

INTERNAL REVENUE CODE SECTION 263A: AN ASSESSMENT
OF ITS IMPACT AND PROPOSALS FOR SIMPLIFICATION

by

Paul G. Schloemer

Dissertation submitted to the faculty of Virginia
Polytechnic Institute and State University in partial
fulfillment of the requirements for the degree of:

DOCTOR OF PHILOSOPHY

in

Business

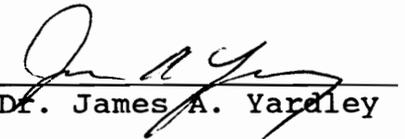
with a major in

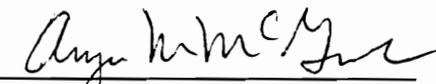
Accounting

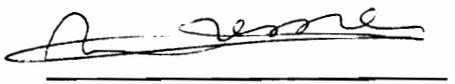
APPROVED:


Dr. W. Eugene Seago


Dr. N. Leroy Kauffman


Dr. James A. Yardley


Dr. Anya M. McGuirk


Dr. Helmuth Cremer

October 15, 1991

Blacksburg, Virginia

INTERNAL REVENUE CODE SECTION 263A: AN ASSESSMENT
OF ITS IMPACT AND PROPOSALS FOR SIMPLIFICATION

by

Paul G. Schloemer

W. Eugene Seago, Accounting

(ABSTRACT)

Section 263A was one of the largest revenue raising provisions enacted in the Tax Reform Act of 1986. Little empirical research regarding the impact of this tax law change has been conducted. The primary objective of this study was the empirical assessment of Section 263A to determine its relative impact on firms of different sizes, inventory methods and industries.

Section 263A has been criticized for its complex rules which impose high compliance costs on affected firms. The secondary objective of this study was evaluation of simplification proposals to determine if simpler rules could be enacted that would have an impact similar to Section 263A yet reduce compliance costs.

Corporate tax return data for taxable years 1986 and 1987 were analyzed to identify firms that were severely impacted by Section 263A. The results show the tax burden from this law change fell more heavily on small firms not electing the Last-In-First-Out inventory method. In addition, wholesalers paid relatively more tax than retailers. These firms have a relatively stronger incentive to react to Section 263A by reducing inventories, relocating

their production and distribution facilities outside the United States and/or restructuring their investments away from production and distribution activities towards activities in the service sector. Reactions by these firms have potential adverse consequences on the U.S. economy.

Four proposals for simplifying Section 263A rules were evaluated by simulating the impact of these proposals on the taxable income of affected firms. Use of an individual firm capitalization ratio for all future years based a firm's average ratio for the first three years Section 263A was in effect appeared superior to other proposals. The results show there is potential for decreasing the complexity of Section 263A without reducing current tax revenues.

ACKNOWLEDGEMENTS

This study is dedicated to Jesus Christ, my Lord and Savior and God of the universe. Through His power, a country boy with limited ability was given the opportunity to earn a Ph.D.

I praise God for my wife, Melanie, who supported me throughout my education with her prayers and finances.

I am indebted to my doctoral committee who worked as hard as I did to make this research successful and others in the Virginia Tech Accounting Department who invested in my life over the past three years.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	1
CHAPTER 2. BACKGROUND	4
Explanation of the Law	4
The Tax Incidence Issue	9
CHAPTER 3. RELEVANT LITERATURE	13
The Economic Impact of Section 263A	13
Hypotheses	19
Administrative Efficiency	24
Summary	28
CHAPTER 4. METHODOLOGY	29
Assessing the Impact of Section 263A	29
Proposals for Simplification	35
Data Collection and Sample Description	37
CHAPTER 5. DATA ANALYSIS AND INTERPRETATION	44
The Impact of Section 263A	44
Interpretation of the Results	48
Tests of Simplification Proposals	52
CHAPTER 6. CONCLUSIONS, EXTENSIONS AND LIMITATIONS	61
Assessment of the Impact of Section 263A	61
Assessment of Simplification Proposals	66
Extensions	68
Limitations	70
REFERENCES	72

APPENDIX A. Implementation of Section 263A	76
APPENDIX B. Form 1120 Data Items	77
APPENDIX C. Original Models and Results	78
APPENDIX D. Tests of Assumptions and Predictive Accuracy	81
Tests of Assumptions	81
Comparison of Predictive Accuracy	82
Collinearity and Outlier Tests	83
APPENDIX E. Application of Simplified Methods	85
VITA	87

CHAPTER 1

INTRODUCTION

The Tax Reform Act of 1986 (hereafter, TRA) made sweeping changes to the system of taxation in the United States while attempting to maintain an overall objective of revenue neutrality. The revenue losing provisions, such as the lower corporate and individual