 2	0	2,750	9,400	1,600	149,450	31,000
of Exempt Goods	0	0	0	0	0	0
of Exports	0	240	600	100	500	0
to Organizations whose purchases are not subject to VAT	0	10	0	0	50	1,000
Number of Routine Sales Returns	few[a]	0	15	25	3,000	100
Number of Non-Routine Sales	few	5	few	few	few	few
Total Number of Invoices Related to Sales	375	3,005	10,015	1,725	153,000	32,100
Number of Customers	12	450	28	30	7,000	2,000
Purchases						
Number of invoices received from suppliers (other than for the purchase of fixed assets)	1,500	16,500	12,000	5,000	36,000	70,000
Number of invoices received from suppliers for the purchase of fixed assets	few	few	50	25	few	few

Table 9. Continued.

Description	Firm A	B	C	D	E	F
Number of Purchase Returns	few	0	180	50	few	500
Total number of invoices related to Purchases	1,500	16,500	12,230	5,075	36,000	70,500
Number of checks issued for Purchases	1,500	2,600	3,800	1,000	5,400	14,400
Number of suppliers	50	200	150	100	500	115
Total						
Total number of invoices related to sales and purchases not processed by a computer[b]	1,875	19,505	22,245	6,800	36,000	70,500

[a]For those items listed as "few," no exact number could be obtained from the respondents so 0 was used.

[b]The sales invoices of firms E and F are processed by a computer.

SOURCE: The source of the numbers, including classifying the sales by VAT rate, was the interview with the firm's treasurer or controller.

Table 10. Number of Persons in the Accounting Function Involved in the Processing of Sales and Suppliers' Invoices[a]

Action Performed	Firm					
	A	B	C	D	E	F
Preparing or Processing Sales Invoices	2	3	2	2	13	5
Processing Suppliers' Invoices	2	1	1	1	6	2
Posting to Ledger		1	1			2
Keypunching				1	8	2
Computer Programming and Operating				2	2	2
Supervising (includes treasurer)	1	3	1	1	2	3
Total	5	8	5	7	31	16

[a]The persons in the accounting function involved in the processing of sales invoices and suppliers' invoices was defined in chapter 2.

SOURCE: Interview with the firm's treasurer or controller.

Table 11. Summary of Methods of Processing Sales and Purchases Within Each Firm

	Processing of Purchases		
Processing of Sales	Neither Accounting Machine nor Computer Used	Accounting Machine Used	Computer Used
Neither Accounting Machine nor Computer Used	Firm A		Firm D
Accounting Machine Used		Firms B,C	
Computer Used	Firm E	Firm F	

SOURCE: Interview with the firm's treasurer or controller.

actions that the firm might be expected to carry out as a result of a VAT. This list was the basis for the lists of possible compliance costs, Tables 19, 20, 27 and 28. The researcher then determined what information would be needed to cost each of the actions and asked each treasurer or controller over one hundred questions to elicit this information.

The interviews lasted approximately two hours and were conducted at the firm. The respondents answered virtually all of the questions asking for factual information except those concerning wage rates. During the first three interviews wage rate questions annoyed the respondents, probably because of the confidential nature of the information, and yielded virtually no information. For these reasons, wage rate questions were not asked at subsequent interviews. No questions were asked concerning the firm's profitability. A number of questions asking for estimates by the respondent were answered. In some cases an upper and a lower bound was placed on the estimate. It seemed to the interviewer that no respondent gave estimates for which he did not have a certain degree of confidence. When a respondent would not answer a question with a minimum level of confidence, he would usually respond with "Oh, I don't know" or some similar statement. The number and content of the questions were revised as the study progressed. Some questions were dropped after computing the estimated compliance costs for several firms as the information obtained from the questions did not relate or contribute to VAT compliance costs.

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Estimating the Changes Required in the Accounting Function of Each Firm Studied

It was originally intended that the interviewed firms estimate at least some of the changes that a VAT would require in their accounting function, but it was apparent in the interviews that the respondents did not want to take the time to do so. Since the VAT laws used by the researcher are only hypothetical and not something with which the firm will have to comply, and since the respondents were unfamiliar with the hypothetical VAT laws, it is understandable that they would not care to make such estimates at the present time. If a VAT were to become a reality, however, then after the accountant had become familiar with the provisions of the VAT law it would be easy for him to determine the changes required in his firm's accounting function because he is so intimately acquainted with it.

In each interview, the respondent was asked to describe the accounting function of his firm as it related to the processing of sales invoices prepared by the firm, suppliers' invoices received by the firm, and posting these transactions to the ledger accounts. Based on the researcher's knowledge about the firm and the hypothetical VAT laws and their accounting requirements, the researcher estimated what changes in the firm's accounting function would enable it to comply with the VAT. In many instances the changes were discussed with the firm at the time of the interview. The remaining changes were determined by the researcher subsequent to the interview. While these changes in the accounting function would enable a firm to comply with the VAT they may not be the

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optimal set of changes for that firm to minimize its long run VAT compliance costs.

Cost Estimates

Preparing the Cost Estimates

The changes required of the firm to comply with the hypothetical VATs would be accomplished by certain actions within the firm. The lists of possible compliance costs, Tables 19, 20, 27 and 28, describe each action and indicate the estimated cost of each. A number of actions are included which were not required by any firm in this study, but might be required were the study replicated with other firms.

After identification of the action, for example, preparation of the annual VAT return, it was determined whether the action would involve personnel or not. The dollar amount for each action involving personnel was estimated in the following manner:

1. Determine the persons in the accounting function who would be affected by the change;

2. Relate the job titles used by the firm to the titles used in Cost to the Firm Per Hour and Minute of Effective Production Time for Selected Types of Employees, Table 12;

3. Estimate the wage rate of each person affected by the change, and let W represent that wage rate;

4. Determine individual actions required by each person affected by the change;

5. Estimate the additional time required for each person affected to perform the action once, and let T represent that time;

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6. Estimate the number of times each person will perform the required action, and let N represent that number;

7. Estimate the total cost to the firm, which would equal W times T times N.

Certain actions, few in number, do not involve primarily personnel, for example, purchasing additional equipment. The dollar amount of each non-personnel action was estimated in the following manner:

1. Estimate the cost of one item, and let C represent that cost;

2. Estimate the number of those items required by the firm, and let N represent that number;

3. Estimate the total cost to the firm, which would equal C times N.

For an accurate estimate of the VAT compliance costs of his firm, a firm's accountant would need to follow the procedures just described which were used in this study. Data concerning wage rates (W), the number of times each person will perform an action (N) or the number of items required (N), and the cost of an item (C) are readily available to the accountant and could be expected to be more accurate and less time consuming to obtain than that used in this study. Data concerning the additional time required for each action (T) is not presently readily available to a firm's accountant and he would need to refer to this study or develop his own.

The next three sections of this chapter discuss the wage rates (W), personnel performance and training times (T), and the

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estimates of non-personnel costs (C) used in this study. The number of times each action would be performed (N) and the number of items required (N) were based on the interviews with the firms and are summarized in Tables 9 and 10.

Estimates of Wage Rates

As was indicated above, the interviews did not provide information concerning wage rates of individuals within the firm, apparently because of the confidential nature of the information. This section develops and explains the wage rates used in this study for individuals within the firm and outside it.

Employees Within the Firm

The Michigan Salary Survey Report - 1971 was used to develop wage rate estimates for employees within the firm, but not including the treasurer and the head of marketing.[3] This survey was of 250 Michigan firms, who employ 22 per cent of all wage and salary workers in the state. The hourly rate reported was the straight time rate and excluded overtime payments and shift premiums. From the wage rates listed for each accounting position, the median hourly rate was selected. The amounts of unproductive employee time (e.g., vacations) and firm-paid fringe benefits were then estimated and a factor calculated through the use of which the straight time rate was increased, so that the

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[3]Michigan, Civil Service Commission, Salary Survey Report-1971, (Lansing: Michigan Civil Service Commission, September, 1971).

adjusted wage rate represents the cost to the employer per hour of effective production time.

The formula was constructed as follows: [(Wage rate per hour x total annual hours for which the employee is paid) + employer's annual contribution for Social Security and Medicare + employer's annual contribution for unemployment insurance + employer's annual contribution for workmen's compensation insurance + employer's annual contribution for other fringe benefits] ÷ total annual hours of effective production time for the employee.

The construction of the components of the formula is shown in Appendix A. The numbers derived there are as follows: total annual hours for which the employee is paid = 2,088 hours; employer's annual contribution for Social Security and Medicare = 5.85 times 2,088 times the wage rate per hour for employees whose wage rate is less than or equal to $5.172 per hour and $631.80 for employees whose wage rate is greater than $5.172 per hour (a distinction is made between those earning less than or equal to $5.172 and those earning more because in a year the latter would reach the maximum the firm would have to contribute to Social Security and Medicare); employer's annual contribution for unemployment insurance = $54.18; employer's annual contribution for workmen's compensation insurance = .0017 times 2,088 times the wage rate per hour; employer's annual contribution for other fringe benefits = $252.; and total annual hours of effective production time for the employee = 1,749.6 hours.

Table 12 lists the positions selected from the Salary Survey Report - 1971 and gives the effective cost per hour for each one. The

Table 12. Cost to the Firm Per Hour and Minute of Effective Production Time for Selected Types of Employees

Position and Description[a]	Hourly Rate[b]	Hourly Rate X Adjustment Factor = Cost Per Effective Hour[c]	Cost Per Effective Minute
Employees earning less than or equal to $5.17 per hour			
Account Clerk-Intermediate ...adding, crossfooting, preparing invoices, making simple adjustments to the accounts, not required to know bookeeping principles...	$2.863	$3.798	$.0633
Account Clerk-Senior ...posting subsidiary ledgers, marking journal distribution of costs and discounts...	3.550	4.667	.0778
Accountant-Junior ...college degree...	4.225	5.521	.0920
Clerk - Junior ...filing, proofreading...	2.424	3.242	.0540
Clerk - Intermediate ...checking records, reports to specified standards...	2.783	3.696	.0616
Clerk - Senior ...preparing reports, composing correspondence...	3.336	4.396	.0733
Computer Operator ...loading and running programs...	4.080	5.337	.0890
Computer Programmer ...converts routines to electronic data processing equipment...	4.761	6.199	.1033

Table 12. Continued.

Position and Description[a]	Hourly Rate[b]	Hourly Rate X Adjustment Factor = Cost Per Effective Hour[c]	Cost Per Effective Minute
Key Punch Operator	$2.951	$3.909	$.0651
Shipping and Receiving Clerk	3.710	4.869	.0812
Typist - Junior ...typing reports from clear copy...	2.659	3.539	.0590
Typist - Intermediate ...types from a variety of sources...	2.755	3.661	.0610
Typist - Senior ...composing letters from oral instructions...	3.084	4.077	.0680
Employees earning more than $5.17 per hour			
Buyer - Senior	6.537	8.350	.1392

[a]Michigan, Civil Service Commission, Salary Survey Report-1971.

[b]Michigan, Civil Service Commission, Salary Survey Report-1971.

[c]The adjustment factor is explained in Appendix A. For employees earning less than or equal to $5.172 per hour the formula used was wage rate per hour x 1.2653 + $.175, and for employees earning more than $5.172 per hour the formula used was wage rate per hour x 1.1954 + $.536.

Salary Survey Report - 1971 did not include data concerning treasurers or the heads of marketing.

The following limitations are present in the cost-per-effective-hour rates developed. It should be noted that the rates are based on a number of estimates and assumptions including assumptions 7 and 8 in chapter 2. Thus, the cost to a particular business firm for an employee may vary from those developed, e.g., the unemployment insurance rate may be higher as well as the amount paid for fringe benefits. Secondly, a particular firm, in actuality might obtain additional work from employees by making more effective use of existing time (thus at no cost to the firm), or salaried personnel may be required to work overtime without compensatory time or additional pay. Conversely, additional work might be obtained only by paying an overtime premium. Were the firm to hire part-time employees as a result of the VAT, their effective cost to the firm could be above or below the cost calculated.

Treasurers or Controllers

The firms interviewed did not provide information about the wage rates of their treasurers or controllers. The researcher therefore obtained estimates from management recruiting firms for the entry level and maximum salary a certain size industrial firm might pay its treasurer or controller.[4] The size firm was one with sales of $3-5 million and eight to fifteen accounting employees. The median entry

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[4]Telephone interviews were conducted on May 23, 1972 with James Griffin, Manager, Management Recruiters, Lansing, Michigan; Gordon Lowell, Gordon Personnel Associates, Lansing, Michigan; and James Steel, Snelling & Snelling, East Lansing, Michigan.

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level salary and median maximum salary were averaged to equal $21,750 per year. This amount was assumed as the salary of each firm's treasurer or controller.

The following formula was used to determine the cost per effective hour for a treasurer: (annual salary + employer's annual contribution for Social Security and Medicare + employer's annual contribution for unemployment insurance + employer's annual contribution for workmen's compensation insurance + employer's annual contribution for other fringe benefits) ÷ total annual hours of effective production time.

The components of the formula were: employer's annual contribution for Social Security and Medicare = $631.80;[5] employer's annual contribution for unemployment insurance = $54.18;[6] employer's annual contribution for workmen's compensation insurance = $36.98 = $21,750 x .0017;[7] employer's annual contribution for other fringe benefits =

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[5]Commerce Clearing House, Inc., Standard Federal Tax Reporter-1973 (Chicago: Commerce Clearing House, 1973), para. 113.

[6]This is based on the average employer unemployment insurance tax rate as a percent of taxable wages in Michigan in 1968 of 1.29 percent times the wage base to which the tax applied in Michigan in 1972 which was $4,200. Tax rate from U. S., Department of Labor, Manpower Administration, Unemployment Insurance Tax Rates by Industry-1968 (Washington, D.C.: Government Printing Office, 1970), p. 237, and wage base from Commerce Clearing House, Inc., State Tax Guide - All States (Chicago: Commerce Clearing House), para. 535.

[7]The rate of 17¢ per $100 payroll was stated by W. D. Morgan, Michigan Workmen's Compensation Rating Bureau, in a letter to the author dated February 15, 1973.

$252.00;[8] total annual hours of effective production time (1944) = days at work per year (243) x effective production hours per day (8).[9] Thus, the cost to the firm per hour of effective production time for a treasurer is $(21,750. + 631.80 + 54.18 + 36.98 + 252) ÷ 1944, or $22,724.96 ÷ 1944 = $11.690, the cost per effective hour. The cost per effective minute = $.1948.

The limitations cited above for the employees within the firm also apply to the hourly rate for a treasurer or controller. In addition, the annual salary of the treasurer or controller is related to the size of his employing firm. If this study were replicated using larger firms, then the treasurer's or controller's hourly rate should be recomputed.

Heads of Marketing

Again, because the firms did not provide information concerning their wage rates, the researcher had to estimate them. Based on the telephone interviews, a cost per effective hour of $11.69 and a cost per effective minute of $.1948 were estimated.[10]

Accounting Machines Reprogrammers

For those firms using accounting machines to post to the ledger, prepare check advices, etc., a VAT would necessitate changing

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[8]This was estimated based on the telephone interviews of May 23, 1972 with James Griffin, Gordon Lowell, and James Steel.

[9]These were estimated based on the information provided by the firms interviewed.

[10]Telephone interviews of May 23, 1972 with James Griffin, Gordon Lowell, and James Steel.

some of the panels, bars, boards, or punched tape used to program the machine. The firms that were studied that use accounting machines indicated that they would have a representative of the manufacturer do the conversion, rather than attempt it themselves. The Lansing, Michigan office of an accounting machine manufacturer indicated that the billing rate for the conversion of accounting machine programs would be $25.50 per hour.[11] This is the hourly rate that has been used in the study for this type of accounting machine conversion work.

CPA Tax-Advisors

The firms studied indicated that they would consult with their CPA if an invoice type of VAT were adopted. The most frequently mentioned reason was to check that the firm interpreted the VAT law in the same manner as the CPA. The respondents indicated widely varying hourly rates they expected their firms would be billed by a CPA for this consultation. The lowest rate cited was $12.50 per hour and the highest was $60 per hour. The remainder were in the range of $25 to $35 per hour. The researcher was hesitant to reject most of the CPA hourly billing rates estimated by the firms because the firm's estimate of the billing rate of its CPA ought to be more accurate than the estimate of an outsider. Except for the rate of $12.50 per hour, the study used the estimate given by each firm in the calculation of its compliance costs. It is recognized that CPA billing rates vary, although they may not in fact vary as much as the respondents' estimates of

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[11]This was indicated by the Borroughs Corp., Lansing, Michigan in a letter to the author dated May 24, 1972.

those rates. However, the rate of $12.50 seemed so unreasonably low that the rate of $20 was used for the calculation of that firm's compliance costs.

Estimates of Personnel Performance and Training Times

The sources of these time estimates were the treasurer of controller of the firm, standard time data, or the researcher. The source of the time estimate for the possible compliance costs of Tables 19, 20, 27 and 28 are indicated in the code number assigned to that cost; see Table 16. The non-availability of reliable time estimates from the firm or standard time data forced the researcher to make his own estimate in a number of instances. An accountant preparing an estimate of the compliance costs for his firm could use the times estimated in this study as a starting point, but he would undoubtedly wish to make adjustments to reflect the characteristics of his particular firm.

Estimates Solicited from Firms

The time estimates solicited from the respondent in each firm concerned primarily the time for the respondent to become familiar with the VAT legislation, consulting time with the firm's CPA, and the time it used to take the respondent to prepare the Michigan BAT return. The restriction of the estimates to estimates of these types were for two reasons. The treasurers and controllers were unfamiliar with the details of the hypothetical VAT laws and were not interested

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in spending the time to become familiar with them. Reliable time estimates would not be obtained when detailed knowledge of the law was necessary so the researcher did not ask the respondents for such estimates. Secondly, the respondents in some cases would not make an estimate when they did not have a certain degree of confidence in their estimate. As indicated previously, they would respond with "Oh, I don't know" or some similar statement.

To provide a standard for measurement the respondent's estimate of the time he would need to become familiar with a hypothetical invoice-type VAT law was based on his brief examination of "Proposals for a Value-Added Tax in Ireland," a proposal eleven pages long.[12] The estimate of the time he would need to become familiar with a hypothetical accounts-type of VAT was based upon a perusal of a Michigan annual BAT return,[13] as was his estimate of the time he used to spend to prepare the Michigan BAT return. Each of the respondents had prepared an annual BAT return before the BAT was repealed.

Estimates Developed Based on Standard Time Data

An analysis of the invoicing and reporting requirements for both hypothetical laws reveals that the actions needed to comply with the VAT would be similar in all the firms studied, but the times needed

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[12]Ireland, "Proposals for a Value-Added Tax in Ireland" (Extract of the White Paper), Bulletin for International Fiscal Documentation, 25 (May 1971): 175-85.

[13]Michigan, Department of the Treasury, Business Activities Tax-Annual Return (Rev. 7-67).

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to perform these actions would vary from firm to firm. For example, individual sales of six digits rather than five would affect the time required to perform an action. Since the time required to perform each action is less than a minute, it was impossible to obtain accurate estimates of these times from the interviewed controllers and treasurers. For this reason, this study bases estimates on the article, "How Much Work Can You Expect,"[14] which provides in detail the times necessary to perform common office operations. The article describes the operation of certain machines, e.g., adding machine, and the performance of certain work, e.g., typing, in terms of a number of component operations. The time to perform each component operation is given in ten-thousandths of a minute. The standard time for each accounting operation related to a VAT was determined by breaking the operation into components, selecting the appropriate time from those given in the article, and then computing the total times, as shown in Table 13. Appendix B quotes those times used in this study for estimating standard times for various actions. Appendix C shows the computation of each of the time estimates shown in Table 13, as well as the minor assumptions related to those computations.

Use of the above time estimates are subject to the same limitations that exist in any situation where predetermined time standards

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[14]"How Much Work Can You Expect?", Modern Office Procedures, 13 (April 1968): 51-2. Textbooks on office management explain how to do office time studies, but give only a few examples of the results of such time studies. For example, see George R. Terry, Office Management and Control 6th ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1970), chapter 20 and John J. W. Neuner and B. Lewis Keeling, Administrative Office Management 5th ed. (Cincinnati: South-Western Publishing Company, 1966), chapter 15.

Table 13. Time to Perform Certain Accounting Operations Related to a VAT.

Description of the Accounting Operation	Minutes to Perform that Operation
Typing ledger account title	.4740
Handwriting VAT registration number of the buying firm	.1140
On a sales invoice (the number in parentheses refers to the index number on the specimen sales invoice, Figure 2):	
Typing VAT registration number of buyer (6)	.0615
Entering the net amount of an item in the proper VAT rate column (16)-(19)	.0487
Additional typing of "Sub" (20)	.0096
Adding amounts in a VAT rate column (22)-(25)	.0255 per amount + .0240
Entering the total sales for each VAT rate column or exempt column used (22)-(25)	.0679
Crossfooting of the VAT sales by rate and of the exemption (26), if more than one column used	.0321 per column + .0240
Comparing crossfooting of the VAT sales by rate (26) with vertical addition of the net amount (21)	.0405
Calculating the amount of VAT for one VAT rate (27), (28)	.1071
Entering the amount of VAT due (27), (28), (30)	.0615
Additional typing of, "VAT" (29)	.0391
Crossfoot the amount of VAT applicable at 2% (rate 1) and 4% (rate 2) (30)	.0684
Additional typing of, "total" (31)	.0455
Adding "total before VAT added" amount and "VAT" amount to determine total amount (32)	.0462
Entering the total amount due (32)	.0699
Additional typing of special rates (34)	
Non-routine sale	.0807

Table 13. Continued

Description of the Accounting Operation	Minutes to Perform that Operation
Self-delivery	.0711
Export	.0487
Buyer's purchases exempt from VAT	.1351
Comparing an added total of a VAT rate with column total on a sales invoice	.0405
Checking the VAT calculation for one VAT rate	.1482
Comparing crossfooting of VAT by rates with total VAT on a sales invoice	.0297
Checking the total due	.0981
Annual listing of VAT on uncollectible accounts	
Per account (debtor) written off	.2494
Per invoice written off	.2768
Annual listing of VAT invoiced by customer	
Per customer	.2704
Per invoice	.0467
Annual listing of VAT invoiced by the firm's suppliers	
Per supplier	.2704
Per invoice	.0467
Sorting documents from numerical sequence by invoice number into groups by VAT registration number (firm name)	
Total time per invoice = .0382 + (.0001) (number of firms)	
Sorting documents from groups by VAT registration number into numerical sequence by invoice number	
Total time per invoice =(digits in total number of documents)(.0221)	

SOURCE: Appendix C, which this table summarizes.

are used. Among the assumptions underlying the time estimates are the following:[15] it is possible to define and time human motions with accuracy, as is assumed in "How Much Work Can You Expect;" it is possible to isolate the defined motions; the time required by a series of motions is the sum of the individual motions; and times derived from one situation can be applied to other work situations. The time estimates make no statement about the effect of learning on the times. Neither do the time estimates make any allowance for the detection and correction of errors nor an allowance for fatigue and personal time. It is also possible that in the detailed computations of Appendix C, the researcher has omitted some actions that an employee would need to perform in order to perform an accounting operation.

Estimates Made by the Researcher

Time estimates for a number of the possible compliance costs could not be obtained in the interview with the treasurer or controller nor from standard time data. These estimates could have been omitted from the study or made by the researcher. Omitting them would mean that the compliance cost estimate for a firm would have understated the probable total by some unknown amount. As the study was interested in total compliance costs, the researcher estimated those times which could not be obtained from the interviews or standard time data. The coding system for the possible compliance costs, Table 16, identifies these estimates. The coding also reflects the researcher's judgment

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[15]Bertram Gottlieb, "Limitations of PMTS-Predetermined Motion Time Systems," Systems and Procedures Journal, 17 (July-August 1966): 15-20.

as to the accuracy of each of these estimates. The three categories are that the time estimate was: estimated accurately as defined in chapter 2; not estimated accurately, but the information is readily available to a firm's accountant (defined in chapter 2); and not estimated accurately, and the information is not readily available to a firm's accountant. Coding the individual compliance costs in this manner enables the reader to discern the impact of the researcher's estimates and, if he so desires, to substitute his own estimates and to observe their impact.

There are limitations to these researcher-estimated times. First, they are based on the researcher's background and experience. Secondly, they do not make allowances for variation in employee ability. As employee ability and wage rates may be directly related, the cost (wage rate x time) to teach an employee a given amount of knowledge may not vary much. Thirdly, while an individual time estimate may be reasonably accurate, the cumulative effect of an error could be significant.

The remainder of this section discusses some of the problems in estimating computer reprogramming time, and the time estimates where more than one individual would be involved, for example, training time for employees. When the time estimate involves the time of only one individual, for example, the treasurer, that time estimate has been stated in the list of possible compliance costs Tables 19, 20, 27 and 28.

Employees whose job will be affected by a VAT will require training concerning the VAT. As will be shown in chapter 7, Hypothesis

1, an accounts-type of VAT will not require an employee to change his present routine in his day-to-day work. Chapter 6, Hypothesis 1 will show that an invoice-type of VAT will require changes in the employee's routine. In Table 14 are identified the bodies of knowledge that would enable an employee to perform his job, as it is affected by an invoice-type of VAT, and the times the researcher estimates it would take one employee to learn it. The most basic knowledge, which all affected employees would need, is listed first. As the table progresses, the knowledge listed becomes progressively more complex and is therefore needed by fewer and fewer employees.

A set of times the researcher hesitated to estimate concerned computer programming times which includes the time to change product code numbers if necessary, redesign the input medium (e.g., card or tape), rewrite, text and de-bug existing programs. William Sharpe has stated, "It is particularly difficult to estimate the cost of programming a given task or set of tasks."[16] After interviewing the data processing installations of eleven firms, another researcher stated, "The systems people sometimes made substantial errors in their cost estimates even when the job description was complete and clear."[17] Given these findings it seemed most unlikely that applicable standard time data could be found.

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[16]William F. Sharpe, The Economics of Computers (New York: Columbia University Press, 1969), p. 529.

[17]Lester Edward Heitger, "Criteria for Transfer Pricing of Data Processing Services Within Business Firms," (Ph.D. diss., Michigan State University, 1972), p. 78.

Table 14. Estimated Time to Train Employees Concerning a VAT

Knowledge Employees Are to Obtain	Time in Minutes
For An Invoice Type of Vat	
General, including how VAT applies to returns of goods and discounts	30
Total	30
VAT rates and exemptions	
It is assumed that if the firm were to have numerous goods at other than 1 rate, that the product code would be adjusted so as to make identification of the applicable rate easy	
Rates applicable to goods and services	20
Exempt Goods and Services	15
Exports	10
Organizations whose purchases are not subject to tax	15
Total	60
Checking invoices for accuracy	
Errors to look for	10
How to resolve errors found	20
Total	30
Special treatment to be afforded:	
Sale of assets	6
Self-deliveries	12
VAT non-deductible	12
Total	30
For An Accounts Type of Vat	
No additional knowledge is needed.	

SOURCE: Estimates of researcher.

To have obtained useful estimates from the firms, the firms would have been required to spend a considerable amount of time making estimates and/or actually performing the reprogramming tasks. The firms with computers interviewed were not prepared to do this. The Assistant Comptroller of Goodyear Tire and Rubber Company, commenting on estimating the cost of reprogramming his firm's computer system in response to an invoice-type VAT wrote, "It is horrible enough to contemplate that necessity in the event we are so required by law and, short of that, I cannot bring myself to face up to it."[18] Thus, the lack of alternative computer programming time estimates required the researcher to estimate these times.

The following table indicates some other times estimated by the researcher. It was assumed that the firm's accounting function was operating so as to accumulate the VAT related information in the proper VAT ledger accounts. It also assumed a trial balance has been prepared with year-to-date figures for each account.

It should be noted that a practicing CPA was consulted before making time estimates concerning certain costs related to the year-end cut-off.[19] The researcher obtained some estimates from the firms as to their error rates on sales invoices prepared and supplier invoices received, but could not obtain from the firms a means of transforming these estimates into times to detect and correct errors

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[18] S. L. Lacks, Assistant Comptroller, The Goodyear Tire and Rubber Company, Akron, Ohio in a letter to the author dated May 25, 1972.

[19] Interview on April 26, 1973 with Danny C. Williams, Urbach, Kahn & Werlin, Albany, New York.

Table 15. Time to Perform Certain Accounting Operations

Description of the Accounting Operation Related to a VAT	Time in Minutes
For An Invoice Type of VAT	
Preparing a trial balance, income statement, and balance sheet - per account	.5
Find in a trial balance the balance of an account	1.
Determine the amount of VAT to be paid monthly to the government	
Find in the trial balance the balance of 8 accounts x 1 minute (per above) (VAT invoiced; routine rates 1 and 2, non-routine 1 and 2, routine returns rates 1 and 2; VAT deductible, and VAT paid to government)	8
Other time	7
Total	15
Time to prepare check or voucher check	1
Time to complete quarterly and annual VAT return	
Estimated number of accounts in the trial balance of a firm would have to consult = 21 (see Table 7)	21
Time to check and sign return	14
Total	35
For An Accounts Type of VAT	
Time to complete quarterly VAT return	
Time to obtain sales figure	1.
Time to obtain and accumulate allowable deductions	24.
Time to apply apportionment formula and determine tax	5.
Time to check and sign return	15.
Total	45.

SOURCE: Estimates of researcher.

stemming from a VAT. Another set of times that were difficult to estimate concerned the additional time an employee requires to perform his VAT related task while he is still learning the task. The performance times estimated previously assume the employee has learned his task. In effect a relatively gentle sloping area on a learning curve has been reached. The researcher estimated this employee learning time keeping in mind that a number of the actions resulting from the VAT would probably not be subject to a great deal of learning by the employee. For example, performing a percentage calculation on the sales invoice, would not require much learning time on the part of an employee who already performs percentage calculations although not for a VAT.

Estimates of Non-Personnel Costs

All six firms interviewed purchased one or more tax subscription services such as those provided by Commerce Clearing House, Inc., Prentice Hall, Inc. or the Bureau of National Affairs, Inc. Each of the above publishers was contacted for an estimate of the price for a subscription service for a federal invoice type of VAT. One publisher responded that he "would guess" that a one volume unit would sell initially for $175.[20] He also guessed that this unit would increase the price of an existing series by $75. As the hypothetical invoice-type VAT law seemed relatively uncomplicated, it was assumed that the VAT subscription service would be added on to an existing service, so the $75 amount was used for the purposes of this study.

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[20]This was indicated by one of the services, which wished to remain anonymous, in a letter to the author dated June 1, 1972.

Another compliance cost a firm might incur would be the one-time reprinting of their supply of sales invoices to include the information required by an invoice type of VAT. Two firms who print business forms were contacted.[21] If a substantial number of copies were to be printed and the composition were relatively simple, neither firm expected that the customer would be charged extra for altering the sales invoice because of the VAT. The competitiveness and practices of the printing business appeared to be the reasons for the lack of an additional charge. It is possible that if a VAT were adopted and a large number of firms wanted their sales invoices reprinted during the same time period there would be a special composition charge by the printers. Assuming there would be a substantial period of time before the VAT became effective, sales invoice composition costs to the firm by its printer were estimated to be zero.

On the date the VAT becomes effective a firm could have a quantity of accounting forms, particularly sales invoices, on hand which are made obsolete by the VAT. These forms would be a sunk cost to the firm, but had the VAT not been adopted the forms would have been utilized. If the firm uses neither an accounting machine or a computer it may be able to avoid this obsolescence by using up their supply of old forms and introducing the revised ones prior to the effective date of the VAT. Where an accounting machine, such as in firms B and C, or particularly a computer, such as in firms E and F, is used in the processing of sales the obsolescence of some quantity of accounting

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[21]Telephone interviews were conducted on May 24, 1972 with Superior Business Forms, Inc., Lansing, Michigan; and Wileden-Cullen Co., Lansing, Michigan.

documents seems inevitable. It seems unlikely that the revised accounting machine or computer programs would be inserted in the machines the moment the old supply of sales invoices, for example, is depleted.

Determining the additional computer equipment that might be needed because of the VAT could have been a difficult task. In his study on the pricing of data processing services, Heitger states, "Typically there is no simple measure of capacity . . . ."[22] In none of the firms interviewed were the computers or accounting machines used outside of the 8 a.m. - 5 p.m. working hours. Thus, the assumption was made (chapter 2, assumption 6) that those machines have sufficient unused capacity that the VAT would not require the purchase of additional equipment. Also because of the excess capacity, any additional computer processing time due to the VAT was estimated to have no cost.

The additional office equipment required by the firms consisted of an electronic calculator (estimated cost of $80.) and a file cabinet (estimated cost of $60.).[23]

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[22]Heitger, "Criteria for Transfer Pricing," p. 139.

[23]Sears, Roebuck and Co., Fall and Winter Catalog 1973, Eastern Edition (Boston: Sears Roebuck and Co., 1973), pp. 921, 928.

CHAPTER VI

CONCLUSIONS FOR THE INVOICE METHOD OF COMPUTING THE VAT

This chapter discusses and accepts or rejects each of the seven hypotheses for the invoice method of computing the VAT. Except for Hypothesis 1, each of the hypotheses is accepted as generally true.

Hypothesis 1

1. It is not possible to determine the changes that a VAT would require within the accounting function of each firm subject to the tax.

This hypothesis is rejected after examining each firm in the study. In order to identify the possible individual compliance costs of the VAT (Hypotheses 2 and 3, Tables 19 and 20) it was necessary to determine the changes in each firm's accounting function that the VAT would require. Certain changes will be required of all firms regardless of the nature of their particular accounting function, for example, recording the amount of VAT billed by suppliers. Other changes are dependent on the amount of mechanization within a firm's accounting function, for example, using the computer instead of people to calculate the VAT on each sales invoice. Finally, other changes are required because of the individuality of each firm's accounting function, for example, checking of the sales invoices by some firms and not by others.

Firm A

Description of the processing of sales

The firm contracts for most of its sales prior to the start of each growing season. After receiving the shipping documents, one of two office secretaries prepares the sales invoice. Another office secretary checks the sales invoices. The treasurer posts the ledger by hand for the sale and the receivable.

Changes in the processing of sales necessitated by the VAT

The secretary preparing the sales invoice could enter the additional information required by the VAT. It could be checked by the other secretary. The treasurer could simply add a column in his posting process for the VAT invoiced.

Description of the processing of purchases

The purchasing agent prepares all purchase orders. One of the two office secretaries checks the suppliers' invoices. The purchasing agent approves the payment. A clerk prepares the checks for the supplier. A check-advice is prepared unless the supplier has included a copy of his invoice to be returned. The check register is used to accumulate the information for posting the ledger. The treasurer posts the ledger by hand.

Changes in the processing of purchases necessitated by the VAT

The office secretary who checks the suppliers' invoices could also check the invoice for the VAT related items. The check register could be expanded to include a column for the VAT invoiced by the supplier, which would be completed by the clerk preparing the checks. The treasurer could use the total of that VAT column to post to the ledger.

General Comments

The firm indicated that the accounting personnel are not fully utilized. The firm has a computer, which is used to handle inventory and cost accumulation and it is not fully utilized.

Conclusion

The hypothesis is rejected for this firm.

Firm B

Description of the Processing of Sales

For each job, the timekeeper posts the labor and materials to a cost card. The engineer and sales manager review and approve the cost card. An invoicing clerk prepares a sales invoice, and an accounting supervisor checks it. Weekly, the accounting machine operator prepares a sales journal and a customer accounts receivable ledger simultaneously. The sales journal lists each invoice as well as certain other information. An accounting supervisor uses the sales

journal totals in preparing the journal entry for sales and accounts receivable. The accounting machine operator posts the journal entries to the ledger accounts.

Changes in the Processing of Sales Necessitated by the VAT

The invoicing clerk could enter all the information required by the VAT on the sales invoice. An accounting supervisor could check the VAT-related information on the sales invoice. The sales journal and its program would need to be redesigned and reprogrammed. Columns would need to be inserted for rates at VAT rate 2, exports, and sales to organizations whose purchases are not subject to VAT, as well as for VAT invoiced at rate 2. As the present sales journal uses only eleven columns while the accounts payable uses fourteen, adding four columns should not be impossible. The accounting machine operator would post the amounts of the sale and VAT on each invoice in the appropriate columns. The accounting supervisor would sum the total of the entries in the VAT column and in the three additional sales columns in the sales journal. These totals would be used in preparing the journal entry for sales and VAT invoiced.

Description of the Processing of Purchases

The buyer prepares a purchase order which is sent to the supplier. The secretary in purchasing checks the suppliers' invoices when received. Weekly, the accounting machine operator prepares a remittance advice and an accounts payable journal simultaneously. The

remittance advice lists the invoices being paid. An accounting supervisor uses the total of the accounts payable journal in preparing the journal entry for purchases and accounts payable. The accounting machine operator weekly posts the journal entry to the ledger accounts.

Changes in the Processing of Purchases Necessitated by the VAT

The secretary in purchasing would check the suppliers' invoices for the VAT-related items. The accounts payable journal program would need to be reprogrammed to insert a column for VAT. When the accounting machine operator is preparing the remittance advice-accounts payable journal, the amount of VAT shown in each supplier's invoice would be entered in the VAT column. The accounting supervisor would add the VAT column shown on the accounts payable journal as the machine's registers are fully utilized. This total of VAT invoiced by suppliers would be used as part of the purchases journal entry.

General Comments

The treasurer indicated that his present accounting personnel are being fully utilized, with a number required to work 40-46 hours per week. He also indicated he is thinking about a small computer in order to process his extensive job-costing system more efficiently. The changes necessitated by an invoice-type of VAT appear within the capabilities of the present accounting function, although an invoice-

type of VAT might well require the firm to hire additional personnel or to pay overtime to the accounting machine operator.

Conclusion

The hypothesis is rejected for this firm.

Firm C

Description of the Processing of Sales

Most sales are via releases under blanket purchase orders from the customer. One clerk types the sales invoice. Another clerk checks the prices and extentions. The operator of the accounting machine (NCR 400) lists each sales invoice separately. The total is distributed to various accounts receivable and sales ledgers. The totals of the various columns of the listing are produced by the machine and are used to post the ledger.

Changes in the Processing of Sales Necessitated by the VAT

The clerk preparing the sales invoice could enter the information required by the VAT. The clerk checking the sales invoice could check the VAT required information. The NCR program would need to be reprogrammed. The new program would insert the contents of one column into the miscellaneous column and put the VAT information in its place. A special column might be established for the export sales, or the miscellaneous column might be used. The accounting machine operator would have to post to the VAT column for every sales invoice. The

machine can accumulate the total of the column for purposes of posting to the ledger account.

Description of the Processing of Purchases

Two purchasing agents prepare purchase orders for approximately one-half of the orders. The remaining purchases are purchases against blanket orders. A clerk checks the suppliers' invoices as they are received. He also indicates the expense breakdown. The accounting machine operator lists for each invoice the number, amount, and the distribution to various accounts. The totals of the various columns are used to post the ledger. The invoices are accumulated by supplier. When the clerk prepares a check, he also prepares a voucher that lists the invoices being paid.

Changes in the Processing of Purchases Necessitated by the VAT

The clerk who checks the suppliers' invoices could check the invoices for VAT related items. The NCR program would need to be reprogrammed. The new program would insert the contents of one column into the miscellaneous column and put the VAT information in its place. The accounting machine operator would have to post to the VAT column for every supplier's invoice. The machine can accumulate the total of the VAT column for purposes of posting to the ledger.

General Comments

The firm uses a NCR Century 100 computer to accumulate standard and actual costs as well as inventory quantities. The

computer is used 20 hours per week.

Conclusion

The hypothesis is rejected for this firm.

Firm D

Description of the Processing of Sales

Upon receipt of an order, the clerk in sales prepares a customer-order-received slip. The shipping clerk initiates preparation of the sales invoice at the time of shipment. The clerk in sales completes preparation of the sales invoice. Monthly, amounts are taken from the sales invoices to prepare the journal entry to record sales, freight, etc. The journal entries are key punched and a computer (IBM 360-20) is used to maintain the ledger.

Changes in the Processing of Sales Necessitated by the VAT

The clerk in sales could enter all the VAT-required information on the sales invoice. Monthly, he could also sort the invoices, total the sales by type of sale, and total the VAT invoiced. These totals would be used in preparing the monthly journal entry.

Description of the Processing of Purchases

The purchasing agent initiates or approves the purchase order. The clerk of the purchasing agent checks the supplier's invoice when it

is received. The key punch operator prepares an account-liability card and an account-distribution card for each purchase. Weekly, the liability cards are sorted, and the ones due are paid. A check-advice is prepared showing the invoice numbers, amount, etc. The entries in the ledger are run from the cards.

Changes in the Processing of Purchases Necessitated by the VAT

The clerk of the purchasing agent could check the VAT related items on the suppliers' invoices. The layout of the account distribution and liability cards would need to be altered to include columns for VAT invoiced. The program for checking the total for both of these cards would need to be rewritten. The key punch operator would have to punch the amount of VAT invoiced on each purchase. The computer would require additional time to run the entries for the ledger.

General Comments

The firm indicated that its accounting personnel are not underutilized, although no overtime has been required for two years. The computer is underutilized, as the firm indicated that it is doing some computer work for other firms and the firm is looking for additional computer work. While some computer reprogramming will be required, it does not appear to be extensive. The other changes required are reasonably simple.

Conclusion

The hypothesis is rejected for this firm.

Firm E

Description of the Processing of Sales

Clerks in sales receive the customer order to which they assign a customer number and an invoice number. Key punch operators prepare a header card with the customer and invoice numbers. For each item ordered, a card is prepared showing the item number and quantity. A computer (IBM 360-20) using a master price-file punches the description and price into each detail card and prepares a shipping order. After the goods are shipped, the header and detail cards are used to prepare the sales invoice and a total card is prepared for the invoice. An invoice listing is prepared which is used by accounts receivable. Totals are taken that form the basis for the journal entry for sales. The computer is used for maintaining the ledger.

Changes in the Processing of Sales
Necessitated by the VAT

The VAT would require that the computer be reprogrammed. If the products were taxed at more than one VAT rate, the product item number in the master price file would need to be coded as to the rate of VAT applicable. The customer file numbers of customers representing exports and organizations whose purchases are not subject to VAT

would also need to be changed to reflect their status. The program for the preparation of the sales invoice and total card would need to be changed. On each order, the computer would need to check the customer file to see whether the customer is subject to VAT. The computer would also need to check the product code number for the VAT rate applicable. Having done this, when the computer prepared the invoice it would do the VAT percentage calculation and entry on the invoice and also punch the amount of the VAT in the total card. The invoice listing would need to be altered to include listing and accumulating the amount of the VAT.

Description of the Processing of Purchases

Purchase orders are prepared and sent to the supplier. When the supplier's invoice is received, clerks in purchasing check it. Clerks in accounts payable again check the supplier's invoice and supporting documents. The clerks in accounts payable accumulate the invoices by supplier. Monthly, for each supplier, a simple voucher check is typed listing each invoice paid. Manually, each check is entered in a summary journal which lists the check number, amount, and expense distribution. The totals of this summary journal are the basis for a journal entry for purchases and expenses.

Changes in the Processing of Purchases Necessitated by the VAT

Since the supplier's invoice is presently checked twice, it would probably continue to be if a VAT were adopted. Thus clerks, both

in purchasing and in accounts payable, would be required to check the invoices for the VAT-related items. The clerks in accounts payable, when they prepare the voucher check, would have to enter the amount of VAT for each invoice and also total the amount of VAT in each voucher check. The clerk who posts summary journal entries would have to enter the VAT and take the total of the VAT entered. This total would be part of the journal entry.

General Comments

The firm indicated that its accounting personnel and computer were fully utilized. They also indicated that the firm did the accounting work of three related companies on a fee basis. Neither the personnel nor the computer were utilized outside of the usual working hours (8-5). While an invoice type of VAT would require extensive revision of some of the firm's computer programs, the reprogramming would apply only to the processing of sales. Since the firm already has familiarity with computers and their technology, the reprogramming should be within the firm's capability. The VAT might require additional people and/or overtime and possibly, but not probably, the use of a larger computer.

Conclusion

The hypothesis is rejected for this firm.

Firm F

Description of the Processing of Sales

Sales orders are received via teletype from the branches. Sales are also made from the main office. Three clerks in the sales department price the order. This consists of determining if the prices stored in the computer for that customer will be overriden or not. The order is key punched, and the punching is not verified. The computer (IBM 1130) prepares a shipper proof, which includes the prices, but not the quantity of goods shipped. The same three clerks usually check these shipper proofs. After shipment, the quantity shipped is key punched into the cards prepared earlier, as are any exceptions. The computer prepares the invoice, including calculating any discounts that are applicable. Two clerks in accounts receivable scan the prepared invoices. The computer accumulates the information required for posting the sales and the various customer receivable accounts. The firm's ledger is maintained on the computer.

Changes in the Processing of Sales Necessitated by the VAT

The computer programs for processing sales would need to be altered. As all of Firm F's sales subject to VAT are expected to be taxed at the same VAT rate, the product code numbers would not need to be altered. Customers whose purchases are not subject to VAT would need to be so identified. The program for preparing the sales invoices would need to be altered to include the VAT calculations, etc. It

would also need to accumulate the VAT invoiced, the sales subject to the VAT, and the sales to organizations, whose purchases are not subject to VAT. On sales, the amount of VAT invoiced for each customer could be accumulated by customer file.

Description of the Processing of Purchases

Copies of the purchase orders and the suppliers' invoices are sent from the branches to the main office for payment. Two clerks check the suppliers' invoices. The invoices are accumulated by supplier and paid weekly. An accounting machine operator prepares a voucher check for each payment. The voucher check lists the invoices and amounts being paid. One copy of the voucher check goes to a clerk who uses it to post the general ledger.

Changes in the Processing of Purchases Necessitated by the VAT

The two clerks who check the suppliers' invoices could check those invoices for the VAT related items. The accounting machine program used in preparing the voucher checks would need to be reprogrammed. A column would need to be added for the VAT. The accounting machine operator, in listing each invoice on the voucher check, would have to insert the amounts of VAT. The accounting machine could total the VAT on each voucher check and also the total VAT on all the voucher checks. The total of the VAT could be used by the clerks to post the ledger.

General Comments

The controller indicated that the accounting personnel were fully utilized, but he also stated that currently accounting personnel did not work overtime. The firm has had experience reprogramming existing computer programs, particularly those concerning payrolls. While an invoice-type of VAT would require some rewriting of computer programs, it appears that the firm has the personnel and experience to perform the reprogramming. The other changes required are quite simple.

Conclusion

The hypothesis is rejected for this firm.

Conclusion for Hypothesis 1

For each of the six firms it is possible to identify the individuals who would be affected by the VAT and to describe in general terms how these individuals' tasks would be altered. The hypothesis is therefore rejected in general for the invoice method of computing the VAT.

An Implication of the Finding for Hypothesis 1

One of the arguments business might use against the adoption of a VAT is that it would require a major change (defined in chapter 2) within the accounting function of firms and that firms would simply be unable to comply with the tax. It has been shown that the VAT will

require additional time of accounting personnel in each firm, and this in turn may require additional persons to be hired. In those cases where an accounting machine or computer is used in the processing of sales and/or purchases, the programs will have to be rewritten, tested, etc. Although machine reprogramming is time consuming, it seems well within the experience-capabilities of the firms involved. It can be said then that the VAT would not require a major change in any of the six firms studied.

Hypotheses 2 and 3

2. The total initial compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

3. The total continuing compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

The listing of possible initial and continuing compliance costs follows (Tables 19 and 20). Based on the listing, Hypotheses 2 and 3 are accepted for most, but not all of both types of costs.

Information that is readily available to a firm's accountant was defined in chapter 2 as information that the accountant would know already, to which he would have ready access, that he could determine easily, or which he could be expected to estimate reasonably. The information necessary for the accountant to estimate the individual costs for his firm was discussed in chapter 5 (Estimating the Changes Required in the Accounting Function). The information necessary to cost each component identified and the availability or non-availability of that information is summarized below. The general availability of

the information was the basis for accepting the Hypotheses.

Information concerning wage rates of the firm's employees are readily available to the accountant from within the firm. Billing rates of outside suppliers of goods or personnel services (e.g., CPA tax advisors) the accountant can obtain from the supplier. The number of goods (e.g., calculators) or the frequency an action is to be performed depends on how many of an item the firm currently owns, its volume of accounting activity, or the VAT law. The accountant can be expected to know or have ready access to these items. Estimates of the additional time involved for each person affected could come from several sources. The accountant, computer programmer, and accounting machine reprogrammer could estimate their own times, and employee time may be available from standard time data (e.g., Table 13) or estimated by the accountant. Information is not readily available for certain time estimates as the accountant has little data on which to base his own estimate and no other sources are available. Time spent with a government VAT auditor is an example. The information necessary for the accountant to estimate his compliance costs may come from a variety of sources, but in some instances there may be little basis on which to make the estimate.

The list of compliance costs reflects the changes required in each firm, described in Hypothesis 1. The list also includes costs resulting from changes that may be required of some firms, although none of the firms in this study were required to do so, for example, converting cash registers.

In the list of compliance costs each of the possible costs have been identified with a three-digit number, followed by one of the code letters explained in Table 16 below. For personnel costs, the letter indicates the source of the additional time estimate, and for non-personnel costs, it indicates either the source of the cost of the item or of the number of items. The possible compliance cost is then described. Under the description of those costs estimated by the researcher is the researcher's estimate (discussed in chapter 5) of the time (abbreviated T) or cost required. The dollar amounts of each individual compliance cost for each firm are separated and coded according to the category of individuals to whom the cost estimate relates, as described in Table 17.

Within the list, the individual compliance costs have been grouped by the sequence in which the cost would likely be incurred (summarized in Table 18). The total dollar amount of estimated compliance costs for each firm are summarized in Table 22.

Table 16. Code Letters Indicating Source of Personnel and Non-Personnel Dollar Cost Estimates

Source of Estimate by Type of Cost Estimated	Code Letter
Personnel	
Estimates solicited from the firms interviewed	A
Estimates developed based on standard time data	B
Estimates by the researcher, which have narrow bounds	C
Estimates by the researcher, but the researcher feels that the information probably is readily available to a firm's accountant (see chapter 2, definition 10).	D
Estimates by the researcher, and the researcher feels that the information probably is not readily available to a firm's accountant	E
Non-Personnel	
Estimates solicited from a business firm	J
Estimates by the researcher, but the researcher feels that the information probably is readily available to a firm's accountant	K
Estimates by the researcher, and the researcher feels that the information probably is not readily available to a firm's accountant	L

Note: The accuracy of the estimate decreases progressively within Personnel from A to E, and within Non-Personnel from J to L.

Table 17. Code Letters Indicating the Persons or Firm to Whom the Cost Estimated Relates

Individual(s) or Firm	Code Letter
Head of marketing in the firm interviewed	M
Accounting employees of the firm interviewed	P
Treasurer or controller of the firm interviewed	Q
Individuals occasionally hired by the firm interviewed - CPA tax-advisors and accounting machine reprogrammers	R
Firms supplying non-personnel items to the firm interviewed	S

Table 18. Summary of Possible Compliance Costs for the Invoice Method of Computing the VAT

Code Number and Description of the Type of Cost	Number of Individual Costs Estimated
100 Initial Compliance Costs	Total = 75
110 Prior to Start of VAT Year	
111 Gaining Familiarity With VAT Requirements	3
121 Relating the VAT to the Firm	12
161 Designing the Necessary Accounting Procedures	13
201 Determining the Effect of VAT on Individuals in the Accounting Function	3
215 Reprogramming the Machines	
216 For an Accounting Machine	5
236 For a Computer	9
276 Converting Other Machines	1
285 Training of Employees Concerning the VAT	
286 Determining How	1
296 Designing the Content	1
306 Conducting the Training	7
331 Purchasing Additional Office Equipment and Redesign Forms	5
351 Miscellaneous Actions	7
371 Registering for VAT	2
380 During First Year	
381 Miscellaneous	6
400 Continuing Compliance Costs	Total = 119
410 Annually at Start of the VAT Year	1
420 Related to Sales	
421 Inserting on Sales Order	1
425 Related to Each Sale (Non-Computer Processed)	
426 Related to Preparation of Each Sales Invoice	26
516 Checking Completed Sales Invoice	13
536 Related to Each Sales Return	1
546 Related to Posting of Sales	3

Table 18. Continued.

Code Number and Description of the Type of Cost	Number of Individual Costs Estimated
565 Related to Each Sale (Computer Processed)	
566 Input into Computer	2
576 Processing by Computer	4
596 Output from Computer	1
620 Related to Purchases	
621 Indicating on Purchase Order	1
631 Checking Supplier's Sales Invoice	13
651 Indicating on Supplier's Invoice	1
661 Related to Preparing Payment Vouchers	5
671 Related to Purchase Returns	1
681 Related to Posting (Non-Computer Processed)	2
695 Related to Posting (Computer Processed)	
696 Input	2
706 Processing	3
720 At Various Times Through the Year	
721 Determining VAT on Self-Deliveries	1
731 Related to New Employees and Their Training	4
751 Related to All Employees	3
771 Detection of Errors	1
781 Correction of Errors	1
791 Executive Attendance at Meetings Concerning VAT	1
801 Planning to Reduce Tax Impact	1
811 Reassessment of Decisions	1
820 Periodically - Monthly	5
850 Periodically - Quarterly	2
870 Annually - at End of VAT Year	1
880 Annually - at End of Financial Year	2
890 Annually - After End of VAT Year	5
930 Miscellaneous	10
980 Compliance Cost Savings	1

Table 19. List of Possible Initial Compliance Costs for the Invoice Method of Computing a VAT.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
100 Initial Compliance Costs							
110 Compliance costs which a firm would incur once, previous to the date the VAT took effect							
111 Gaining familiarity with the VAT requirements							
112A Reading to gain familiarity with the legislation	Q	187.04	52.61	93.52	93.52	187.04	93.52
114A Executive attendance at meetings concerning the VAT and its requirements	Q	0	0	0	0	0	0
116A Consulting with CPA and/or tax advisor to verify the firm's interpretation of the legislation	Q	23.38	23.38	93.52	11.69	23.38	46.76
	R	40.00	50.00	200.00	35.00	120.00	260.00
121 Relating the VAT to the firm							
122C Determining the applicable rate of VAT (zero, rate 1, rate 2, or exempt) for each good and service which the firm sells	Q	1.95	1.95	1.95	1.95	1.95	1.95
Time=T=10 min. The products of each firm in this study are homogeneous. VAT at rate 1 or rate 2 would apply to a particular firm, not both rates.							
124C Determining which, if any, customers are organizations whose purchases are not subject to VAT (and thus will not be invoiced for any VAT)	P	0	0	0	0	54.13	0
	Q	1.17	1.70	1.43	1.46	0	33.44
T=5 min. + 5 Sec. per customer. This could be determined by examining the customer file.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
126C Determining which, if any, of the firm's sales are exports (and thus will have no VAT collected on the sale)	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
T=0 min. When performed #124 would simultaneously perform #126							
128C Determining the applicable rate of VAT (zero, rate 1, rate 2, or exempt) for each good and service which the firm purchases	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min. The categories of goods purchased by the firms in this study are easily separable into those taxed at VAT rate 1 and those taxed at VAT rate 2							
132C Determining which, if any, of the firm's suppliers are organizations which are zero rated or exempt from VAT (and thus will not be invoicing the firm for VAT)	P	0	0	0	0	4.29	0
	Q	1.79	4.22	3.41	2.60	0	2.84
T=5 min. + 5 sec. per supplier. This could be determined by examining the supplier file							
134C Determining the new accounts required in the ledger (at most 21 accounts, see Table 7)	Q	8.18	8.18	8.18	8.18	8.18	8.18
T=2 min. per account. It was assumed that each firm would use all 21 accounts. More accounts might be needed if a firm currently uses multiple sales accounts and desires to continue the practice.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
136C Assigning account numbers to the new ledger accounts	Q	8.18	8.18	8.18	8.18	8.18	8.18
T=2 min. per account							
138C Determining the additional information requiring space on the firm's sales invoice (Figure 2) when it is printed (this does not include the information to be inserted each time a sales invoice is prepared)	Q	.39	.58	.58	.58	.97	.97
T=1 min. each for items on invoice 2, 6, and 34 if applicable. Since it is most unlikely that any of the firms in this study would record on one invoice, sales at more than one VAT rate, columns 16 - 19 on the invoice were unnecessary for any firm in this study. On the computer prepared sales invoices of firms E and F, since the tax and total are expected to be printed in a fixed location, 29 and 31 are also applicable.							
142C Performing the general redesign of the sales invoice	Q	1.95	2.92	2.92	2.92	4.87	4.87
T=5 min. per item to be redesigned on the document.							

Dollar Amount by Firm

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
144C Determining if there are any additional forms on which the firm's VAT number will need to be printed (e.g., purchase order, check advice or voucher check)	Q	.97	1.95	1.95	1.95	1.95	2.92
T=5 min. per document to be redesigned.							
146C Determining if any additional information is required by VAT on any other accounting form other than indicated in costs #138, 144, 219, 247, and 249	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min. to review accounting documents. It did not appear that any firm would need to revise any other accounting documents.							
148C Performing the general redesign of any of these accounting forms mentioned in cost #144 and #146	Q	.97	1.95	1.95	1.95	1.95	2.92
T=5 min. per item to be redesigned on document.							
161 Designing the necessary accounting procedures							
162C Designing the accounting procedures in order to place the information required by VAT on each sales invoice (Figure 2) on that sales invoice (e.g., amount of VAT invoiced)	Q	4.87	5.84	5.84	5.84	5.84	5.84
T=5 min. each for items on invoice 6, 29, 30, 31, 32, and 34 if applicable. Firms E and F do not include computer reprogramming time.							

Table 19. Continued.

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
164C Designing the accounting procedures in order to accumulate the information (which would be on the sales invoice) to be reported concerning Routine Sales (by type) and VAT Invoiced (by rate) on those sales (see specimen VAT return, Figure 1) (Routine and non-routine sales are defined in chapter 2)	Q	5.84	8.77	5.84	5.84	5.84	5.84
T=30 min. for one accounting operation and 15 min. for each additional operation requiring a different person. For each firm in this study all VAT collected would be at one rate.							
166C Designing the accounting procedures in order to accumulate the information to be reported concerning VAT invoiced by suppliers (this is for the VAT that is not deductible as well as for the VAT that is deductible on the VAT return)	Q	8.77	8.77	5.84	5.84	8.77	8.77
T=30 min. for one accounting operation and 15 min. for each additional operation requiring a different person.							
168C Designing the accounting procedures in order to accumulate the information to be reported concerning VAT invoiced (by rate) for non-routine sales of goods	Q	2.92	2.92	2.92	2.92	2.92	2.92
T=15 min.							

Table 19. Continued.

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
172C Designing the accounting procedures in order to account for and report the VAT applicable on self-deliveries of goods and services (self-deliveries are discussed in chapter 3)	Q	0	0	2.92	0	0	0
T=15 min. if firm has self-deliveries.							
174C Designing the accounting procedures in order to report the VAT invoiced by the firm, but never collected	Q	0	0	1.95	0	1.95	1.95
T=10 min. if firm had uncollectable accounts in the prior year.							
176C Designing the accounting procedures in order to accumulate the information for the special annual listing of VAT invoiced by customer (discussed in chapter 3)	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min.							
178C Designing the accounting procedures in order to accumulate the information for the special annual listing of VAT invoiced by supplier (discussed in chapter 3)	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min.							
182C Designing the accounting procedures for ascertaining the amount and making the periodic (monthly) payments of the tax to the government	Q	2.92	2.92	2.92	2.92	2.92	2.92
T=15 min.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
184C Designing the accounting procedures for preparing the periodic (three quarterly and the annual) VAT returns sent to the government	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min.							
186C Designing the accounting procedures for preparing the special annual listing of VAT invoiced by customer	Q	.97	.97	.97	.97	.97	.97
T=5 min. Appendix C indicates the procedure.							
188C Designing the accounting procedures for preparing the special annual listing of VAT invoiced by supplier	Q	.97	.97	.97	.97	.97	.97
T=5 min. Appendix C indicates the procedure.							
192C Designing the accounting procedures for the accounting cutoff work for the date the VAT becomes effective (this is to insure that invoices for sales after that date include the VAT, while invoices for sales prior to that date do not, similarly for purchases and self-deliveries) (procedures for cutoff work undoubtedly already exist in the firm)	Q	2.92	2.92	2.92	2.92	2.92	2.92
T=15 min. Researcher consulted practicing CPA concerning time.							
201 Determining the effect of VAT on individuals in the accounting function							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
202C Determining which people in the accounting function will be affected by the changes in accounting procedures for sales and planning exactly how their tasks will each be altered	Q	8.77	14.61	11.69	7.79	14.61	15.58
T=15 min. per operation + 5 min. per person in that operation.							
204C Determining which people in the accounting function will be affected by the changes in accounting procedures for VAT invoiced by suppliers and planning exactly how their tasks will each be altered	Q	11.69	12.66	7.79	7.79	11.69	12.66
T=15 min. per operation + 5 min. per person in that operation.							
206A Rewriting the job descriptions of those employees whose job description has changed as a result of the VAT	Q	0	0	0	8.77	31.17	5.84
Some firms do not have job descriptions.							
215 Reprogramming the machines used in the accounting function							
216 For an accounting machine: For #217 - #229, T varied from firm to firm and was based on the complexity of the work to be performed and comments by the firms concerning past experience with accounting machine reprogrammers.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code	Dollar Amount by Firm			

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
217C Discussion between a financial officer of the firm and the person who will reprogram the accounting machine as to the end results required and the possible means of achieving those results	Q	0	23.38	11.69	0	0	5.84
	R	0	51.00	25.50	0	0	12.75
T=see #216.							
219C Redesigning, if necessary, the forms (or other medium) on which the accounting data is recorded	R	0	10.62	0	0	0	0
T=see #216.							
223C Changing the program (panel, bar, board, punched tape, or mylar tape) (it may be easier to prepare a new program than to alter the old one)	R	0	51.00	51.00	0	0	12.75
T=see #216.							
227C Installing the program	R	0	12.75	8.50	0	0	4.25
T=see #216.							
229C Testing and "debugging" the program	R	0	44.62	25.50	0	0	12.75
T=see #216.							
236 For a computer: For #239 - #263 the researcher feels that a firm's accountant in conjunction with the firm's programmer could make a reasonable estimate of the time involved. Computer time cost=0 due to assumption 6, in chapter 2, that excess capacity is available.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
237C Discussion between a financial officer of the firm and the person(s) who will reprogram the computer as to the end results required	P	0	0	0	6.20	0	6.20
	Q	0	0	0	11.69	0	11.69
T was based on the complexity of the work to be performed in each firm. In firm E the treasurer would do the reprogramming.							
239D Ascertaining the changes required and flow charting them	P	0	0	0	99.18	0	99.18
	Q	0	0	0	0	187.04	0
T=16 hours.							
243D Identifying the existing programs to be altered (the more integrated the data processing system, the more programs will be affected)	P	0	0	0	99.18	0	99.18
	Q	0	0	0	0	187.04	0
T=16 hours.							
247D Redesigning the medium used to input information into the computer (this could include cards, paper tape, magnetic tape, and direct access programs)	P	0	0	0	49.59	0	49.59
	Q	0	0	0	0	93.52	0
T=8 hours.							
249D Redesigning the output medium	P	0	0	0	99.18	0	99.18
	Q	0	0	0	0	187.04	0
T=16 hours.							
253D Identifying the program steps to be revised	P	0	0	0	148.78	0	148.78
	Q	0	0	0	0	280.56	0
T=24 hours.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
257D Inserting the rewritten program steps	P	0	0	0	495.92	0	495.92
T=80 hours.	Q	0	0	0	0	935.20	0
259D Testing and debugging the rewritten programs	P	0	0	0	247.96	0	247.96
T=40 hours.	Q	0	0	0	0	467.60	0
263D Writing programs for ascertaining the amount of the periodic (monthly) tax payment due the government and for generating the amounts for the periodic (quarterly) returns (this includes actions similar to those described in #239 - #259)	P	0	0	0	99.18	0	99.18
	Q	0	0	0	0	187.04	0
T=16 hours.							
276C Converting other machines in addition to an accounting machine or a computer, e.g., cash registers and calculators	R	0	0	0	0	0	0
T not estimated as no firm in this study would require conversion of another type of machine.							
285 Training of employees concerning the VAT							
286C Determining how each category of employee and then each employee whose job will be altered by the VAT will be trained	Q	3.70	5.26	4.68	7.01	14.61	12.66
T=5 min. per operation + 1 min. per person in the operation.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
296C Designing the content of the training each employee will receive	Q	46.75	58.44	58.44	58.44	58.44	58.44
T=double the applicable times in Table 14.							
306 Conducting the training for those: In #307 - #327 the knowledge needed by the employees varied from firm to firm as did the number of employees. The T came from the four totals shown in Table 14. As the training could be done simultaneously for a number of categories of employees, the trainer's time is included in the lowest numbered category of employee to which it applies.							
307C Employees affected by a VAT processing sales, sales invoices, sales returns, VAT invoiced and collected	P	16.32	35.76	19.00	15.20	55.67	31.28
	Q	23.38	23.38	29.22	29.22	17.53	22.38
T=see #306.							
309C Employees affected by a VAT processing purchases, purchase returns, VAT invoiced by suppliers, and VAT paid	P	14.38	7.32	9.50	9.50	45.57	11.39
	Q	0	0	0	0	5.84	0
T=see #306.							
313C Employees operating an accounting machine The firms indicated they would let the accounting machine reprogrammers do the operator training for the new programs. The number and complexity of the programs varied from firm to firm as did the T. T for general knowledge about VAT see #306.	P	0	11.72	9.77	0	0	7.81
	R	0	38.25	25.50	0	0	12.75

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
317C Employees operating a key punch machine	P	0	0	0	7.81	15.62	7.01
T included 30 min. related only to key-punching. Trainer in firm E is the ADP manager. T for general knowledge about VAT see #306.	Q	0	0	0	5.84	5.84	0
319C Employees operating a computer	P	0	0	0	2.67	5.34	0
T=see #306. See #323 for firm F operators.							
323C Other employees in the posting process	P	0	0	0	3.10	6.12	26.20
T=see #306. Includes conducting training for computer programmers of firms D and F prior to that of other employees.	Q	0	0	0	5.84	0	23.37
327C Supervisors whose knowledge needs to be broader than any one of the above areas of knowledge	P	0	4.67	0	0	13.80	25.47
	Q	0	5.84	0	0	29.22	29.22
T=see #306.							
331 Purchasing additional office equipment and re-designing the sales invoice							
332J Purchasing additional calculators for employees preparing sales invoices or checking the VAT calculation on the sales invoice or the invoices of suppliers	S	0	0	0	0	0	160.00
Firm F indicated that two calculators would be needed. Price per calculator=$80 (see chapter 5).							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
334K Purchasing additional hardware necessitated by the VAT, e.g., computer tapes, disk packs and tape or disk drives	S	0	0	0	100.00	100.00	100.00
Cost=$100.							
336J Preparing for printing the sales invoice and any other forms, including those used in accounting machines or computers, altered because of the VAT	S	0	0	0	0	0	0
Two printing firms indicated no additional cost (see chapter 5).							
338J Preparation of the new masters used to print the sales invoice and any other forms	S	0	0	0	0	0	0
Two printing firms indicated no additional cost (see chapter 5).							
342K Avoiding obsolesence of a stock of sales invoices, accounting machine forms, and those other forms which would become obsolete on the effective date of VAT	S	3.13	25.04	83.46	14.38	637.50	133.75
Cost x Number=5¢ per invoice x 2 months supply of sales invoices, except for firms E and F it is a 1 month supply.							
351 Miscellaneous actions.							
352D Rewriting the systems and procedures manual	Q	5.85	5.85	5.85	5.85	5.85	5.85
T=30 min.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
354D Determining whether a parent and subsidiary companies should register as one company for VAT purposes or as several companies	Q	0	46.76	0	0	46.76	46.76
T=4 hours for those firms with subsidaries.							
356C Determining how the VAT affects the contract price on any leases and long term contracts	Q	5.84	2.92	2.92	5.84	5.84	5.84
T=15 min. per different type of lease.							
358D Explaining to cost accountants how the VAT works and how it affects the cost accounting system and the costs generated by the system	P	22.08	22.08	22.08	22.08	22.08	22.08
	Q	46.76	46.76	46.76	46.76	46.76	46.76
T=4 hours.							
362D Explaining to the marketing dept. how the VAT works and how it may affect the pricing decision	M	46.76	46.76	46.76	46.76	46.76	46.76
	Q	46.76	46.76	46.76	46.76	46.76	46.76
T=4 hours.							
364D Estimating the effect of the VAT on the firm's forecast of cash receipts and cash disbursements	Q	46.76	46.76	46.76	46.76	46.76	46.76
T=4 hours.							
366D Estimating the effect of the VAT on the firm's profits	Q	23.38	23.38	23.38	23.38	23.38	23.38
T=2 hours.							
371 Registering for the VAT and performing cutoff work for the date the VAT becomes effective							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
372C Registering for the VAT with the government	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min.							
374C Performing cutoff work for the date the VAT becomes effective, which was assumed to be January 1	P	0	6.22	5.06	8.86	8.23	9.34
	Q	7.79	0	0	0	0	0
T assumed=1 min. per document. The firms indicated that they prepare a schedule of 10 to 50 sales and also suppliers' invoices for either side of the cutoff date.							
380 Compliance costs which a firm would incur once, during the first year of VAT							
381 Miscellaneous							
382E Supervising employees to ensure that they have assimilated the VAT training and are performing as required concerning VAT	P	0	37.34	0	0	132.48	44.16
	Q	70.14	0	70.14	70.14	0	0
T=2 hours per employee preparing sales invoices or examining suppliers' invoices							
384E Answering questions not covered in VAT training and concerning what to do about VAT related mistakes made by customers and suppliers	P	47.42	134.91	45.57	45.57	447.26	149.08
	Q	140.28	0	140.28	140.28	0	0
T=4 hours per employee preparing sales invoices or examining suppliers' invoices.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
386E Learning by employees to perform their VAT related tasks at the rate of an employee experienced in the performance of that task	P	47.42	60.22	45.57	45.57	182.30	60.76
T=4 hours per employee preparing sales invoices or examining suppliers' invoices.							
388C Designing the procedures for the accounting cutoff work at the end of the VAT year (these will insure that the VAT invoiced to customers and by suppliers is reported in the proper VAT year)	Q	2.92	2.92	2.92	2.92	2.92	2.92
T=15 min. Researcher consulted practicing CPA concerning time (see chapter 5). Researcher assumed VAT year would end December 31.							
392C Designing the procedures for the accounting cutoff work at the end of the firm's financial year (this includes setting up the VAT liability account on the balance sheet)(it would be required if the end of the VAT year and the firm's financial year did not coincide)	Q	1.95	0	0	1.95	1.95	1.95
T=10 min. if the firm's financial year did not end December 31. Researcher consulted practicing CPA concerning time.							

Table 19. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
394D Review of the firm's pricing decisions by the marketing department and purchasing decisions by the purchasing department	M	280.56	280.56	280.56	280.56	280.56	280.56
T=24 hours.							
TOTAL INITIAL COMPLIANCE COSTS		1288.64	1449.92	1674.99	2690.16	5401.95	3452.08

Table 20. List of Possible Continuing Compliance Costs for the Invoice Method of Computing a VAT.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
400 Continuing Compliance Costs - Compliance costs which a firm would incur during each year after the adoption of the VAT							
410 Annually at the start of the VAT year							
411B Opening the necessary accounts for VAT in the ledger (at most 21 accounts)	P	.68	.65	.65	.65	.65	.65
Time=T=.4740 min. per account, per Table 13. Assumed 21 VAT related accounts would be used.							
420 Related to sales							
421D Inserting additional information on the sales order (e.g., VAT registration number of customer, the fact that the customer's purchases are not subject to VAT, and/or digits in product code number due to VAT)	P	0	15.83	37.98	6.33	34.82	63.30
T=1 min. N=number of exports + number of sales to organizations whose purchases are not subject to VAT. Firms B, C, and E may need to prepare a sales order.							
425 Related to each sale and sales returns (non-computer processed)							
Firms E and F use a computer to prepare their sales invoices so #425 - #553 do not apply and $0 cost is shown. #565 - #597 apply to Firms E and F.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates			Dollar Amount by Firm					
			A	B	C	D	E	F
426 Related to the preparation of each sales invoice								
The source for the time estimates (T) of #429 - #509, except #433, is Table 13. The number of invoices processed by each firm does not include sales returns, which are included in #536, and self-deliveries, included in #720. However, #509 does include all invoices. As indicated in #138, it was unlikely that any firm in this study would record on one invoice, sales at more than one VAT rate. Therefore on the Specimen Sales Invoice, 16 - 26 would not appear and #437 - #473, except #439, would not be performed.								
	Number on Specimen Sales Invoice (Figure 2)	Activity to be Performed						
427C	(2)	Enter VAT registration number of the seller T=0 min. as this can be preprinted on the sales invoice.	P	0	0	0	0	0	0
429B	(6)	Enter VAT registration number of the buyer T=.0615 min.	P	1.57	12.38	38.99	6.62	0	0
433C	(16)-(19)	Determine the rate of VAT applicable to each item on the invoice (0 rate, rate 1 (2%), rate 2 (4%), and exempt). T=0 min. Assumed included in #437.	P	0	0	0	0	0	0

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates				Dollar Amount by Firm					
				A	B	C	D	E	F
437B	(16)-(19)	Enter the amount due for each item in the applicable VAT rate column T=.0487 min.	P	0	0	0	0	0	0
439B	(20)	Enter, Sub before Total T=.0096 min.	P	.24	1.82	6.09	1.03	0	0
443B	(22)	Add the column, VAT rate 0% T=.0255 min. per amount + .0240 min.	P	0	0	0	0	0	0
447B	(22)	Enter the total amount of column, VAT rate 0% T=.0679 min. if applicable.	P	0	0	0	0	0	0
449B	(23)	Add the column, VAT rate 1 (2%) T=.0255 min. per amount + .0240 min.	P	0	0	0	0	0	0
453B	(23)	Enter the total amount of column, VAT rate 1 (2%) T=.0679 min. if applicable.	P	0	0	0	0	0	0
457B	(24)	Add the column, VAT rate 2 (4%) T=.0255 min. per amount + .0240 min.	P	0	0	0	0	0	0
459B	(24)	Enter the total amount of column, VAT rate 2 (4%) T=.0679 min. if applicable.	P	0	0	0	0	0	0
463B	(25)	Add the column, exempt T=.0255 min. per amount + .0240 min.	P	0	0	0	0	0	0
467B	(25)	Enter the total amount of column, exempt T=.0679 min. if applicable.	P	0	0	0	0	0	0

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates				Dollar Amount by Firm					
				A	B	C	D	E	F
469B	(26)	Crossfoot sales by rates 0%, rate 1 (2%), rate 2 (4%) and exempt T=.0321 min. per column + .0240 min.	P	0	0	0	0	0	0
473B	(26)	Check that crossfooting of sales by rates (26) agrees with vertical net amount total (21) T=.0405 min.	P	0	0	0	0	0	0
477B	(27)	Calculate the amount of VAT applicable at VAT rate 1 (2%) T=.1071 min.	P	2.73	0	0	0	0	0
479B	(27)	Enter the amount of VAT applicable at VAT rate 1 (2%) T=.0615 min.	P	0	0	0	0	0	0
483B	(28)	Calculate the amount of VAT applicable at VAT rate 2 (4%) T=.1071 min.	P	0	18.68	63.83	10.85	0	0
487B	(28)	Enter the amount of VAT applicable at VAT rate 2 (4%) T=.0615 min.	P	0	0	0	0	0	0
489B	(29)	Enter, VAT T=.0391 min.	P	1.00	7.44	24.79	4.21	0	0
493B	(30)	Crossfoot the amount of VAT applicable at rate 1 (2%) and rate 2 (4%) T=.0684 min.	P	0	0	0	0	0	0
497B	(30)	Enter the total amount of the crossfooting of VAT applicable at rate 1 (2%) and rate 2 (4%) T=.0615 min.	P	1.57	11.70	38.99	6.62	0	0

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates			Dollar Amount by Firm					
				A	B	C	D	E	F
499B	(31)	Enter, Total T=.0455 min.	P	1.16	8.65	28.84	4.90	0	0
503B	(32)	Add total before VAT added amount and VAT amount T=.0462 min.	P	1.18	8.06	27.53	4.68	0	0
507B	(32)	Enter total amount of total before VAT added plus VAT T=.0699 min.	P	1.78	13.30	44.31	7.52	0	0
509B	(34)	Enter, if applicable, special rate information, e.g., non-routine sale, self-delivery, export, buyer purchases exempt T=.0807, .0711, .0487, and .1351 min. respectively.	P	0	.86	1.93	.31	0	0
516 Checking a completed sales invoice for accuracy									
This does not include the time to correct the errors found. The number following the description refers to the number when the sales invoice was prepared. The source for T for #523 - #533 was Table 13. As indicated in #138 it was unlikely that any firm in this study would have on one invoice, sales at more than one VAT rate. Therefore in checking an invoice, #522 - #532, except #528, would not be performed.									
517C Check for the existence of the VAT registration number of the seller (#427)			P	0	0	0	0	0	0
T=0 min. An eyeglance at preprinted number on invoice.									

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
518C Check the VAT registration number of the buyer (#429)	P	0	0	0	0	0	0
T=0 min. An eyeglance at the inserted number.							
519C Determine the rate of VAT applicable to each item on the invoice (0 rate, rate 1, rate 2, and exempt) (#433)	P	0	0	0	0	0	0
T=0 min. Assumed included in checking the quantity times price extension							
522C Check that the amount has been entered in the proper VAT rate column (#437)	P	0	0	0	0	0	0
T=0 min. An eyeglance at the inserted amount.							
523B Add the amounts in a VAT rate column (#443, #449, #457, and #463)							
T=.0255 min. per amount + .0240 min.							
524B Comparing the total of a VAT rate column with the total of the column shown on the invoice (#447, #453, #459, and #467)	P	0	0	0	0	0	0
T=.0405 min. per column.							
526B Crossfoot sales by rates, 0%, rate 1, rate 2, and exempt (#469)	P	0	0	0	0	0	0
T=.0321 min. per column + .0240 min.							
527B Comparing the crossfooting of sales by rates total with vertical net amount total on the invoice (#473)	P	0	0	0	0	0	0
T=.0405 min.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
528B Checking the VAT calculation for one VAT rate (#477, #479, #483, and #487)	P	3.78	31.76	88.32	0	0	0
T=.1482 min.							
529B Crossfoot the amount of VAT applicable at rate 1 and rate 2 (#493)	P	0	0	0	0	0	0
T=.0684 min.							
532B Comparing the crossfooting of VAT by rates total with total VAT on the invoice (#497)	P	0	0	0	0	0	0
T=.0297 min.							
533B Checking the total due (#503, and #507)	P	2.50	21.03	58.46	0	0	0
T=.0981 min.							
534C Checking the special rate information, if applicable (#509)	P	0	.65	1.56	0	0	0
T=.04 min.							
536 Related to each sales return							
537B Preparing the VAT related items on a credit memo including checking it if the sales invoice is checked (for the steps involved in: preparing a credit memo see preparation of a sales invoice, #427 - #509; checking a credit memo see checking a completed sales invoice, #517 - #534)	P	0	0	.66	.69	0	0
T depends on the steps involved in the preparation and checking. For firms C and D, T for preparation =.4404 min. and T for checking = .2463 min.							

Table 20. Continued.

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
546 Related to the posting of sales and sales returns							
547C Determining the ledger accounts the sales and VAT invoiced information for each invoice or sales return will be recorded in	P	0	0	0	0	0	0
T=.05 min. Since all sales of a particular firm in this study would be at the same VAT rate, there is no decision to be made and T=0.							
549B Accumulating the information about the sales and VAT invoiced into daily, weekly or monthly totals	P	0	42.08	37.75	11.60	0	0
T taken from Table 13 and Appendix B and applied to the accounting system of the firm.							
553B Posting from individual invoices or accumulated totals the amount of the sales by type and VAT by rate invoiced to their respective accounts	P	0	2.65	6.20	0	0	0
	Q	3.36	0	0	0	0	0
T taken from Appendix B as applicable.							
565 Relating to each sale and sales return (computer processed)							
For #576 - #597 the researcher feels that a firm's accountant in conjunction with the firm's programmer could make a reasonable estimate of the time involved if the computer programs affected by the VAT had to be rewritten, installed, and debugged.							
566 Input into the computer							
567B Keypunching additional information required by and resulting from the VAT	P	0	0	0	.17	0	0
T developed from Appendix B							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
569B Verifying the additional information required by and resulting from the VAT	P	0	0	0	0	0	0
T developed from Appendix B.							
576 Processing by the computer							
As a result of assumption 6 in chapter 2 concerning the availability of excess computer capacity, certain computer related costs of firms D, E, and F are =$0.							
577K Searching files (tape or disk)	S	0	0	0	0	0	0
Cost=$0 for firms E and F. See #576.							
579K Comparing (e.g., customer code with designation of customers whose purchases are not subject to VAT or are foreign customers, or product code with designation of applicable VAT rate)	S	0	0	0	0	0	0
Cost=$0 for firms E and F. See #576.							
583K Performing calculations (percentage calculations, also additional additions due to VAT)	S	0	0	0	0	0	0
Cost=$0 for firms E and F. See #576.							
587K Accumulating VAT related information (e.g., sales by classification and VAT invoiced by rates)	S	0	0	0	0	0	0
Cost=$0 for firms D, E, and F. See #576.							
596 Output from the computer							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
597K Printing the additional VAT information on each sales invoice or sales return	S	0	0	0	0	0	0
Cost=$0 for firms E and F. See #576.							
620 Related to Purchases							
621C Indicating on the purchase order if the purchasing firm or the purchase is not subject to VAT due to its exemption or zero-rating	P	0	0	0	0	0	0
T=0. This information, if it applied to a firm, could be preprinted on the purchase order. It did not apply to any firm in this study.							
631 Checking the suppliers sales invoice for accuracy							
(The list and the Ts used are a repeat of those previously listed #516 - #534) The number following the description refers to the number on the Specimen Sales Invoice, Figure 2. The source for T for #637 - #647 is Table 13.							
It is unlikely that any firm in this study would purchase on a particular supplier's invoice, goods subject to more than one VAT rate. Therefore, in checking a supplier's sales invoice, #636 - #646, except #643, would not be performed.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
632C Check for the existence of the VAT registration number of the seller (2)	P	0	0	0	0	0	0
T=0 min. An eyeglance at the preprinted number.							
633C Check the VAT registration number of the buyer (6)	P	0	0	0	0	0	0
T=0 min. An eyeglance at the inserted number.							
634C Determine the rate of VAT applicable to each item on the invoice (zero rate, rate 1, rate 2, and exempt) (16) - (19)	P	0	0	0	0	0	0
T=0 min. was assumed.							
636C Check that the amount has been entered in the proper VAT rate column (16) - (19)	P	0	0	0	0	0	0
T=0 min. An eyeglance at the inserted amount.							
637B Add the amounts in a VAT rate column (22) - (25)	P	0	0	0	0	0	0
T=.0255 min. per amount + .0240 min.							
638B Comparing the total of a VAT rate column with the total of the column shown on the invoice (22) - (25)	P	0	0	0	0	0	0
T=.0405 min. per column.							
639B Crossfoot sales by rates 0%, rate 1, rate 2, and exempt (26)	P	0	0	0	0	0	0
T=.0321 min. per column + .0240 min.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
642B Comparing the crossfooting of the sales by rates total with the vertical net amount total on the invoice (26)	P	0	0	0	0	0	0
T=.0405 min.							
643B Checking the VAT calculation for one VAT rate (27) and (28)	P	15.12	149.16	113.04	47.14	337.72	661.36
T=.1482 min.							
644B Crossfoot the amount of VAT applicable at rate 1 and rate 2 (30)	P	0	0	0	0	0	0
T=.0684 min.							
646B Comparing the crossfooting of VAT by rates with total VAT on the invoice (30)	P	0	0	0	0	0	0
T =.0297 min.							
647B Checking the total due (32)	P	10.01	98.74	74.83	31.20	223.55	437.79
T=.0981 min.							
648C Checking the special rate information, if applicable (34)	P	0	0	0	0	0	0
Assumed T=.04 min.							
651B Indicating on the suppliers invoice if the "VAT invoiced is not deductible (on the VAT return) for VAT purposes"	P	0	0	.78	.22	0	0
T=.0114 min. x 31 letters. From Appendix B.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
661 Related to preparing payment vouchers, and/or check advices and/or voucher checks (since the suppliers invoice would be available, all the VAT related information need not be repeated on any of the three documents)							
662B Inserting the amount of VAT invoiced	P	5.68	66.06	0	0	140.15	282.26
T=.0615 min., per Table 13.							
663B Adding the individual VAT amounts listed and entering the total VAT	P	0	0	0	0	58.79	0
T=.0222 min. per invoice listed + .0240 min. per voucher check, per Appendix B.							
664B Adding the amount of VAT to the before VAT total (a firm might use the total from the sales invoice rather than perform this operation)	P	0	0	0	0	0	0
T=.0642 min. per Table 13.							
666B Inserting the total of the document	P	6.46	0	0	0	23.89	0
T=.0699 min. per Table 13.							
668C Checking the completed payment voucher, and/or check advice and/or voucher check	P	0	0	0	0	0	0
T=0 min. Assumed unnecessary to look at VAT related information when approving payment.							
671 Related to each purchase return							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
672B Checking the credit memo of the supplier for the VAT related items (for the steps involved see #631 - #648)	P	0	0	2.81	.78	0	7.80
T depends on the steps involved in the checking. For firms A - F, if applicable, T=.1482 min. + .0981 min.							
681 Related to the posting of purchases and purchase returns (non computer processed)							
682B Accumulating the information about VAT invoiced by suppliers and deductible into daily, weekly or monthly totals	P	2.16	34.10	48.96	0	11.44	63.72
As applicable, T=.0615 min. or .0699 min., per Table 13.							
684B Posting from the individual payment voucher, check advice, or voucher check, or from an accumulated total to the ledger account	P	0	3.98	7.09	0	1.11	1.11
	Q	.26	0	0	0	0	0
Using an accounting machine T=.3917 min. developed from Appendix B; using a keypunch T=.0699 min. developed from Table 13.							
695 Related to the posting of purchases and purchase returns (computer processed)							
696 Input into the computer							
697B Keypunching the amount of the VAT	P	0	0	0	20.32	0	0
T=.0615 min. per Table 13.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
699B Verifying the amount of the VAT	P	0	0	0	0	0	0
T=.0615 min. per Table 13.							
706 Processing by the computer							
707K Checking the VAT calculation	S	0	0	0	0	0	0
Cost=$0 for firm D. See #576.							
708K Accumulating the amount of the VAT	S	0	0	0	0	0	0
Cost=$0 for firm D. See #576.							
709K Posting to the ledger account	S	0	0	0	0	0	0
Cost=$0 for firms D, E, and F. See #576.							
720 At various times throughout the year							
721B Determining and entering the VAT applicable on the document to record self-deliveries (the firm might use a sales invoice to record self-deliveries)	P	0	0	.65	0	0	0
T is based on the time to prepare and check a sales invoice (#426 - #509, #516 - #534).							
731 Related to new employees and employees with new positions (the estimates for #731 - #736 for firms A - F were based on that firm's employee turnover in the prior year)							
732C Conducting training for that portion of their job relating to the VAT	P	0	30.06	0	0	69.67	0
	Q	0	11.69	0	0	0	0
T see Table 14 referred to in #306.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
734E Supervising the new or transferred employee to ensure that they have internalized the VAT training and are performing as required concerning VAT	P	0	18.67	0	0	22.08	0
	Q	0	0	0	0	0	0
T=2 hours per new employee preparing sales invoices or examining suppliers' invoices.							
736E Answering employee questions not covered in VAT training and concerning what to do about VAT related mistakes made by customers and suppliers	P	0	67.72	0	0	74.54	0
	Q	0	0	0	0	0	0
T=4 hours per new employee preparing sales invoices or examining suppliers' invoices.							
738E Learning by the new or transferred employee to perform their VAT related tasks at the rate of an employee experienced in the performance of that task	P	0	30.38	0	0	30.38	0
	Q	0	0	0	0	0	0
T=4 hours per new employee preparing sales invoices or examining suppliers' invoices.							
751 Related to all employees							
752E Supervising employees to ensure that they are performing as required concerning VAT	P	0	0	0	0	115.94	60.73
	Q	35.07	81.83	46.76	58.45	0	0
T=1 hour per employee used in #307 - #323, excluding keypunch operators.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
754E Answering questions concerning VAT including those not covered in VAT training or whose answer has been forgotten by the employee (e.g., VAT related mistakes made by suppliers)	P	23.72	56.60	30.60	53.08	401.94	241.46
	Q	70.14	163.66	93.52	116.90	0	0
T=2 hours per employee used in #307 - #323, excluding keypunch operators.							
756E Concluding periodic follow up training concerning problems resulting from the VAT and performance improvement	P	11.86	28.30	15.30	26.84	117.91	64.68
	Q	11.69	35.07	23.38	35.07	35.07	35.07
T=1 hour per category of employee used in #307 - #323.							
771E Detection of the cause in the accounting function of errors related to the VAT (e.g., the total of the special annual listings of VAT invoiced by customer does not agree with the total of the VAT invoiced ledger accounts)	P	5.90	59.84	70.41	21.52	113.94	223.13
	Q	0	0	0	0	0	0
T=5 min. per 100 non-computer processed invoices.							
781E Correction of errors detected in accounting work caused by the VAT (this includes errors which were made by employees of the firm (e.g., VAT calculation on sales invoices, posting to the VAT by rate accounts) and employees of suppliers or customers)	P	5.90	59.84	70.41	21.52	113.94	223.13
	Q	0	0	0	0	0	0
T=5 min. per 100 non-computer processed invoices.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
791E Executive attendance at meetings concerning the VAT and its problems, and/or the changes in VAT legislation or interpretation	Q	93.52	93.52	93.52	93.52	93.52	93.52
T=8 hours for treasurer.							
801E Filing in tax subscription service, and study of tax service and planning so as to reduce the tax impact	P	7.40	7.40	7.40	7.40	7.40	7.40
	Q	46.76	46.76	46.76	46.76	46.76	46.76
T=2 hours for clerk, 4 hours for treasurer.							
811E Reassessment of certain decisions by personnel outside the accounting function (the effect of a VAT on the firm's purchasing and pricing decisions can be expected to require at least one review after the VAT has been in existence for a period of time)	M	46.76	46.76	46.76	46.76	46.76	46.76
	Q	0	0	0	0	0	0
T=4 hours.							
820 Periodically - Monthly							
(#822 - #826 would be performed 11 times per year, and #828 and #832 would be performed 12 per year)							
822B Finding the balance of the ledger accounts related to VAT, if a running balance is not maintained for each ledger account	P	0	0	0	0	0	0
	Q	16.73	0	0	0	0	0
T was developed from Appendix B.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
824C Determining the amount of VAT to be paid to the government (sum of VAT invoiced = VAT on routine sales rates 1 and 2, VAT on non-routine sales rates 1 and 2, and VAT on routine returns rates 1 and 2; less VAT deductible; less VAT paid to the government)	P	0	0	0	0	0	6.85
	Q	17.14	17.14	17.14	17.14	17.14	0
T=8 min., per Table 15.							
826C Completing a brief government form to accompany the payment indicating the firm's name, VAT registration number, and amount of VAT paid (this might be partially prepared by the government first and mailed to the firm)	P	0	0	0	0	0	5.99
	Q	15.00	15.00	15.00	15.00	15.00	0
T=7 min., per Table 15.							
828C Preparing the check, check invoice, or voucher check for the payment of the VAT to the government	P	.74	.78	.78	.78	.76	.78
T=1 min. per Table 15.							
832C,K Preparing a trial balance, an income statement, and a balance sheet requires additional time because of the additional ledger accounts due to the VAT	P	0	8.20	8.20	0	0	0
	Q	24.54	0	0	0	0	0
	S	0	0	0	0	0	0
T=.5 min. per account per Table 15. Assumed all 21 VAT related accounts were used. Cost = $0 for firms D, E, and F which use a computer. See #576.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
850 Periodically - Quarterly							
(#852 and #854 would be performed 3 times per year)							
852B Preparing a schedule for the uncollectible accounts written off showing the applicable VAT (described in chapter 3)	P	0	0	0	0	1.67	3.89
For those firms with uncollectible accounts T= .2494 min. per account + .2768 min. per invoice, per Table 13.							
854C Preparing the quarterly VAT return (Figure 1) (this includes completing the form and checking the return)	P	0	0	0	0	0	12.03
	Q	20.45	20.45	0	20.45	20.45	0
	R	0	0	43.75	0	0	0
T=35 min. per Table 15. For firm C its CPA prepares the tax returns.							
870 Annually - at the end of the VAT year							
872C Performing cut-off work at the end of the VAT year (for example, insuring the VAT on invoices for sales after the year end will be reported in the next period, similarly for purchases and self-deliveries) (it would be required if the end of the VAT year and the firm's financial year do not coincide)	P	0	0	0	8.86	8.23	9.34
	Q	7.79	0	0	0	0	0
T assumed = 1 min. per document. The firms indicated that they schedule 10 to 50 sales and also suppliers' invoices for either side of the cutoff date.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
880 Annually - at the end of the firm's financial year							
884C Performing cut-off work at the end of the firm's financial year (the work required would be like that described in #872 and includes setting up the VAT liability account on the balance sheet)	P	0	3.11	2.53	4.43	4.11	4.67
	Q	3.90	0	0	0	0	0
T assumed = .5 min. per document scheduled.							
886B Closing the ledger accounts required by the VAT	P	0	0	0	.13	.13	.13
T was based on Appendix B if performed. For firms with computers this was keypunched time only.							
890 Annually - after the end of the VAT year							
892B Preparing a schedule for the uncollectible accounts written off showing the applicable VAT	P	0	0	0	0	.56	1.29
	Q	0	0	.10	0	0	0
T=.2494 min. per account + .2768 min. per invoice, per Table 13, for those firms with uncollectible accounts in the last year.							
894A,D Determine if any assets on which VAT was paid and deducted on the VAT return have been switched during the year to personal use or the production of exempt goods or services (if assets have been switched then a retroactive adjustment must be made in the VAT deductible on that asset, described in chapter 3)	Q	0	0	0	0	0	0
None of the firms in this study anticipated that such a switch would be made.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
896C Preparing the annual VAT return (Figure 1) (this includes completing the form and checking the return)	P	0	0	0	0	0	4.01
	Q	6.82	6.82	0	6.82	6.82	0
	R	0	0	14.58	0	0	0
T=35 min. per Table 15. For firm C its CPA prepares the tax returns.							
898B,K Preparing the special annual listing of VAT invoiced by customer (described in chapter 3)	P	3.92	16.58	30.09	5.61	0	0
	S	0	0	0	0	0	0
T=.2704 min. per customer + .0467 min. per invoice + sorting time if applicable, per Table 13. Firms E and F could use their computers to accumulate the information and prepare the listing. If done so cost=$0, see #576. If done by hand firm E's cost=$488.05 and firm F's cost= $129.12.							
902B Preparing the special annual listing of VAT invoiced by supplier (described in chapter 3)	P	5.15	52.20	38.72	16.71	84.89	44.54
T=.2704 min. per supplier + .0467 min. per invoice or voucher check + sorting time if applicable, per Table 13.							
930 Miscellaneous Items							
932D Auditing work the firm's CPA adds in order to satisfy himself concerning the firm's accounting for VAT (e.g., testing the VAT computations on the sales invoices, verifying the balances of the VAT accounts)	R	50.00	50.00	50.00	50.00	50.00	50.00
T=2 1/2 hours. Cost at $20. per hour.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
942J Purchasing a subscription service on the VAT (such as those provided by Prentice Hall, Commerce Clearing House, or Bureau of National Affairs)	S	75.00	75.00	75.00	75.00	75.00	75.00
Cost=$75.00 (see chapter 5).							
952K Printing more complex or larger sales invoices, accounting machine forms, or other forms	S	0	0	0	0	0	0
Cost=$0 based on #338.							
954K Purchasing additional accounting forms (e.g., ledger cards)	S	10.00	10.00	10.00	10.00	10.00	10.00
Cost=$10. per year.							
956K Retaining the VAT returns and other documents required solely by the VAT	S	6.00	6.00	6.00	6.00	6.00	6.00
Cost=$60. for a file cabinet lasting 10 years (see chapter 5)							
962L Undetected errors (these could have a negative or positive effect on the firm) (for example, overrecording the total before VAT on a purchase and underrecording by the same amount the VAT invoiced on that purchase has a negative effect on the firm, it has paid VAT for which it will receive no deduction)	S	0	0	0	0	0	0
Assumed net effect of errors =$0.							

Table 20. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
964L Customer ill will (this may be created by the firm making errors, for example, in assigning the applicable rate of VAT or doing the percentage calculations)	S	0	0	0	0	0	0
Assumed immaterial in customers decision process. Cost=$0.							
972E Consulting with representatives of government auditing the firm for VAT purposes (this includes time gathering records and data at the government's request and correspondence)	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
Assumed firm fully complies with VAT law and is not audited. T=0 min.							
974E Litigation concerning the VAT (this is a potential cost to the firm)	Q	0	0	0	0	0	0
	R	0	0	0	0	0	0
Cost=$0 based on #972.							
976L Payment of penalties and interest due to failure to comply with the VAT law (this is a potential cost to the firm)	S	0	0	0	0	0	0
Cost=$0 based on #972.							
980C Compliance cost savings	P	0	0	0	0	0	0
No time or cost savings were discerned for any firm in this study as a result of the VAT.							
TOTAL CONTINUING COMPLIANCE COSTS		683.14	1668.96	1611.75	930.59	2422.73	2795.15

Conclusion for Hypothesis 2

Seventy-five possible individual initial compliance costs for a VAT computed by the invoice method are identified in this study. The information to estimate seventy-two of the costs is readily available. However, the information to estimate the other three costs (related to personnel, coded letter E, and numbered 382, 384, and 386) is not readily available. As the information is readily available to a firm's accountant to estimate 72 of the 75 identified costs, Hypothesis 2 is accepted as generally true for each firm in this study and as true in general.

Conclusion for Hypothesis 3

One hundred and nineteen possible individual continuing compliance costs for a VAT computed by the invoice method are identified in this study. The information to estimate one hundred and three of the costs is readily available and the information is not readily available for sixteen costs (coded with letters E and L). Of these sixteen costs, seven (numbered 734, 736, 738, 752, 754, 756 and 791) concern employee performance and supervision, four (numbered 771, 781, 962 and 964) concern errors resulting from the VAT and ill-will created, three (numbered 972, 974 and 976) concern a government VAT compliance investigation, and two (numbered 801 and 811) concern reassessment of certain decisions within the firm. As the information is readily available to a firm's accountant to estimate 103 of the 119 identified costs, Hypothesis 3 is accepted as generally true

for each firm in this study and in general.

Hypotheses 4 and 5

4. A dollar amount can be estimated accurately for the VAT initial compliance costs identified in Hypothesis 2.

5. A dollar amount can be estimated accurately for the VAT continuing compliance costs identified in Hypothesis 3.

The amount of time required to make an estimate and the lack of data on which to base an estimate are the primary reasons that the cost estimates of an accountant would vary in accuracy. The code letters in Table 16 indicated the source of the personnel and non-personnel dollar cost estimates shown in the list of possible compliance costs, Tables 19 and 20. These code letters also indicate the accuracy with which the compliance costs can be estimated. The information is readily available to a firm's accountant for personnel costs coded A, B, C and D and non-personnel costs coded J and K. An accountant could estimate his firm's dollar costs using the same cost estimation process as this study (discussed in chapter 5, preparing the cost estimates).

Because the time or cost estimate would fall within narrow bounds on either side of the expected true value and/or standard time data is available, the costs coded A, B, C and J can be estimated accurately. Information for estimating these costs number nearly three-quarters of the initial compliance costs identified and of the continuing compliance costs identified, see Table 21.

Table 21. Number of Compliance Costs for an Invoice-Type of VAT by Source of Estimates

Code Letters-Per Table 16	Source of Estimate in This Study and Its Anticipated Accuracy-per Table 16	Number of Initial Compliance Costs-per Table 19	Number of Continuing Compliance Costs-per Table 20
	Personnel Dollar Cost Estimates		
A	Firm interviewed, accurate	4	0
B	Standard Time Data, reasonably accurate	0	62
C	Researcher, accurate within narrow bounds	48	24
D	Researcher, inaccurate because subject to wide variability	15	3
E	Researcher, inaccurate because information is not readily available to a firm's accountant	3	13
	Non-Personnel Dollar Cost Estimates		
J	Firm interviewed, accurate	3	1
K	Researcher, inaccurate because subject to wide variability	2	13
L	Researcher, inaccurate because information is not readily available to a firm's accountant	0	3
	TOTAL	75	119

For the costs coded D and K the information is available to the firm's accountant, but his estimate is not expected to be accurate because it would be subject to wide variability. The estimate of computer reprogramming time is an example. There is no standard time data the accountant could turn to that would be completely applicable. Increased accuracy of his estimates can be achieved with increased costs in the form of increased time and effort by the accountant and his staff. An accountant in a firm would prefer to spend his time performing the task rather than estimating how long it will take him to perform the task. Thus, the cost of making estimates can inhibit accurate estimates.

Of the initial compliance costs identified, fifteen are coded D and two are coded K. Nine of these initial costs (numbered 239-263, and 334) are computer related and firms without a computer could accurately estimate them at zero. Of the continuing compliance costs identified, three are coded D and thirteen coded K. Ten of these continuing costs (numbered 577-597, 707-709, 832 and 898) are computer related and would be zero for firms without a computer. Firms with computers have more than twice as many identified costs subject to widely variable estimates as do firms without computers. For firms with computers this is less than one-fourth of the number of initial compliance costs, identified, and less than one-seventh of the number of continuing compliance costs identified.

For the costs coded E and L, the information is not readily available on which the accountant could base an estimate and therefore estimates of these costs would be accurate by chance only. Three

initial compliance costs were coded E and L as were sixteen continuing compliance costs.

Conclusions for Hypotheses 4 and 5

Individual compliance costs can be estimated with varying degrees of accuracy. For a majority of the individual costs the hypotheses are accepted. For some costs, the hypotheses are rejected, although the accuracy of the estimate would improve with additional time and effort by the accountant. The hypotheses is rejected for other costs as the necessary information is not readily available to the accountant. As at least seventy-three percent of the initial and continuing compliance costs identified for a VAT computed by the invoice method can be estimated accurately, Hypotheses 4 and 5 are accepted as generally true for each firm in this study and therefore in general.

Some Implications of the Findings for Hypotheses 4 and 5

This section summarizes the estimated dollar amount of compliance costs by firm and examines the effect on compliance costs of changing certain VAT law provisions, the proportion of total compliance costs resulting from certain groups of difficult-to-estimate costs, and the cost of a particular VAT related operation.

A substantial portion of each firm's total amount of estimated compliance costs results from individual compliance costs, each of which cannot be estimated accurately. Table 22 summarizes the estimated total dollar amount of initial and continuing compliance costs by

Table 22. Dollar Estimate of Possible Compliance Costs for an Invoice-Type of VAT

	Initial Compliance Costs			Continuing Compliance Costs		
Firm	Source of Estimates Code Letter A, B, C, J	Source of Estimates Code Letter D, E, K, L	Total	Source of Estimates Code Letter A, B, C, J	Source of Estimates Code Letter D, E, K, L	Total
A	$ 461.34	$ 827.30	$1,288.64	$ 258.42	$ 424.72	$ 683.14
B	626.74	823.18	1,449.92	790.78	878.18	1,668.96
C	771.06	903.93	1,674.99	962.95	648.80	1,611.75
D	416.34	2,273.82	2,690.16	330.44	600.15	930.59
E	811.70	4,590.25	5,401.95	1,101.73	1,321.00	2,422.73
F	1,059.69	2,392.39	3,452.08	1,623.21	1,171.94	2,795.15

Sources: The initial compliance costs are taken from Appendix D, which summarizes the amounts by firm in Table 19. The continuing compliance costs are taken from Appendix E, which summarizes the amounts by firm in Table 20.

firm. Each total is subdivided into two parts. One is the summation of the individual, accurately estimated costs, coded A, B, C and J (see Table 21). The other is the summation of the individual costs, coded D, E, K and L, which could not be estimated accurately.

For the three firms without a computer (firms A, B and C) the accurately estimated costs (coded A, B, C and J) constitute thirty-six to forty-six percent of their total amount of initial compliance costs. For the three firms with a computer (firms D, E and F), the accurately estimated costs constitute fifteen to thirty-one percent of their total amount of initial compliance costs. For the six firms the accurately estimated portion of the total amount of continuing compliance costs ranges from thirty-six to sixty percent.

Thus, for each firm the total estimated amount compliance costs consist of an accurate estimate plus an estimate subject to considerable variability. The accurate estimate constitutes the minimum possible compliance costs for that firm. There is little evidence to assist in estimating a maximum possible compliance cost for each firm.

The researcher recognizes that the reader may disagree with time estimates made by the researcher in Tables 19 and 20. A revised cost estimate could be made by multiplying the compliance cost dollar amount determined by the researcher by the time estimate of the reader and dividing the result by the time estimate of the researcher. Some of the costs in Tables 19 and 20 could be estimated more accurately by the firm than by the researcher, since the firm's accountant has

access to confidential information not available to the researcher (exact wage rates, e.g., whereas the researcher used standard rates).

Certain provisions of the hypothetical VAT law do not appear to result in substantial compliance costs. Five of these concern the listing of uncollectible accounts, inserting the VAT registration number of the buyer on the sales invoice, having the VAT year end December 31 rather than coincide with the end of the firm's financial year, and requiring special annual listings of VAT billed by customer and suppliers (see chapter 3). Table 23, items 1-5, indicates these provisions and the compliance costs for each firm. The costs are a summation of the relevant portions of the individual costs shown in Tables 19 and 20. The impact of the five provisions on each firm is less than 1% of its total initial compliance costs (amounting to $11 to $59) and less than 7% of its total continuing compliance costs (amounting to $19 to $112). Thus while any or all of the five provisions would place an additional compliance burden on the firms, it does not appear that the burden would be substantial.

Certain groups of compliance costs, some of which cannot be estimated accurately, constitute a significant portion of the total amount of initial and total continuing compliance costs for each firm. Costs relating to gaining familiarity with the VAT, reprogramming the computer, review of the firm's pricing decisions, and employee supervision (Table 23, items 7-10) constitute 44% to 77% of each firm's total initial compliance costs. Reprogramming the computer is particularly significant for those firms with a computer. Two groups of continuing compliance costs, employee supervision and error detection

Table 23. Impact on Total Compliance Costs of Five Provisions of the VAT Law and Certain Estimates

Description	Type of Cost Initial- I Continuing- C	Firm and Dollar Amounts					
		A	B	C	D	E	F
Total Initial Compliance Cost for Firm - From Table 22	I	1289	1450	1675	2690	5402	3452
Total Continuing Compliance Cost for Firm - From Table 22	C	683	1669	1612	931	2423	2795
Certain Provisions of the VAT Law[a]							
1. Listing of Uncollectible Accounts	I	0	0	1	0	1	1
	C	0	0	0	0	2	5
2. Inserting VAT Registration Number of Buyer on Sales Invoice, 6	I	4	5	4	4	20	13
	C	2	18	43	8	11	22
3. Having the end of the VAT year be December 31 rather than coincide with the end of the firm's financial year	I	7	0	0	7	7	7
	C	8	0	0	9	8	9
4. Requiring a Special Annual Listing by Customer of VAT billed	I	3	3	3	3	28	28
	C	4	17	30	6	0	0
5. Requiring a Special Annual Listing by Supplier of VAT billed	I	3	3	3	3	3	3
	C	5	52	39	17	85	45

Table 23. Continued.

Description	Type of Cost Initial-I Continuing-C	Firm and Dollar Amounts					
		A	B	C	D	E	F
6. Checking VAT on Suppliers' Sales Invoices and Correcting the Errors Found-Cost #332 and 643 plus part of #754 and 781 and others	I	2	2	2	3	4	163[b]
	C	18	162	123	52	368	710
Certain Estimates Made							
7. Gaining Familiarity with VAT Requirements, Cost #112 and 116, both coded A	I	250	126	387	140	330	400
8. Reprogramming the Computer, Cost #237-263, all coded D except 237, coded C	I	0	0	0	1357	2525[c]	1357
9. Review of the Firm's Pricing Decisions, Cost #394, Coded D	I	280	280	280	280	280	280
10. Employee Supervision, Questions, and Learning, Costs #382, 384, and 386, all coded E	I	305	232	302	302	762	254

Table 23. Continued.

Description	Type of Cost Initial- I Continuing- C	Firm and Dollar Amounts					
		A	B	C	D	E	F
11. Employee Supervision, and Questions, Costs #752 and 754, both coded E	C	129	302	171	228	518	302
12. Error detection and correction, Costs #771 and 781, both coded E	C	12	120	141	43	228	446

[a]The VAT law provisions are discussed in chapter 3.

[b]Firm F would need to purchase two calculators in order to perform this checking.

[c]The programming would be done by the treasurer as Firm E does not employ a programmer.

and correction (Table 23, items 11 and 12), constitute 19% to 31% of each firm's total continuing compliance cost. The more assured an individual accountant was of the accuracy of his estimate of these groups of costs, the more assured he would be of the accuracy of his estimate of the total actual compliance costs.

It is conceivable that the cost of checking the VAT calculation on the suppliers' sales invoices (compliance cost #643 and others) and correcting the errors found would exceed the costs of not performing this checking (see Table 23, item 6). The invoice would be checked to see that the amount of VAT shown has been properly added to the total before the VAT. If the supplier used the wrong percentage for the amount of VAT or for some other reason showed the incorrect amount, the firm would pay more or less than the proper amount to the supplier. Paying more than the proper amount would result in a cost due to the loss of the use of the cash. Paying less would result in a cost saving. In either case, when the firm filed its monthly VAT return, the return would reflect the amount actually invoiced. Thus, a firm might decide not to check the VAT calculation.

Hypotheses 6 and 7

6. The model TICC = a + gP can be used by a firm to estimate its total initial compliance costs for the stated VAT.
   Where P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices.

   a = a fixed amount in dollars (to be determined)
   g = a coefficient (to be determined)
   TICC = Total Initial Compliance Costs in dollars

7. The model TCCC = b + hN can be used by a firm to estimate its total continuing compliance costs for the stated VAT.
   Where N = the number of sales invoices plus the number of suppliers' invoices processed per year, but not by a computer.

   b = a fixed amount in dollars (to be determined)
   h = a coefficient (to be determined)
   TCCC = Total Continuing Compliance Costs per year in dollars

The lists of possible compliance costs (Tables 19 and 20) and the methodology discussion (chapter 5) provide a framework the accountant could use to estimate the VAT compliance costs for his firm. However, preparing cost estimates in the manner used by this study is a time-consuming task. Certainly some accountants are interested in an estimate of their firm's VAT compliance costs without the effort of a detailed estimate. One approach is to make an educated guess such as Rudolph Niehus (a German CPA) who stated, referring to the German value-added tax law, "It may be said, therefore, that the new law will not place an undue burden on the accounting department."[1]

The inaccuracy of such guesses is evident in that two years later, referring to the same law, Niehus stated, "This disadvantage

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[1]Rudolph J. Niehus, "New German Added Value Tax Law," Taxes, 45 (November 1967): 746.

cannot be overlooked: an added value tax law greatly increases the administrative burden on the tax payer."[2]

To provide an estimate of greater accuracy than the accountant's guess and yet to be less time consuming to prepare than using the list of compliance costs, Hypotheses 6 and 7 were tested. Correlations were calculated which determined the a, g, b, and h values in the models. Using Pearson's r, the models were tested for significance at the alpha = .05 level and both hypotheses were accepted.

The two models are more accurate than a guess by the accountant in that they are built upon the detailed estimates of the individual possible compliance costs. The models do contain a source of inaccuracy in that they are calculated using the total compliance costs of each firm and that total includes costs coded D, E, K, and L which, as has been indicated in Hypotheses 4 and 5, are not accurately estimated.

Table 24 summarizes the total number of sales invoices plus suppliers' invoices processed per year, but not by a computer, total number including those processed by a computer, and gross sales for each firm.

Using the data shown in Table 24, Table 10 (Number of Persons in the Accounting Function Involved in the Processing of Sales and Suppliers' Invoices), and Table 22 (Dollar Estimates of Possible Compliance Costs for an Invoice-Type of VAT) correlations were calculated

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[2]Rudolf J. Niehus, "German Added Value Tax - Two Years After," Taxes, 47 (September 1969): 566.

Table 24. Number of Sales Invoices plus Suppliers' Invoices Processed Per Year and Gross Sales

Firm	Number of sales plus suppliers' invoices processed, not by a computer (from Table 9)	Number of sales plus suppliers' invoices processed, including by a computer (from Table 9)	Gross Sales (from Table 8)
A	1,875	1,875	$4.5 mil.
B	19,505	19,505	3.8 mil.
C	22,245	22,245	7.0 mil.
D	6,800	6,800	4.0 mil.
E	36,000	189,000	6.25 mil.
F	70,500	102,600	21.0 mil.

which would determine the a, g, b and h values in the models. In addition to calculating correlations for the two hypotheses, twelve additional correlations were calculated as follows.

Gross sales, mean total number of employees, and number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices were each correlated with initial compliance costs from sources A, B, C and J.

Gross sales, mean total number of employees, and total number of sales plus suppliers' invoices processed including those computer processed were each correlated with total continuing compliance costs.

Gross sales, mean total number of employees, and total number of sales plus suppliers' invoices processed including those computer processed were each correlated with continuing compliance costs from sources A, B, C and J.

Total number of sales plus suppliers' invoices processed, but not by a computer, was correlated with continuing compliance costs from sources A, B, C and J.

Pearson's coefficient of correlation r was determined and tested for significance at the alpha = .05 level for each of the correlations.

The following results were obtained for the model TICC = a + gP where

P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices

a = 881.81

g = 148.16

TICC = Total Initial Compliance Costs in Dollars

Pearson's r = .95 which is significant at the .01 level for four degrees of freedom.[3]

The following results were obtained for the model TCCC = b + hN where

N = the number of sales invoices plus the number of suppliers' invoices processed per year, but not by a computer.

b = 873.83

h = .031

TCCC = Total Continuing Compliance Costs per year in Dollars

Pearson's r = .94 which is significant at the .01 level for four degrees of freedom.[4]

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[3]N. M. Downie and R. W. Heath, Basic Statistical Methods, 3rd ed. (New York: Harper & Row, 1970), p. 318.

[4]Downie and Heath, Basic Statistical Methods, p. 318.

The correlations of gross sales and mean total number of employees with total initial compliance costs were not significant.

The correlations of gross sales and mean total number of employees with initial compliance costs from sources A, B, C and J were significant while that of the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices was not.

The correlation of mean total number of employees with total continuing compliance costs was significant while the correlations of gross sales and total number of sales plus suppliers' invoices processed including those computer processed were not significant.

The correlations of gross sales, mean total number of employees, and total number of sales plus suppliers' invoices processed, but not by a computer, with continuing compliance costs from sources A, B, C and J were significant while that of total number of sales plus suppliers' invoices processed including those computer processed was not.

As three of the four correlations involving mean total number of employees tested significant, the compliance costs listed in Tables 19 and 20 were reviewed to see if any individual compliance costs were related to the mean total number of employees of the firm. None could be found. The fact that three of the correlations were significant may have been chance, or the mean total number of employees and the compliance costs may be related to a third variable.

Conclusion for Hypothesis 6

Hypothesis 6 is therefore accepted using the values a = \$881.81 and g = \$148.16, as stated above. Thus a firm, to estimate its initial compliance costs under the invoice method of computing the VAT, could use the model

TICC = \$881.81 + (\$148.16) (P)

where P = the number of persons in the accounting function of the firm involved in the processing of sales invoices and suppliers' invoices.

TICC = Total Initial Compliance Costs in Dollars

Conclusion for Hypothesis 7

Hypothesis 7 is therefore accepted using the values b = \$873.83 and h = \$.031, as stated above. Thus a firm, to estimate its continuing compliance costs under the invoice method of computing the VAT, could use the model

TCCC = \$873.83 + (\$.031) (N)

where N = the number of sales invoices plus the number of suppliers' invoices processed per year by the firm, but not by a computer.

TCCC = Total Continuing Compliance Costs per Year in Dollars.

Some Implications of the Findings for Hypotheses 6 and 7

As might be expected, the accuracy of the compliance cost estimates of the accountant is related to the amount of time spent preparing those estimates. If the accountant wishes to spend a minimal amount of time, then he can use the models of Hypotheses 6 and 7. If he wishes to spend more time and obtain greater accuracy, he can use the list of possible compliance costs as a basis for making detailed cost estimates. Of course, the most accurate amount of compliance cost could be determined by actually performing the changes necessitated by the VAT. Which method the accountant would use to prepare his estimate of his firm's compliance costs would depend on his evaluation of the costs to prepare and the benefits to be derived from each. The two models provide cost estimates more accurate than an accountant's guess, and they are less time-consuming to prepare than estimating each item in the list of possible compliance costs.

In using the models accepted in Hypotheses 6 and 7, an accountant should recognize that were he to estimate his compliance costs item by item in Tables 19 and 20, his total estimated compliance costs might be greater than or less than that predicted by the models. When the initial and continuing compliance cost models for each of the six firms were used to predict the total costs estimated in this study (Table 22), the predicted costs were above the estimated costs for three firms and below for three firms for both models. The largest dollar amount difference among the initial compliance costs was the estimated cost exceeding the predicted cost by $771 for Firm D (29%

of D's estimated cost). For the continuing compliance costs the estimated cost exceeded the predicted cost by $433 for firm E (18% of E's estimated cost). The largest percentage difference among the initial compliance costs was the predicted cost exceeding the estimated cost by 43% for firm B ($617 difference). For the continuing compliance costs the predicted cost exceeded the estimated cost by 36% for firm A ($249 difference).

The model accepted in Hypothesis 7 indicates continuing compliance costs at least 3.6 times as much as those estimated in Phyllis Barker's study published in 1972.[5] Table 25 shows the estimated costs of the six firms in the Barker study compared with those estimated using the model accepted in Hypothesis 7.

In answering Hypothesis 7 a correlation was determined which used only those costs whose source was A, B, C and J. Pearson's r for this model was significant at the .01 level. Applying this model, TCCC = $326.44 + $.0198 N, to the Barker firms would estimate continuing compliance costs at least 1.4 times those of the Barker article. The Barker article is sketchy as to what the VAT law is assumed to be as well as in identifying the individual compliance costs used, making it impossible to replicate the study.

It seems evident, however, that the continuing compliance costs for each firm will be considerably higher than those suggested

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[5]Phyllis A. Barker, "The Value-Added Tax - The Cost to the Businessman," Journal of Accountancy, 134 (September 1972): 75-9; and Phyllis A. Barker, "Letters - Value-Added Tax," Journal of Accountancy, 135 (March 1973): 37.

Table 25. Hypothesis 7 Applied to the Barker Study

Barker Study[a]			This Study
Firm and Type	Number of Sales Invoices[b]	Estimated Compliance Costs in Dollars[c]	Estimated Continuing Compliance Costs in Dollars[d]
A - Manufacturer[e]	400,000	$40,800	$ ---
B - Manufacturer	1,700	56	927
C - Wholesaler	12,600	350	1,264
D - Retailer[f]	2,520	120	952
E - Trucking	400	100	886
F - Industrial Design	72	3	876

[a]Phyllis A. Barker, "The Value-Added Tax - The Cost to the Businessman," Journal of Accountancy, 134 (September 1972): 75-9; and Phyllis A. Barker, "Letters - Value-Added Tax," Journal of Accountancy, 135 (March 1973): 37.

[b]The articles do not state the number of suppliers' invoices processed. When applying the model of Hypothesis 7, the number of suppliers' invoices was assumed to be zero.

[c]This was computed from the Barker articles, compliance costs per dollar of sales multiplied by dollars of sales.

[d]This was estimated using the model accepted in Hypothesis 7. Total Continuing Compliance Costs = $873.83 + $.031 N where N = the number of sales invoices plus the number of suppliers invoices processed per year, but not by a computer. The dollar amounts are all understated since the number of suppliers' invoices was assumed to be zero.

[e]Firm A used electronic data processing so the model of Hypothesis 7 could not be applied as N is not known.

[f]The model of Hypothesis 7 in this study was developed from manufacturing firms and may not be applicable to Firm D, a retailer.

in the Barker article.

The Cambridge Research Institute Study,[6] concerning retailers and discussed in chapter 1, assumed a VAT rate of 2% and expected compliance costs of 2% to 4% of the VAT collected. Thus the compliance costs would be .0004 to .0008 of a retailer's sales dollar. Applying these percentages to the $600,000 in sales of the retailer in the Barker article, firm D yields expected compliance costs of $240 to $480. This is half or less than the amount predicted by Hypothesis 7 in Table 25. Note, however, that the model in Hypothesis 7 was developed from manufacturing firms and a service firm and may not be applicable to retail firms. Reducing expected compliance costs to a fixed percentage of sales, as the Cambridge Research Institute's study did, is not justified, since, as indicated in the discussion, the six firms in this study, the correlation between total continuing compliance costs and gross sales was not significant. An examination of the list of possible compliance costs, Tables 19 and 20, shows that only a portion of some relatively minor costs increases or decreases with a change in the dollar amount of sales. Additional dollar amounts of sales might mean for cost #483, for example, an additional digit in the VAT computation.

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[6]Cambridge Research Institute, Prepared for American Retail Federation, The Value-Added Tax in the United States - Its Implications For Retailers (Cambridge, Mass.: Cambridge Research Institute, 1970), pp. 12, 137.

CHAPTER VII

CONCLUSIONS FOR THE ACCOUNTS METHOD OF COMPUTING THE VAT

This chapter discusses and accepts, does not accept, or rejects each of the seven hypotheses for the accounts method of computing the VAT. Hypotheses 2 - 6 are accepted as generally true, Hypothesis 7 is not accepted, and Hypothesis 1 is rejected.

Hypothesis 1

1. It is not possible to determine the changes that a VAT would require within the accounting function of each firm subject to the tax.

An examination of the return (Figure 3) required by the accounts type of VAT shows that most firms would be maintaining the necessary ledger accounts already. However, there were two items the firms would have to report that might require changes in and additional work by their accounting functions. Schedule A, item 1 of the return specified the deductions from gross receipts. Schedule A, item 3 of the return required the inventory value to exclude any payroll and overhead costs. Each of the six respondents was asked whether his firm would need to add any additional accounts to its ledger in order to accumulate the required information for the return. Attention was drawn to the two specific items indicated above.

Firms B, C and F responded that the two items would be "no problem" and that the VAT would not require any additional ledger accounts for their firm. Firm E responded that a few new ledger accounts might be required, but that there would be no problem in accumulating the information. Firm A indicated that no new ledger accounts would be required, but a small amount of work would be required to find the amount of deductions from gross receipts. Firm C replied that no new accounts would be required nor would it be any problem to comply with the reporting requirements. To remove the overhead and payroll from the inventory value would involve applying a percentage to its value.

Conclusion for Hypothesis 1

Each of the firms studied indicated few, if any, changes were needed for the firm to be able to accumulate the information necessary for it to complete its VAT return. The changes that would be required are minor procedural ones within the accounting function involving the individual posting the ledger. Firms without prior experience with the Michigan Business Activities Tax (BAT) may need to add additional accounts to their ledger as well as procedures for accumulating and posting the information to those accounts.

The changes that a VAT would require are few, but they can be described. The hypothesis is therefore rejected in general for the accounts method of computing the VAT.

Hypotheses 2 and 3

2. The total initial compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

3. The total continuing compliance costs of a VAT can be broken into components that can be described in terms of information readily available to a firm's accountant.

Hypotheses 2 and 3 are jointly discussed as they were in chapter 4. The listing of possible and initial continuing compliance costs follows (Tables 27 and 28). Based on the listing, Hypotheses 2 and 3 are accepted for most, but not all, of both types of costs.

The list of compliance costs reflects the changes required in each firm, described in Hypothesis 1, as well as changes that other firms subject to the tax may be required to make.

Each of the possible compliance costs has been identified with a three-digit number. If the description of the cost is identical with that of a cost in the list for an invoice type of VAT (Tables 19 and 20), then the same three-digit number is used. Following the number is a code letter described in Table 16 as the source of the personnel (letters A-E) and non-personnel (letters J-L) dollar cost estimates. The possible compliance cost is described and under the description of those costs estimated by the researcher is the researcher's estimate (discussed in chapter 5) of the time or cost required. The dollar amounts of each individual compliance cost for each firm are separated and coded according to the category of individuals (letters M-S, described in Table 17) to whom the cost estimate relates.

For the costs coded E or L, the information is not readily available to a firm's accountant for estimating that cost. For costs coded A-D, J and K the information is readily available and the accountant could estimate the costs based on a variety of sources of information, as discussed in chapter 6. Within the list, the individual compliance costs have been grouped by the sequence in which the costs would likely be incurred (summarized in Table 26). The total estimated dollar amounts of compliance costs for each firm, computed in detail in Tables 27 and 28 are summarized in Table 30.

Conclusion for Hypothesis 2

Forty possible individual initial compliance costs for a VAT computed by the accounts method are identified in this study. As the information is readily available to a firm's accountant to estimate 40 of the 40 identified costs, Hypothesis 2 is accepted as generally true for each firm in this study and in general.

Conclusion for Hypothesis 3

Thirty-four possible individual continuing compliance costs for a VAT computed by the accounts method are identified in this study. The information to estimate twenty-eight of the costs is readily available and the information is not readily available for six costs (coded with letters E and L). Of these six costs, three (numbered 791, 801 and 811) concern reassessment of certain decisions within the firm, and three (numbered 972, 974 and 976) concern a government VAT

Table 26. Summary of Possible Compliance Costs for the Accounts Method of Computing the VAT

Code Number and Description of the Type of Cost	Number of Individual Costs Estimated
100 Initial Compliance Costs	Total = 40
110 Prior to Start of VAT Year	
111 Gaining Familiarity with VAT Requirements	3
121 Relating the VAT to the Firm	2
161 Designing the Necessary Accounting Procedures	6
201 Determining the Effect of VAT on Individuals in the Accounting Function	2
215 Reprogramming the Machines	
216 For an Accounting Machine	1
236 For a Computer	9
285 Training of Employees Concerning the VAT	3
331 Purchasing Additional Office Equipment	1
351 Miscellaneous	7
371 Registering for VAT	2
380 During First Year	
381 Miscellaneous	4
400 Continuing Compliance Costs	Total = 34
410 Annually at Start of the VAT Year	1
420 Related to Sales	
425 Related to Each Sale (Non-Computer Processed)	3
565 Related to Each Sale (Computer Processed)	3
620 Related to Purchases	5
720 At Various Times Through the Year	
731 Related to New Employees	3
751 Related to All Employees	2
791 Executive Attendance at Meetings Concerning VAT	1
801 Planning to Reduce Tax Impact	1
811 Reassessment of Decisions	1
820 Periodically - Monthly	1
850 Periodically - Quarterly	2
880 Annually - At End of Financial and VAT Year	2
890 Annually - After End of VAT Year	1
930 Miscellaneous	7
980 Compliance Cost Savings	1

Table 27. List of Possible Initial Compliance Costs for the Accounts Method of Computing a VAT.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
100 Initial Compliance Costs							
110 Compliance costs which a firm would incur once, previous to the date the VAT took effect							
111 Gaining familiarity with the VAT requirements							
112A Reading to gain familiarity with the legislation	Q	46.76	23.38	29.23	11.69	23.38	29.23
114A Executive attendance at meetings concerning the VAT and its requirements	Q	0	0	0	0	0	0
116A Consulting with CPA and/or tax advisor to verify the firm's interpretation of the legislation	Q	35.07	35.07	93.52	11.69	29.22	23.38
	R	60.00	75.00	200.00	35.00	150.00	65.00
121 Relating the VAT to the firm							
134C Determining the new accounts required in the ledger	Q	.39	.39	.39	.39	1.56	.39
Time=T=2 min. per account. Cost includes a VAT payable account for each firm.							
136C Assigning account numbers to the new ledger accounts	Q	.39	.39	.39	.39	1.56	.39
T=2 min. per account.							
161 Designing the necessary accounting procedures							
163C Designing the accounting procedures which will separate gross receipts into the necessary ledger accounts for reporting on the return	Q	0	0	0	0	0	0
No estimate of T necessary for these firms.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
165C Designing the accounting procedures which will separate expenditures and expenses into deductions which are allowable and deductions which are not allowed	Q	0	0	0	0	0	0
No estimate of T necessary for these firms.							
167C Designing the accounting procedures which will accumulate expenditures and expenses in the necessary ledger accounts for reporting deductions on the return	Q	0	0	0	0	0	0
No estimate of T necessary for these firms.							
184C Designing the accounting procedures for preparing the periodic (three quarterly estimated) VAT returns sent to the government	Q	2.92	2.92	2.92	2.92	2.92	2.92
T=15 min.							
185C Designing the accounting procedures for preparing the annual VAT return sent to the government	Q	3.90	3.90	3.90	3.90	3.90	3.90
T=20 min.							
192C Designing the accounting procedures for the accounting cut-off work for the date the VAT becomes effective (this is to establish the amount of receipts and deductions which existed prior to the effective date of the VAT)	Q	4.87	4.87	4.87	4.87	4.87	4.87
T=25 min.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
201 Determining the effect of VAT on individuals in the accounting function							
203C Determining which people in the accounting function will be affected by the changes in accounting procedures, and planning exactly how their tasks will each be altered	Q	0	0	0	0	0	0
T=15 min. per operation + 5 min. per person in that operation.							
206A Rewriting the job description of those employees whose job description has changed as a result of the VAT	Q	0	0	0	0	0	0
Some firms do not have job descriptions.							
215 Reprogramming the machines used in the accounting function							
216C For an accounting machine:	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No reprogramming anticipated for these firms.	R	0	0	0	0	0	0
236 For a computer: For #239-#263 the researcher feels that a firm's accountant in conjunction with the firm's programmer could make a reasonable estimate of the time involved. Computer time cost=0 due to assumption 6, chapter 2, that excess capacity is available.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
237C Discussion between a financial officer of the firm and the person who will reprogram the computer as to the end results required (this could include altering existing programs and preparing a program to assist in preparing the VAT returns)	P	0	0	0	1.55	0	1.55
	Q	0	0	0	2.92	0	2.92
T was based on the complexity of the work to be performed in each firm. In firm E the treasurer would do the reprogramming.							
239D Ascertaining the changes required and flow charting them	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
243D Identifying the existing programs to be altered	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
247D Redesigning the medium to input information into the computer	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
249D Redesigning the output medium	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
253D Identifying the program steps to be revised	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
257D Inserting the rewritten program steps	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
259D Testing and debugging the rewritten programs	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
263D Writing programs for generating the amounts for the periodic (quarterly and annual) returns (this includes actions similar to those described above in #239 to #259)	P	0	0	0	99.18	0	99.18
	Q	0	0	0	0	187.04	0
T=16 hours.							
285 Training of employees concerning the VAT							
286C Determining how each category of employee and then each employee whose job will be altered by the VAT will be trained	Q	0	0	0	0	0	0
T=5 min. per operation + 1 min. per person in that operation.							
296C Designing the content of the training each employee will receive	Q	0	0	0	0	0	0
No estimate of T necessary for these firms.							
306C Conducting the training for those employees whose job has been altered by the VAT	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate of T necessary for these firms.							
331 Purchasing additional office equipment							
334K Purchasing additional computer hardware necessitated by the VAT, e.g., computer tape	S	0	0	0	10.00	10.00	10.00
Cost=$10.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
351 Miscellaneous actions							
352D Rewriting the systems and procedures manual	Q	0	0	0	1.95	1.95	1.95
T=10 min. to add, running computer program quarterly.							
354D Determining whether a parent and subsidiary should register as one company for VAT purposes or as several companies	Q	0	11.69	0	0	11.69	11.69
T=1 hour.							
356C Determining how the VAT affects the contract price on any leases and long term contracts	Q	5.84	2.92	2.92	5.84	5.84	5.84
T=15 min. per different type of lease.							
358D Explaining to the cost accountants how the VAT works and how it affects the cost accounting system and costs generated by the system	P	5.52	5.52	5.52	5.52	5.52	5.52
	Q	11.69	11.69	11.69	11.69	11.69	11.69
T=1 hour.							
362D Explaining to the marketing department how the VAT works and how it may affect the pricing decision	M	11.69	11.69	11.69	11.69	11.69	11.69
	Q	11.69	11.69	11.69	11.69	11.69	11.69
T=1 hour.							
364D Estimating the effect of the VAT on the firm's forecast of cash receipts and cash disbursements	Q	11.69	11.69	11.69	11.69	11.69	11.69
T=1 hour.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
366D Estimating the effect of the VAT on the firm's forecast of cash receipts and cash disbursements	Q	23.38	23.38	23.38	23.38	23.38	23.38
T=2 hours.							
371 Registering for VAT and performing cut-off work for the date the VAT becomes effective							
372C Registering for the VAT with the government	Q	1.95	1.95	1.95	1.95	1.95	1.95
T=10 min.							
374D Performing cut-off work for the date the VAT becomes effective, which was assumed to be January 1	P	0	9.35	7.60	30.84	60.77	60.77
	Q	93.52	11.69	11.69	93.52	93.52	93.52
T=1 hour for firms whose financial year ends December 31, and T=8 hours for other firms.							
380 Compliance costs which a firm would incur once, during the first year of VAT							
381 Miscellaneous							
382E Supervising employees to ensure that they have internalized the VAT training and are performing as required concerning VAT	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate necessary for these firms.							
384E Answering employee questions not covered in VAT training	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate necessary for these firms.							

Table 27. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
388C Designing the accounting procedures for the cut-off work at the end of the VAT year (the end of the firm's financial and VAT years were assumed to coincide) T=10 min.	Q	1.95	1.95	1.95	1.95	1.95	1.95
394D Review of the firm's pricing decisions by the marketing department and purchasing decisions by the purchasing department T=24 hours.	M	280.56	280.56	280.56	280.56	280.56	280.56
TOTAL INITIAL COMPLIANCE COSTS		613.78	541.69	717.55	676.77	948.34	777.62

Table 28. List of Possible Continuing Compliance Costs for the Accounts Method of Computing a VAT.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
400 Continuing Compliance Costs--Compliance costs which a firm would incur during each year after the adoption of the VAT							
410 Annually at the start of the VAT year							
411B Opening the necessary accounts for VAT in ledger	P	.03	.03	.03	.03	.12	.03
Time=T=.4720 per account, per Table 13.							
420 Related to Sales							
425 Related to each sale and sales return (non-computer processed)							
428B Insert information on the sales invoice which will enable the invoice to be posted to the proper VAT necessitated accounts	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
538B Insert information on the credit memo which will enable the memo to be posted to the proper VAT necessitated accounts	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
546C Related to the posting of sales and sales returns (although more ledger accounts may be used as a result of the VAT, the total number of postings to the ledger should not change as a result of the VAT)	P	0	0	0	0	0	0
T=0 min.							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
565 Related to each sale and sales return (computer processed)							
566 Input into the computer							
567B Keypunching additional information necessitated by the VAT	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
569B Verifying the additional information necessitated by the VAT	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
576K Processings by the computer (although more ledger accounts may be used as a result of the VAT, the total number of postings to the ledger should not change as a result of the VAT)	S	0	0	0	0	0	0
T=0 min. is anticipated for these firms.							
620 Related to Purchases							
661B Insert information on the payment voucher, and/or check advice, and/or voucher check, and/or credit memo of vendor which will enable the amount to be posted to the proper VAT necessitated accounts	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
681C Related to the posting of purchases and purchase returns (non-computer processed) (although more ledger accounts may be used as a result of the VAT, the total number of postings to the ledger should not change as a result of the VAT)	P	0	0	0	0	0	0
T=0 min.							
695 Related to the posting of purchases and purchase returns (computer processed)							
696 Input into the computer							
697B Keypunching the additional information necessitated by the VAT	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
699B Verifying the additional information necessitated by the VAT	P	0	0	0	0	0	0
No estimate of T necessary for these firms.							
706K Processing by the computer (although more ledger accounts may be used as a result of the VAT, the total number of postings to the ledger should not change as a result of the VAT)	S	0	0	0	0	0	0
T=0 min. is anticipated for these firms.							
720 At various times throughout the year							
731 Related to new employees and employees with new positions							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
732C Conducting training for that portion of their job relating to the VAT	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate of T necessary for these firms due to #286-#306.							
734E Supervising the new or transferred employees to ensure that they have internalized the VAT training and are performing as required concerning the VAT	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate necessary for these firms due to #286-#306.							
736E Answering employee questions not covered in VAT training	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate necessary for these firms due to #286-#306.							
751 Related to all employees							
752E Supervising employees to ensure that they are performing as required concerning VAT	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
No estimate is necessary for these firms.							
756E Conducting periodic follow-up training concerning problems resulting from the VAT and performance improvement	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
791E Executive attendance at meetings concerning the VAT and its problems, and/or the changes in VAT legislation or interpretation	Q	46.76	46.76	46.76	46.76	46.76	46.76
T=4 hours.							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
801E Filing in tax subscription service, and study of tax service and planning so as to reduce the tax impact	P	1.90	1.90	1.90	1.90	1.90	1.90
	Q	11.69	11.69	11.69	11.69	11.69	11.69
T=30 min. for clerk, 1 hour for treasurer.							
811E Reassessment of certain decisions by personnel outside the accounting function, e.g., marketing and purchasing	M	46.76	46.76	46.76	46.76	46.76	46.76
	Q	0	0	0	0	0	0
T=4 hours.							
820 Periodically--Monthly (12 times per year)							
822B Finding the balance of the ledger accounts related to VAT, if a running balance is not maintained for each ledger account	P	0	0	0	0	0	0
	Q	.73	0	0	0	0	0
T developed from Appendix B							
850 Periodically--Quarterly							
854C Preparing the quarterly VAT return (3 times per year) (this includes completing the form and checking the return)	P	0	0	0	0	0	12.42
	Q	26.30	26.30	0	26.30	26.30	0
	R	0	0	56.25	0	0	0
T=45 min. per Table 15. For firm C the CPA prepares the tax returns.							
856C Preparing the check, check invoice, or voucher check for the payment of the VAT to the government (4 times per year)	P	.25	.26	.26	.26	.25	.26
T=1 min. per Table 15.							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
880 Annually--at the end of the firm's financial and VAT year (the end of the firm's financial and VAT years coincide)							
884D Performing the cut-off work at the end of the firm's financial year	P	0	2.33	1.90	1.90	1.90	2.33
	Q	5.84	0	0	0	0	0
T=30 min.							
886B Closing the ledger accounts required by the VAT	P	0	0	0	0	.09	0
T based on Appendix B if performed. For firms with computers this was keypunch time only.							
890 Annually--after the end of the VAT year							
896A Preparing the annual VAT return, Figure 3 (this includes completing the form and checking the return)	P	0	0	0	0	0	33.13
	Q	40.92	17.54	0	11.69	11.69	0
	R	0	0	37.50	0	0	0
For firm C the CPA prepares the tax returns.							
930 Miscellaneous Items							
932D Auditing work the firm's CPA adds in order to satisfy himself concerning the firm's accounting for VAT, e.g., verifying the balance of the VAT accounts	R	10.00	10.00	10.00	10.00	10.00	10.00
T=30 min. Cost at $20. per hour.							
942D Purchasing a subscription service on the VAT such as those provided by Prentice Hall, Commerce Clearing House	S	10.00	10.00	10.00	10.00	10.00	10.00
Cost=$10.							

Table 28. Continued.

Compliance Cost Number, Description, and Letter Code Indicating to Whom the Cost Estimate Relates		Dollar Amount by Firm					
		A	B	C	D	E	F
954K Purchasing additional accounting forms, e.g., ledger cards	S	2.00	2.00	2.00	2.00	2.00	2.00
Cost=$2 per year.							
956K Retaining the VAT returns and other documents required solely by the VAT	S	3.00	3.00	3.00	3.00	3.00	3.00
Cost=$30 for a small file cabinet lasting 10 years.							
972E Consulting with representatives of government auditing the firm for VAT purposes (this includes time gathering records and data at the government's request, and correspondence)	P	0	0	0	0	0	0
	Q	0	0	0	0	0	0
Assumed firm fully complies with the VAT and is not audited.							
974E Litigation concerning the VAT (this is a potential cost to the firm)	Q	0	0	0	0	0	0
	R	0	0	0	0	0	0
Cost=$0 based on #972.							
976L Payment of penalties and interest due to failure to comply with the VAT law (this is a potential cost to the firm, and it was not estimated)	S	0	0	0	0	0	0
Cost=$0 based on #972.							
980C Compliance cost savings	P	0	0	0	0	0	0
No time or cost savings were discerned for any firm in this study as a result of the VAT.							
TOTAL CONTINUING COMPLIANCE COSTS		206.18	178.57	228.05	172.29	172.46	180.28

compliance investigation. As the information is readily available to a firm's accountant to estimate 28 of the 34 identified costs, Hypothesis 3 is accepted as generally true for each firm in this study and in general.

Hypotheses 4 and 5

4. A dollar amount can be estimated accurately for the VAT initial compliance costs identified in Hypothesis 2.

5. A dollar amount can be estimated accurately for the VAT continuing compliance costs identified in Hypothesis 3.

The accuracy of a compliance cost estimate depends on the availability of the data to make the estimate and the amount of time to make the estimate. For the costs in Tables 27 and 28, coded A, B, C and J (See Table 16) the information is readily available to a firm's accountant. Using the same cost estimation process as this study (see chapter 5), the accountant could make his estimates. As the estimate would fall within narrow bounds on either side of the expected true value, the cost can be estimated accurately. Half of the initial and continuing compliance costs identified can be estimated accurately (see Table 29).

For the costs coded D and K, the information is available to the firm's accountant, but his estimate is not expected to be accurate because it would be subject to wide variability. Increased accuracy can be achieved with increased costs in the form of increased time and effort by the accountant and his staff. Seventeen of the initial compliance costs identified and seven of the continuing

Table 29. Number of Compliance Costs for an Accounts-Type of VAT by Source of Estimates

Code Letter-Per Table 16	Source of Estimate in This Study and Its Anticipated Accuracy-per Table 16	Number of Initial Compliance Costs-per Table 27	Number of Continuing Compliance Costs-per Table 28
	Personnel Dollar Cost Estimates		
A	Firm interviewed, accurate	4	1
B	Standard Time Data, reasonably accurate	0	10
C	Researcher, accurate within narrow bounds	17	6
D	Researcher, inaccurate because subject to wide variability	16	3
E	Researcher, inaccurate because information is not readily available to a firm's accountant	2	9
	Non-Personnel Dollar Cost Estimate		
J	Firm interviewed, accurate	0	0
K	Researcher, inaccurate because subject to wide variability	1	4
L	Researcher, inaccurate because information is not readily available to a firm's accountant	0	1
	TOTAL	40	34

compliance costs identified are estimates subject to wide variability and thus not expected to be accurate.

For the costs coded E and L, the information is not readily available on which the accountant could base his estimate, and therefore the estimates would be accurate by chance only. Two of the initial compliance costs were coded E and L, as were ten of the continuing compliance costs.

Conclusions for Hypotheses 4 and 5

Individual compliance costs can be estimated with varying degrees of accuracy. For just over half of the individual costs the hypotheses are accepted. For some individual costs, the hypotheses are rejected, although the accuracy of the estimate would improve with additional time and effort by the accountant. The hypothesis is rejected for other costs as the necessary information is not readily available to the accountant. As at least fifty percent of the initial and continuing compliance costs identified for a VAT computed by the accounts method can be estimated accurately, Hypotheses 4 and 5 are accepted as generally true for each firm in this study and therefore in general.

Some Implications of the Findings for Hypotheses 4 and 5

A substantial portion of each firm's total amount of estimated compliance costs results from individual compliance costs, each of which cannot be estimated accurately. Table 30 summarizes the

Table 30. Dollar Estimate of Possible Compliance Costs for an Accounts-Type of VAT.

	Initial Compliance Costs			Continuing Compliance Costs		
Firm	Source of Estimates Code Letter A, B, C, J	Source of Estimates Code Letter D, E, K, L	Total	Source of Estimates Code Letter A, B, C, J	Source of Estimates Code Letter D, E, K, L	Total
A	$164.04	$449.74	$613.78	$68.23	$137.95	$206.18
B	152.74	388.95	541.69	44.13	134.44	178.57
C	342.04	375.51	717.55	94.04	134.01	228.05
D	85.06	591.71	676.77	38.28	134.01	172.29
E	227.15	721.19	948.34	38.45	134.01	172.46
F	144.29	633.33	777.62	45.84	134.44	180.28

Sources: The initial compliance costs are taken from Appendix F, which summarizes the amounts by firm in Table 27. The continuing compliance costs are taken from Appendix G, which summarizes the amounts by firm in Table 28.

estimated total dollar amount of initial and continuing compliance costs by firm. Each total is subdivided into two parts. One is the summation of the individual, accurately estimated costs, coded A, B, C and J (see Table 29). The other is the summation of the individual costs, coded D, E, K and L, which could not be estimated accurately.

The accurately estimated portion of each firm's total amount of initial compliance costs ranges from thirteen to forty-eight percent. The accurately estimated portion of the total amount of continuing compliance costs ranges from twenty-two to forty-one percent. These accurate estimates provide the minimum possible compliance costs for each firm. The implementation date of the tax is the only provision of the tax law developed in chapter 4 which, if changed, would result in substantially changed compliance costs for any firm. With an implementation date of January 1, four firms must do additional accounting work to determine their receipts and expenditures prior to that date, which is not their year end. The four firms' additional initial compliance costs would be from $82 to $135 (see Table 31, Item 1). Selecting some other implementation date would reduce the initial compliance cost of one of the firms (A, D, E or F) while increasing it for B and C.

Certain groups of compliance costs, some of which cannot be estimated accurately, constitute a significant portion of the total amount of initial and continuing compliance costs for each firm. Costs relating to gaining familiarity with the VAT, reprogramming the computer, and review of the firm's pricing decisions (Table 31, items 2, 3 and

Table 31. Impact on Total Compliance Costs of the Implementation Date of the VAT Law and Certain Estimates

Description	Type of Cost Initial- I Continuing- C	Firm and Dollar Amounts					
		A	B	C	D	E	F
Total Initial Compliance Cost for Firm - From Table 30	I	614	542	718	677	948	778
Total Continuing Compliance Cost for Firm - from Table 30	C	206	179	228	172	172	180
1. Implementing the VAT January 1 rather than at the end of the firm's financial year[a] - Parts of Cost #192 and 374	I	82	0	0	109	135	135
2. Gaining familiarity with VAT requirements, Cost # 112 and 116, both coded A	I	142	133	323	58	203	118
3. Reprograming the Computer, Cost #237-263, all coded D except #237, coded C	I	0	0	0	104	187[b]	104

Table 31. Continued.

Description	Type of Cost Initial- I Continuing- C	Firm and Dollar Amounts					
		A	B	C	D	E	F
4. Review of the Firm's Pricing Decisions, Cost #394, coded D and 811, coded E	I	281	281	281	281	281	281
	C	47	47	47	47	47	47
5. Executive attendance at Meetings concerning VAT, Cost #791, coded E	C	47	47	47	47	47	47
6. Preparing the Quarterly VAT Returns, Cost #854, coded C	C	26	26	56	26	26	12
7. Preparing the Annual VAT Return, Cost #896, coded A	C	41	18	38	12	12	33

[a]This VAT law provision is discussed in chapter 4.

[b]The reprogramming would be done by the treasurer as Firm E does not employ a programmer.

4 I) constitute 65% to 84% of each firm's total initial compliance costs. Continuing costs concerning review of the firm's pricing decisions, executive attendance at meetings concerning VAT, and completing the returns (Table 31, items 4C, 5, 6 and 7) constitute 77% to 82% of each firm's total continuing compliance costs. The more assured an individual accountant was of the accuracy of his estimate of these costs, the more assured he would be of the accuracy of his estimate of the total actual compliance costs.

Hypotheses 6 and 7

6. The model TICC = a + gP can be used by a firm to estimate its total initial compliance costs for the stated VAT.
   Where P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices.

   a = a fixed amount in dollars (to be determined)
   g = a coefficient (to be determined)
   TICC = Total Initial Compliance Costs in dollars

7. The model TCCC = b + hN can be used by a firm to estimate its total continuing compliance costs for the stated VAT.
   Where N = the number of sales invoices plus the number of suppliers' invoices processed per year, but not by a computer.

   b = a fixed amount in dollars (to be determined)
   h = a coefficient (to be determined)
   TCCC = Total Continuing Compliance Costs per year in dollars

As was discussed for the invoice type of VAT, it would be a time consuming task for the accountant to estimate the compliance costs of an accounts type of VAT for his firm using a list of possible compliance costs. Some accountants certainly would like an estimate for their firm without the effort of making one. To provide an estimate less time-consuming to prepare than using the list of compliance

costs, Hypotheses 6 and 7 were tested.

Using the data shown in Table 30 (Dollar Estimate of Possible Compliance Costs for an Accounts Type of VAT), Table 10 (Number of Persons in the Accounting Function Involved in the Processing of Sales and Suppliers' Invoices), Table 9 (Number of Sales Invoices plus Suppliers' Invoices Processed Per Year and Gross Sales), and Table 8 (Description of Firms Studied), correlations were calculated which would determine the a, g, b and h values in the models. In addition to calculating correlations for the two hypotheses, twelve additional correlations were calculated as follows:

Gross sales, and mean total number of employees were each correlated with total initial compliance costs.

Gross Sales, mean total number of employees, and number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices were each correlated with initial compliance costs from sources A, B, C and J.

Gross sales, mean total number of employees, and total number of sales plus suppliers' invoices processed including those computer processed were each correlated with total continuing compliance costs.

Gross sales, mean total number of employees, and total number of sales plus suppliers' invoices processed including those computer processed were each correlated with continuing compliance costs from sources A, B, C and J.

Total number of sales plus suppliers' invoices processed, but not by a computer, was correlated with continuing compliance costs

from sources A, B, C and J.

Pearson's coefficient of correlation r was determined and tested for significance at the alpha = .05 level for each of the correlations.

The following results were obtained for the model TICC= a + gP where

P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices

a = 567.55

g = 12.11

TICC = Total Initial Compliance Costs in dollars

Pearson's r = .87 which is significant at the .05 level for four degrees of freedom.[1]

Pearson's r at the .05 level was not significant for any of the five other correlations concerning initial compliance costs.

In none of the eight correlations calculated, including Hypothesis 7, concerning continuing compliance costs did Pearson's r have a value exceeding .43. Thus these correlations are not significant at the .05 level for four degrees of freedom.[2]

Conclusion for Hypothesis 6

Hypothesis 6 is therefore accepted using the values a = $567.55 and g = $12.11, as stated above. Thus to estimate its initial

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[1]N. M. Downie and R. W. Heath, Basic Statistical Methods, 3rd ed. (New York: Harper & Row, 1970), p. 318.

[2]Downie and Heath, Basic Statistical Methods, p. 318.

compliance costs under the accounts method of computing the VAT, a firm could use the model

$$TICC = \$567.55 + (\$12.11)\ (P)$$

where P = the number of persons in the accounting function involved in the processing of sales invoices and suppliers' invoices.

TICC = Total Initial Compliance Costs in Dollars

Conclusion for Hypothesis 7

Hypothesis 7 is not accepted and a firm could not use the model to estimate its total continuing compliance costs under the accounts method of computing the VAT, as neither Hypothesis 7 nor seven alternative correlations concerning continuing compliance costs had a Pearson's r value which tested significant.

Some Implications of the Findings for Hypotheses 6 and 7

While Hypothesis 7 was not accepted, a firm would still be interested in estimating its total continuing compliance costs. The three correlations of TCCC and total number of invoices processed by hand, total number of invoices processed, and gross sales had b values in the $190s and h values of 0 to -.3. An examination of the individual compliance costs (Tables 27 and 28) did not reveal any other factor that might correlate with TCCC. Therefore it is possible that total continuing compliance costs are a fixed cost. The average cost for the six firms in this study would be $190, while the costs range is from $172 to $228. Using $190 as the predicted total continuing compliance cost for each firm, the predicted exceeded the total

estimated cost from the detailed listings (Table 30), by no more than 17% of the estimated cost. The predicted total exceeded the lowest estimated cost (for firm D) by $18 (10% of D's estimated cost) and was less than the highest estimated cost (for firm C) by $38 (17% of C's estimated cost). Given this small range of difference between the predicted and the estimated cost for each firm, it appears that continuing compliance costs of $190 per firm is a reasonable estimate for these firms and perhaps for all such firms.

CHAPTER VIII

SUMMARY AND IMPLICATIONS

Summary and Implications of this Study

The study shows that neither an invoice nor an accounts-type of VAT would require major changes in the firms subject to the tax. The study identifies numerous possible compliance costs for both types of VAT and shows that dollar amounts can be accurately estimated for many of the individual costs. The study also shows that the estimation of a number of compliance costs, particularly computer-related costs, either cannot be done with accuracy or require a considerable amount of an accountant's time. These hard-to-estimate costs in some instances constitute a significant portion of the firm's anticipated total compliance costs. Models are determined that would assist an accountant in estimating his firm's VAT compliance costs. These models are the only ones currently available for estimating VAT compliance costs.

Businessmen and accountants can use the study, and in particular the lists of compliance costs, as a planning guide to indicate the actions they would need to consider and possibly take to comply with a VAT, should one be adopted. The study can assist them in estimating their firm's compliance costs and determining the additional accounting staff needed.

The study reveals some of the problems that economists will have in attempting to estimate the macro-economic effects of a VAT. The macro estimates are contingent on reliable estimates at the level of the firm and these are difficult for the firm's accountant to make. The tentative models for estimating a firm's compliance cost indicate that the costs are related to the number of persons in the accounting function who process sales and suppliers' invoices and that the costs are related to the number of these invoices processed by hand. Continuing compliance costs for an accounts-type of VAT may be approximately the same dollar amount for each firm. Census data show the size and number of firms in the country, but the researcher is not aware of nationwide data concerning either the number of persons processing sales and suppliers' invoices or the number of these invoices processed by hand. The economist thus lacks bases for estimating the total compliance costs of business. Based on Tables 8, 22, and 30, the costs of complying with the VATs assumed in this study would amount to less than 1 percent of firms' sales, and thus they may not have much impact on the prices charged by firms.

Assuming the VAT law provisions developed in chapter 2, this study indicates that certain possible provisions of the VAT law, such as listing VAT billed by customer and supplier, do not result in significant compliance costs (see Tables 23 and 31). Most of the compliance costs can be attributed to the VAT law as a whole rather than to any particular provision. Thus legislators should note that criticism by business concerning compliance costs cannot be mitigated by changing a few provisions of the law.

The study discloses the regressive impact of compliance costs for an accounts-type of VAT. The continuing compliance cost is about the same for each of the six firms, although their sizes vary considerably. A provision might be included in the legislation which would allow each firm a deduction against its tax to compensate it for completing a return. If under the invoice type of VAT, the government desires information concerning VAT invoiced by customer or supplier for statistical or enforcement purposes, the government could pay for this by allowing the firm a tax credit on the VAT return. The credit under either type of VAT could be based on some measure of the amount of cost the firm is required to incur.

An invoice-type of VAT would affect firms which print business forms and reprogram accounting machines and computers while an accounts-type of VAT would have little impact on these firms. Those who supply these services to business would have a spurt in activity prior to the implementation date of the tax.

An invoice or accounts-type of VAT would have an impact on the practice of certified public accountants (CPA's) and other public accountants. For both the CPA and the public accountant, this spurt of activity might be added to their already busy period of January to April. A VAT would generate an additional ongoing need for their services, and, depending on the due date of the year-end VAT return, might provide additional work in what is already a busy time of the year.

Implications for Further Research

This study could be replicated using a different set of firms. In this study, there were five manufacturing firms and a service firm. Their sales ranged from $3.8 million to $22 million and under the hypothetical invoice-type of VAT developed in this study the sales would be taxed at only one VAT rate. The total number of employees ranged from 80 to 700. All were audited by CPA's. There are a number of characteristics that could be used for selecting different sets of firms that could be studied. These characteristics include size, measured either in terms of dollars of sales or number of employees; the number of products sold, since firms selling a variety of products would be likely, under an invoice-type of VAT, to have value-added taxed at various rates; and the firm's place in the channels of distribution, since the number of sales, the dollar amount of each sale, and whether the buyer is another firm or a consumer, could all affect compliance costs. Another characteristic is the degree of mechanization of the entity's accounting system. For an invoice-type of VAT, it appears that the firm with a computer will have larger initial compliance costs and lower continuing ones than a similar firm which uses accounting machines. Manual accounting systems and those that do not prepare sales invoices undoubtedly have different patterns of possible compliance costs. A retail firm with numerous sales of intermixed food and merchandise may have peculiar compliance costs under an invoice-type of VAT.

Were the adoption of a particular VAT imminent, a firm's accountant might be willing to spend more time familiarizing himself with

the VAT law provisions and in making estimates of the additional time involved than were the personnel interviewed for this study. The quality of the estimates, particularly of the computer-related costs could be raised if the accountant and computer programmer were willing to spend additional time preparing their estimates. A lack of data concerning wage rates, particularly of the comptroller, could perhaps be overcome in another study.

Possible extensions of the research includes calculation of each firm's possible VAT liability, calculation of the effects of a VAT on each firm's cash flow, the imputation of interest on any positive or negative effects, and the determination of the effect of a VAT on a firm's managerial decisions (such as those concerning marketing, production, finance, and purchasing). The research could identify the particular decisions affected and also the direction and magnitude of any changes. Additional research could possibly identify improvements in the accounting system which would result because a VAT provides the incentive to review and change the accounting system. These improvements could lead to increased efficiency or an overall cost reduction.

Another topic for investigation would be the comparison of an accountant's overall estimate of the compliance costs of a tax with the total of an item-by-item estimate of the cause of the compliance costs. The questionnaire approach of asking an accountant for a single ("lump sum") estimate of his compliance costs for a certain type of tax may be highly inaccurate. The Yocum study of Ohio sales tax compliance costs took the detailed approach while the Wicks and Killworth study of

compliance costs took the single estimate approach.[1] It is possible that the differences between the estimates of the Barker study and those in this study (see Table 25) are related to use of the single estimate approach by Barker.[2]

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[1]James C. Yocum, Retailers' Costs of Sales Tax Collection in Ohio (Columbus: Bureau of Business Research, Ohio State University, 1961) and John H. Wicks and Michael N. Killworth, "Administrative and Compliance Costs of State and Local Taxes," National Tax Journal, 20 (September 1967):309-15.

[2]Phyllis A. Barker, "The Value-Added Tax - The Cost to the Businessman," Journal of Accountancy, 134 (September 1972):75-9; and Phyllis A. Barker, "Letters - Value-Added Tax," Journal of Accountancy, 135 (March 1973):37.

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NOTE: The first three works were the only works in the value-added taxation literature which were directly related to the topic of this study. The last three works were particularly useful general descriptions of value-added taxation. For general bibliographies of value-added taxation, see chapter 1, footnote 28.

APPENDICES

APPENDIX A

CONSTRUCTION OF COMPONENTS OF FORMULA USED TO INCREASE REPORTED HOURLY WAGE RATES OF EMPLOYEES WITHIN THE FIRM

APPENDIX A

CONSTRUCTION OF COMPONENTS OF FORMULA USED TO INCREASE REPORTED HOURLY WAGE RATES OF EMPLOYEES WITHIN THE FIRM

Wage rate per hour was taken from the Michigan, Salary Survey Report-1971.[1]

Total annual hours for which the employee is paid = 2088 hours = work days per year (261) x hours per day paid (8).

Week days per year (261) = days per year (365) - weekends (2 x 52);

Hours per day paid (8) = hours paid per week (40)[2] ÷ days per week (5).

Total annual hours of effective production time for the employee = 1749.6 hours = days at work per year (243) x effective production hours per day (7.2).

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[1]Michigan, Civil Service Commission, Salary Survey Report - 1971 (Lansing: Michigan Civil Service Commission, September 1971).

[2]Michigan, Civil Service Commission, Salary Survey Report - 1971, p. 1.

Appendix A. Continued.

Days at work per year (243) = week days per year (261) - paid holidays (8)[3] - paid vacation days (10)[4] - paid sick days (0)[5];

Effective production hours per day (7.2) = hours per day (8) - coffee break time (2 x 15 min.)[6] - delay in starting work and early stopping (4 x 4-1/2 min.)[7].

Employer annual contribution for Social Security and Medicare:

Employer contribution for Social Security in 1973 = 4.85% of the employee's wage or salary, for Medicare in 1973 = 1.0%, and the base to which the taxes apply in 1973 = first $10,800 per year.[8]

For employees whose wage rate is less than or equal to $5.172 per hour the contribution = Social Security plus Medicare rates (5.85%) x annual hours for which the employee is paid (2088) x wage rate per hour.

For employees whose wage rate is greater than $5.172 per hour the contribution = $631.80.

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[3]This was estimated based on the information provided by the firms interviewed.

[4]Ibid.

[5]Ibid.

[6]This was estimated based on the information provided by the firms interviewed and the researcher's experience in organizations.

[7]Ibid.

[8]Commerce Clearing House, Inc., Standard Federal Tax Reporter - 1973, (Chicago: Commerce Clearing House, 1973), para. 113.

Appendix A. Continued.

$5.172 per hour = wage base ($10,000) ÷ annual hours for which the employee is paid (2088).

Employer annual contributions for unemployment insurance = $54.18 per year = unemployment tax rate (1.29%) x wage base to which the tax applies ($4,200).

Unemployment tax rate of 1.29% = average employer unemployment insurance tax rate as a percent of taxable wages in Michigan in 1968;[9] $4,200 = wage base to which the unemployment insurance tax applied in Michigan in 1972.[10]

Employer annual contribution for workmen's compensation insurance = workmen's compensation rate (.0017) x annual hours for which the employee is paid (2088) x wage rate per hour.

Workmen's compensation rate for clerical office employees is 17¢ per $100 payroll.[11]

Employer annual contribution for other fringe benefits of $252 = months (12) x total monthly contribution ($21).

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[9]U.S., Department of Labor, Manpower Administration, Unemployment Insurance Tax Rates by Industry - 1968 (Washington, D.C.: Government Printing Office, 1970), p. 237.

[10]Commerce Clearing House, Inc., State Tax Guide-All States, (Chicago: Commerce Clearing House), para. 535.

[11]This was stated by W. D. Morgan, Michigan Workmen's Compensation Rating Bureau, in a letter to the author dated February 15, 1973.

Appendix A. Continued

Total monthly contribution ($21) = contribution for employee health insurance per month ($21).[12]

The formula used to adjust the wage rates of employees was [(wage rate per hour x total annual hours for which the employee is paid) + employer's annual contribution for Social Security and Medicare + employer's annual contribution for unemployment insurance + employer's annual contribution for workmen's compensation insurance + employer's annual contribution for other fringe benefits] ÷ total annual hours of effective production time for the employee.

The formula for employees earning less than or equal to $5.172 per hour was [(wage rate per hour x 2088 hours) + (5.85% x wage rate per hour x 2088 hours) + $54.18 + (.0017 x wage rate per hour x 2088 hours) + $252] ÷ 1749.6 hours.

This equals [(wage rate per hour x 2088) x (1 + .0585 + .0017)] ÷ 1749.6 + ($54.18 + $252) ÷ 1749.6.

This equals [(wage rate per hour) x (2088) x (1.0602)] ÷ 1749.6 + $306.18 ÷ 1749.6.

This equals [(wage rate per hour) x (2213.6976 ÷ 1749.6)] + $306.18 ÷ 1749.6.

Thus, the formula was wage rate per hour x 1.2653 + $.175 for employees earning less than or equal to $5.172 per hour.

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[12]This was estimated based on the information provided by the firms interviewed and telephone interviews May 23, 1972 with James Griffin, Manager, Management Recruiters, Lansing, Michigan; Gordon Lowell, Gordon Lowell Associates, Lansing, Michigan; and James Steel, Snelling & Snelling, East Lansing, Michigan.

Appendix A. Continued.

The formula for employees earning more than $5.172 per hour was [(wage rate per hour x 2088 hours) + $631.80 + $54.18 + (.0017 x wage rate per hour x 2088 hours) + $252] ÷ 1749.6 hours.

This equals [(wage rate per hour x 2088) x (1 + .0017)] ÷ 1749.6 + ($631.80 + $54.18 + $252) ÷ 1749.6.

This equals [(wage rate per hour) x (2088) x (1.0017)] ÷ 1749.6 + $937.98 ÷ 1749.6.

This equals [(wage rate per hour) x (2091.5496 ÷ 1749.6)] + $937.98 ÷ 1749.6.

Thus, the formula was wage rate per hour x 1.1954 + $.536 for employees earning more than $5.172 per hour.

APPENDIX B

STANDARDS FOR COMMON OFFICE OPERATIONS USED IN THE DEVELOPMENT OF TIME ESTIMATES FOR THE PERFORMANCE OF CERTAIN ACCOUNTING OPERATIONS RELATED TO A VAT

APPENDIX B

STANDARDS FOR COMMON OFFICE OPERATIONS USED IN THE DEVELOPMENT OF TIME ESTIMATES FOR THE PERFORMANCE OF CERTAIN ACCOUNTING OPERATIONS RELATED TO A VAT

Description of Operation	Minutes For Each Operation[a]
Adding machine, 10 key electric	
Enter digit-per stroke	.0033
Depress add bar	.0090
Print total	.0240
Adding machine, full keyboard	
Enter digit-per stroke	.0043
Typing	
Position roller by hand and return to key board	.0295
Handle material before typing-single sheet	.1300
Key strokes and spaces - filling in printed forms	.0032
Rotary Calculator	
Clear machine	.0400
Read factors	.0160
Key strokes, multiplicand-per digit	.0050
Key strokes, multiplier-per digit	.0033
Operate multiply key	.0070
Machine operating time per digit	.0108
Handwriting	
Manual printing-per character	.0114
Read and write, no column alignment-per digit	.0088
Read and write, column posting-per digit	.0115

[a]Notice that the minutes to perform each operation includes no rest time.

Appendix B. Continued.

Description of Operation	Minutes For Each Operation[a]
Paper Handling	
Pick up first sheet from top of pile	.0245
Pick up, jog, and cross stack over 20 papers per group, from flat surface	.1120
Sort 8-1/2 x 11 card or sheet	
Table top sort-for 1st category	.0161
Table top sort-for 2nd - 15th categories, per category	.0006
Reading	
Numbers up to 3 digits-per digit	.0033
Add for each additional digit	.0027
Comparing or proofreading	
Numbers, each 1st digit	.0090
Each additional digit	.0027

Source: The estimates used in this appendix are reprinted with permission from the April 1968 issue of Modern Office Procedures and copyrighted 1968 by Industrial Publishing Company, Division Pittway Corporation. The article was titled, "How Much Work Can You Expect?", Modern Office Procedures, 13 (April 1968): 51-2.

[a]Notice that the minutes to perform each operation includes no rest time.

APPENDIX C

DETAILS OF TIME ESTIMATES FOR THE PERFORMANCE OF CERTAIN ACCOUNTING OPERATIONS RELATED TO A VAT

APPENDIX C

DETAILS OF THE ESTIMATES FOR THE PERFORMANCE OF CERTAIN ACCOUNTING OPERATIONS RELATED TO A VAT

In this appendix the time estimates not otherwise labeled were taken from Standards for Common Office Operations[1] (see Appendix B).

Certain assumptions were made by the researcher and used throughout this appendix. These assumptions are as follows:

1. Firm names = 20 letters and spaces;

2. VAT registration numbers = 10 digits (9 digits + 1 space);[2]

3. On a sales invoice, the total sales of any VAT rate column, the total of any exempt column used, and the total before VAT is added = 6 digits (XXXX.XX);

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[1] "How Much Work Can You Expect?" Modern Office Procedures, 13 (April 1968): 51-2. Note that the minutes to perform that operation includes no rest time.

[2] Commerce Clearing House, Inc., Corporation-Partnership-Fiduciary Filled-In Tax Return Forms - 1972 Edition (Chicago: Commerce Clearing House, 1972), p. 6.

Appendix C. Continued.

4. On sales invoices a firm prepares, the amount of VAT calculated under any one VAT rate and the total VAT = 4 digits (XX.XX);

5. On invoices a firm receives, the amount of VAT = 4 digits (XX.XX);

Note that assumptions 3, 4, and 5 mean that for invoices representing goods taxable at 2%, sales could range between $500.00 and $4,999.50; for goods taxable at 4%, sales could range between $250.00 and $2,499.75.

6. On sales invoices a firm prepares, individual item amounts = 5 digits (XXX.XX).

7. Titles of accounts relating to VAT = 46 letters and spaces.

8. Account numbers = 4 digits.

Any other assumptions made by the researcher are so labeled.

Appendix C. Continued.

Time to Perform Certain Accounting Operations Related to a VAT

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Typing ledger account titles	
Handle material (insert)	.1300
Position roller	.0295
Type letters and digits [.0032 x (46 +4)]	.1600
Handle material (remove)	.1300
Pick up paper (turn over old account)	.0245
Total	.4740
Hand write VAT registration number of the buying firm	
Manual printing (.0114 x 10 digits)	.1140
Total	.1140
On a sales invoice: (The number in parenthesis refers to the index number on the specimen sales invoice, Figure 2).	
Typing VAT registration number of the buying firm (6)	
Position roller	.0295
Type number (.0032 x 10 digits)	.0320
Total	.0615
Entering the net amount of an item in the proper VAT rate column (16)-(19)	
Position roller	.0295
Type amount [.0032 x (5 digits + 1 point)]	.0192
Total	.0487
Additional typing of "sub" (20)	
Type (.0032 x 3 letters)	.0096
Total	.0096

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Adding amounts in a VAT rate column (22) - (25)	
Enter digit in adding machine and depress add bar (.0033 x 5 digits + .0090) = per number of amounts added	.0255
Print total =	.0240
Entering the total sales for each VAT rate column or exempt column used (22) - (25)	
Read factors	.0160
Position roller	.0295
Type [.0032 x (6 digits + 1 point)]	.0224
Total	.0679
Crossfooting of the VAT sales by rate and of the exemption (26)	
Enter digit in adding machine and depress add bar (.0033 x 7 digits + .0090) = per number of column totals used	.0321
Print total =	.0240
Comparing crossfooting of VAT sales by rate (26) with vertical addition of net amount (21)	
Read total from tape (.0033 x 3 + .0027 x 3)	.0180
Comparing (.0090 x 1 + .0027 x 5)	.0225
Total	.0405
Calculating the amount of VAT for one VAT rate (27), (28)	
Clear machine	.0400
Read factor	.0160
Multiplicand per digit (.0050 x 6 digits)	.0300
Multiplier per digit (.0033 x 1)	.0033
Operate multiply key	.0070
Machine Operating time	.0108
Total	.1071

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT		Minutes to Perform That Operation
Entering the amount of VAT due (27), (28), (30)		
Read factors		.0160
Position roller		.0295
Type [.0032 x (4 digits + 1 point)]		.0160
	Total	.0615
Additional typing of "VAT" (29)		
Position roller		.0295
Type (.0032 x 3 letters)		.0096
	Total	.0391
Crossfoot the amount of VAT applicable at 2% (rate 1) and 4% (rate 2) (30)		
Enter digit in adding machine (.0033 x 4 digits)		.0132
Depress add bar		.0090
Repeat above		.0222
Print total		.0240
	Total	.0684
Additional typing of "total" (31)		
Position roller		.0295
Type (.0032 x 5 letters)		.0160
	Total	.0455
Adding total before VAT added amount and VAT amount to determine total amount (32)		
Assumes total before VAT amount is already in the machine		
Enter digits (.0033 x 4 digits for VAT)		.0132
Depress add bar		.0090
Print total		.0240
	Total	.0462

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Entering the total amount due (32)	
Read amount from tape (.0033 x 3)	.0099
Read each added digit (.0027 x 3)	.0081
Position roller	.0295
Type [.0032 x (6 digits + 1 point)]	.0224
Total	.0699
Additional typing of special notes (34)	
Position roller and type letters	
Non-routine sales (.0295 + .0032 x 16)	.0807
Self-delivery (.0295 + .0032 x 13)	.0711
Export (.0295 + .0032 x 6)	.0487
Buyer's purchases exempt from VAT (.0295 + .0032 x 33)	.1351
Comparing an added total of a VAT rate column with column total on a sales invoice	
Read factor (.0033 x 3 + .0027 x 3)	.0180
Comparing (.0090 + .0027 x 5)	.0225
Total	.0405
Checking the VAT calculation for one VAT rate	
Calculating the amount of VAT	.1071
Read factor (.0033 x 3 + .0027 x 1)	.0126
Comparing (.0090 + .0027 x 3)	.0171
Manual printing, 1 character (a checkmark)	.0114
Total	.1482
Comparing crossfooting of VAT by rates with total VAT on a sales invoice	
Read factor (.0033 x 3 + .0027 x 1)	.0126
Comparing (.0090 + .0027 x 3)	.0171
Total	.0297

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Checking the total due	
Assumes total before VAT is in machine	
Calculating the total due	.0462
Read total from tape (.0033 x 3 + .0027 x 3)	.0180
Comparing (.0090 + .0027 x 5)	.0225
Manual printing, 1 character (a checkmark)	.0114
Total	.0981
Annual listing of VAT on uncollectable accounts	
The listing consists of name of debtor, debtor's VAT registration number, and for each invoice unpaid the invoice number, amount of VAT, and the total amount.	
Time as a function of the number of accounts written off	
Type debtor name and VAT registration number [.0032 x (20 letters + 10 digits + 5 spaces)]	.1120
Adding machine print total (.0240 x 2 columns)	.0480
Type total [.0032 x (4 digits + point + 6 digits + point)]	.0384
Finding grand total of list	
Enter VAT and depress add bar (.0033 x 4 + .0090)	.0222
Enter total and depress add bar (.0033 x 6 + .0090)	.0288
Time per account written off	.2494
Time as a function of the number of invoices written off	
Withdraw invoices from file (assumed .0500)	.0500
Assumed that invoices were grouped by customer.	

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Type for each invoice [.0032 x (4 for invoice number + 4 for VAT amt. + 6 for total amt. + 2 points + 8 spaces)]	.0768
Pick up invoice from top of pile	.0245
Finding total for each firm	
Enter VAT and depress add bar (.0033 x 4 + .0090)	.0222
Enter total and depress add bar (.0033 x 6 + .0090)	.0288
Pick up invoice from top of pile	.0245
Refile invoices (assumed .0500)	.0500
Time per invoice written off	.2768
Annual listing of VAT invoiced by customer	
The listing consists of the customer firm's name and VAT registration number, and the total VAT invoiced.	
Assumed that invoices were grouped by customer	
Time as a function of the number of customers	
Type customer name and VAT registration number [.0032 x (20 letters + 10 digits + 5 spaces)]	.1120
Adding machine print total	.0240
Type total amt. of VAT [.0032 x (6 digits (assumed) + 1 point)]	.0224
Pick up over 20 paper per group	.1120
Time per customer	.2704
Time as a function of the number of invoices	
Enter amount of VAT on invoice, in adder (.0033 x 4 digits)	.0132
Depress add bar	.0090

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Pick up sheet from pile	.0245
Time per invoice	.0467
Annual listing of VAT invoiced by the firm's suppliers	
The listing consists of the supplier's name and VAT registration number, the total amount invoiced and deductible, and invoiced and non-deductible.	
Assumed that VAT invoiced and non-deductible was so infrequent that it could be ignored.	
For the time to prepare this listing, see those times for preparing the annual listing of VAT invoiced by customer.	
Per supplier (customer)	.2704
Per invoice	.0467
Sorting documents from numerical sequence by invoice number into groups by VAT registration number (firm name)	
Table top sort = .0161 + .0006 per category up to 15	
Sort into four groups of alphabet letters [.0161 + (.0006) (4)] = .0185	
Sort into letters within each group [.0161 + (.0006) (6)] = .0197	
Sort by firm name	
number of firms ÷ 26 = average number of firms per letter ÷ 15 categories = sorts per letter x (.0161 + (.0006) (15) =	
(number of firms) (.0251) ÷ 290 =	
(number of firms) (.0001)	
Total time per invoice [(.0382 + (.0001) (number of firms)]	

Appendix C. Continued.

Description of the Accounting Operation Related to a VAT	Minutes to Perform That Operation
Sorting documents from groups by VAT registration number into numerical sequence by invoice number	
Table top sort = .0161 + .0006 per category up to 15	
Sort into 10 categories (0-9) [.0161 + (.0006) (10)] = .0221	
Total time per invoice = (digits in total number of documents) (.0221)	

APPENDIX D

SUMMARY OF ESTIMATED INTITAL COMPLIANCE COSTS BY FIRM FOR THE INVOICE METHOD OF COMPUTING THE VAT

NOTE: The source of the dollar amounts for the estimated initial compliance costs is Table 19.

SUMMARY OF COMPLIANCE COSTS BY TYPE OF FIRM

Method of Computing the VAT - Invoice; Type of Compliance Cost - Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Nonpersonnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed A	Standard time data B	Researcher C	Business firm J		Readily D	Not readily E	Readily K	Not readily L		
FIRM A											
Accounting employees of the firm - P	0	0	30.70	0	30.70	22.08	94.84	0	0	116.92	147.62
Treasurer or controller of the firm - Q	210.42	0	180.22	0	390.64	169.51	210.42	0	0	379.93	770.57
Head of marketing of the firm - M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine programmers and CPA tax-advisors - R	40.00	0	0	0	40.00	0	0	0	0	0	40.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	3.13	0	3.13	3.13
Total	250.42	0	210.92	0	461.34	518.91	305.26	3.13	0	827.30	1,288.64

FIRM B

Accounting employees of the firm	- P	0	0	65.69	0	65.69	22.08	232.47	0	0	254.55	320.24
Treasurer or controller of the firm	- Q	75.99	0	226.82	0	302.81	216.27	0	0	0	216.27	519.08
Head of marketing of the firm	- M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine reprogrammers and CPA tax-advisors	- R	50.00	0	208.24	0	258.24	0	0	0	0	0	258.24
Suppliers of nonpersonnel items	- S	0	0	0	0	0	0	0	25.04	0	25.04	25.04
Total		125.99	0	500.75	0	626.74	565.67	232.47	25.04	0	823.18	1,449.92

SUMMARY OF COMPLIANCE COSTS BY TYPE OF FIRM

Method of Computing the VAT - Invoice; Type of Compliance Cost - Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Nonpersonnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM C											
Accounting employees of the firm - P	0	0	43.33	0	43.33	22.08	91.14	0	0	113.22	156.55
Treasurer or controller of the firm - Q	187.04	0	204.69	0	391.73	169.51	210.42	0	0	379.93	771.66
Head of marketing of the firm - M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine reprogrammers and CPA tax-advisors - R	200.00	0	136.00	0	336.00	0	0	0	0	0	336.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	83.46	0	83.46	83.46

Total	387.04	0	384.02	0	771.06	518.91	301.56	83.46	0	903.93	1,674.99

FIRM D

Accounting employees of the firm - P	0	0	53.34	0	53.34	1,361.05	91.14	0	0	1,452.19	1,505.53
Treasurer or controller of the firm - Q	113.98	0	214.02	0	328.00	169.51	210.42	0	0	379.93	707.93
Head of marketing of the firm - M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine reprogrammers and CPA tax-advisors - R	35.00	0	0	0	35.00	0	0	0	0	0	35.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	114.38	0	114.38	114.38
Total	148.98	0	267.36	0	416.34	1,857.88	301.56	114.38	0	2,273.82	2,690.16

SUMMARY OF COMPLIANCE COSTS BY TYPE OF FIRM

Method of Computing the VAT - Invoice; Type of compliance Cost - Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Nonpersonnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM E											
Accounting employees of the firm - P	0	0	208.77	0	208.77	22.08	762.04	0	0	784.12	992.89
Treasurer or controller of the firm - Q	241.59	0	241.34	0	482.93	2,741.31	0	0	0	2,741.31	3,224.24
Head of marketing of the firm - M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine reprogrammers and CPA tax-advisors - R	120.00	0	0	0	120.00	0	0	0	0	0	120.00

Head of marketing of the firm - M	0	0	0	0	0	327.32	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	737.50	0	737.50	737.50
Total	361.59	0	450.11	0	811.70	3,090.71	762.04	737.50	0	4,590.25	5,401.95

FIRM F

Accounting employees of the firm - P	0	0	124.70	0	124.70	1,361.05	254.00	0	0	1,615.05	1,739.75
Treasurer or controller of the firm - Q	146.12	0	313.62	0	459.74	216.27	0	0	0	216.27	676.01
Head of marketing of the firm - M	0	0	0	0	0	327.32	0	0	0	327.32	327.32
Accounting machine reprogrammers and CPA tax-advisors - R	260.00	0	55.25	0	315.25	0	0	0	0	0	315.25
Suppliers of nonpersonnel items - S	0	0	0	160.00	160.00	0	0	233.75	0	233.75	393.75
Total	406.12	0	493.57	160.00	1,059.69	1,904.64	254.00	233.75	0	2,392.39	3,452.08

APPENDIX E

SUMMARY OF ESTIMATED CONTINUING COMPLIANCE COSTS BY FIRM FOR THE INVOICE METHOD OF COMPUTING THE VAT

NOTE: The source of the dollar amounts for the estimated continuing compliance costs is Table 20.

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Invoice; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM A											
Accounting employees of the firm - P	0	66.69	.74	0	67.43	0	54.78	0	0	54.78	122.21
Treasurer or controller of the firm - Q	0	20.35	95.64	0	115.99	0	257.18	0	0	257.18	373.17
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	50.00	0	0	0	50.00	50.00

Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0			
Suppliers of nonpersonnel items - S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total	0	87.04	96.38	75.00	258.42	50.00	358.72	16.00	0	424.72	683.14

FIRM B

Accounting employees of the firm - P	0	601.88	42.80	0	644.68	15.83	328.75	0	0	344.58	989.26
Treasurer or controller of the firm - Q	0	0	71.10	0	71.10	0	420.84	0	0	420.84	491.94
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	50.00	0	0	0	50.00	50.00
Suppliers of nonpersonnel items - S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total	0	601.88	113.90	75.00	790.78	65.83	796.35	16.00	0	878.18	1,668.96

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Invoice; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Nonpersonnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM C											
Accounting employees of the firm - P	0	784.31	13.07	0	797.38	37.98	194.12	0	0	232.10	1,029.48
Treasurer or controller of the firm - Q	0	.10	32.14	0	32.24	0	303.94	0	0	303.94	336.18
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	58.33	0	58.33	50.00	0	0	0	50.00	108.33

Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Suppliers of nonpersonnel items	- S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total		0	784.41	103.54	75.00	962.95	87.98	544.82	16.00	0	648.80	1,611.75

FIRM D

Accounting employees of the firm	- P	0	181.96	14.07	0	196.03	6.33	130.36	0	0	136.69	332.72
Treasurer or controller of the firm	- Q	0	0	59.41	0	59.41	0	350.70	0	0	350.70	410.11
Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors	- R	0	0	0	0	0	50.00	0	0	0	50.00	50.00
Suppliers of nonpersonnel items	- S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total		0	181.96	73.48	75.00	330.44	56.33	527.82	16.00	0	600.15	930.59

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Invoice; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM E											
Accounting employees of the firm - P	0	884.55	82.77	0	967.32	34.82	998.07	0	0	1,032.89	2,000.21
Treasurer or controller of the firm - Q	0	0	59.41	0	59.41	0	175.35	0	0	175.35	234.76
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	50.00	0	0	0	50.00	50.00

Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Suppliers of nonpersonnel items	- S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total		0	884.55	142.18	75.00	1,101.73	84.82	1,220.18	16.00	0	1,321.00	2,422.73

FIRM F

Accounting employees of the firm	- P	0	1,504.54	43.67	0	1,548.21	63.30	820.53	0	0	883.83	2,432.04
Treasurer or controller of the firm	- Q	0	0	0	0	0	0	175.35	0	0	175.35	175.35
Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors	- R	0	0	0	0	0	50.00	0	0	0	50.00	50.00
Suppliers of nonpersonnel items	- S	0	0	0	75.00	75.00	0	0	16.00	0	16.00	91.00
Total		0	1,504.54	43.67	75.00	1,623.21	113.30	1,042.64	16.00	0	1,171.94	2,795.15

APPENDIX F

SUMMARY OF ESTIMATED INITIAL COMPLIANCE COSTS BY FIRM FOR THE ACCOUNTS METHOD OF COMPUTING THE VAT

NOTE: The source of the dollar amounts for the estimated initial compliance costs is Table 27.

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT- Accounts; Type of Compliance Cost -Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM A											
Accounting employees of the firm - P	0	0	0	0	0	5.52	0	0	0	5.52	5.52
Treasurer or controller of the firm - Q	81.83	0	22.21	0	104.04	151.97	0	0	0	151.97	256.01
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	60.00	0	0	0	60.00	0	0	0	0	0	60.00

Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	0	0	0	0
Total	141.83	0	22.21	0	164.04	449.74	0	0	0	449.74	613.78

FIRM B

Accounting employees of the firm - P	0	0	0	0	0	14.87	0	0	0	14.87	14.87
Treasurer or controller of the firm - Q	58.45	0	19.29	0	77.74	81.83	0	0	0	81.83	159.57
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	75.00	0	0	0	75.00	0	0	0	0	0	75.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	0	0	0	0
Total	133.45	0	19.29	0	152.74	388.95	0	0	0	388.95	541.69

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Accounts; Type of Compliance Cost - Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM C											
Accounting employees of the firm - P	0	0	0	0	0	13.12	0	0	0	13.12	13.12
Treasurer or controller of the firm - Q	122.75	0	19.29	0	142.04	70.14	0	0	0	70.14	212.18
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	200.00	0	0	0	200.00	0	0	0	0	0	200.00

Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	0	0	0	0
Total	322.75	0	19.29	0	342.04	375.51	0	0	0	375.51	717.55

FIRM D

Accounting employees of the firm - P	0	0	1.55	0	1.55	135.54	0	0	0	135.54	137.09
Treasurer or controller of the firm - Q	23.38	0	25.13	0	48.51	153.92	0	0	0	153.92	202.43
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	35.00	0	0	0	35.00	0	0	0	0	0	35.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	10.00	0	10.00	10.00
Total	58.38	0	26.68	0	85.06	581.71	0	10.00	0	591.71	676.77

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Accounts; Type of Compliance Cost - Initial.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM E											
Accounting employees of the firm - P	0	0	0	0	0	66.29	0	0	0	66.29	66.29
Treasurer or controller of the firm - Q	52.60	0	24.55	0	77.15	352.65	0	0	0	352.65	429.80
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	150.00	0	0	0	150.00	0	0	0	0	0	150.00

Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	10.00	0	10.00	10.00
Total	202.60	0	24.55	0	227.15	711.19	0	10.00	0	721.19	948.34

FIRM F

Accounting employees of the firm - P	0	0	1.55	0	1.55	165.47	0	0	0	165.47	167.02
Treasurer or controller of the firm - Q	52.61	0	25.13	0	77.74	165.61	0	0	0	165.61	243.35
Head of marketing of the firm - M	0	0	0	0	0	292.25	0	0	0	292.25	292.25
Accounting machine reprogrammers and CPA tax-advisors - R	65.00	0	0	0	65.00	0	0	0	0	0	65.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	0	0	10.00	0	10.00	10.00
Total	117.61	0	26.68	0	144.29	623.33	0	10.00	0	633.33	777.62

APPENDIX G

SUMMARY OF ESTIMATED CONTINUING COMPLIANCE COSTS BY FIRM FOR THE ACCOUNTS METHOD OF COMPUTING THE VAT

NOTE: The source of the dollar amounts for the estimated continuing compliance costs is Table 28.

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Accounts; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed A	Standard time data B	Researcher C	Business firm J		Readily D	Not readily E	Readily K	Not readily L		
FIRM A											
Accounting employees of the firm - P	0	.03	.25	0	.28	0	1.90	0	0	1.90	2.18
Treasurer or controller of the firm - Q	40.92	.73	26.30	0	67.95	5.84	58.45	0	0	64.29	132.24
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	10.00	0	0	0	10.00	10.00

Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Suppliers of nonpersonnel items - S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total	40.92	.76	26.55	0	68.23	25.84	107.11	5.00	0	137.95	206.18

FIRM B

Accounting employees of the firm - P	0	.03	.26	0	.29	2.33	1.90	0	0	4.23	4.52
Treasurer or controller of the firm - Q	17.54	0	26.30	0	43.84	0	58.45	0	0	58.45	102.29
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	10.00	0	0	0	10.00	10.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total	17.54	.03	26.56	0	44.13	22.33	107.11	5.00	0	134.44	178.57

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Accounts; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Nonpersonnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM C											
Accounting employees of the firm - P	0	.03	.26	0	.29	1.90	1.90	0	0	3.80	4.09
Treasurer or controller of the firm - Q	0	0	0	0	0	0	58.45	0	0	58.45	58.45
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	37.50	0	56.25	0	93.75	10.00	0	0	0	10.00	103.75

Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Suppliers of nonpersonnel items - S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total	37.50	.03	57.01	0	94.04	21.90	107.11	5.00	0	134.01	228.05

FIRM D

Accounting employees of the firm - P	0	.03	.26	0	.29	1.90	1.90	0	0	3.80	4.09
Treasurer or controller of the firm - Q	11.69	0	26.30	0	37.99	0	58.45	0	0	58.45	96.44
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	10.00	0	0	0	10.00	10.00
Suppliers of nonpersonnel items - S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total	11.69	.03	26.56	0	38.28	21.90	107.11	5.00	0	134.01	172.29

SUMMARY OF COMPLIANCE COSTS BY TYPE BY FIRM

Method of Computing the VAT - Accounts; Type of Compliance Cost - Continuing.

Individual(s) or firm to whom the cost estimated relates	Source of personnel and nonpersonnel dollar cost estimates										
	Personnel costs			Non-personnel costs	Sub total	Personnel costs		Nonpersonnel costs		Sub total	Total
						How available is the information to a firm's accountant?					
	Firm interviewed	Standard time data	Researcher	Business firm		Readily	Not readily	Readily	Not readily		
	A	B	C	J		D	E	K	L		
FIRM E											
Accounting employees of the firm - P	0	.21	.25	0	.46	1.90	1.90	0	0	3.80	4.26
Treasurer or controller of the firm - Q	11.69	0	26.30	0	37.99	0	58.45	0	0	58.45	96.44
Head of marketing of the firm - M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors - R	0	0	0	0	0	10.00	0	0	0	10.00	10.00

Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	[illegible]	[illegible]
Suppliers of nonpersonnel items	- S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total		11.69	.21	26.55	0	38.45	21.90	107.11	5.00	0	134.01	172.46

FIRM F

Accounting employees of the firm	- P	33.13	.03	12.68	0	45.84	2.33	1.90	0	0	4.23	50.07
Treasurer or controller of the firm	- Q	0	0	0	0	0	0	58.45	0	0	58.45	58.45
Head of marketing of the firm	- M	0	0	0	0	0	0	46.76	0	0	46.76	46.76
Accounting machine reprogrammers and CPA tax-advisors	- R	0	0	0	0	0	10.00	0	0	0	10.00	10.00
Suppliers of nonpersonnel items	- S	0	0	0	0	0	10.00	0	5.00	0	15.00	15.00
Total		33.13	.03	12.68	0	45.84	22.33	107.11	5.00	0	134.44	180.28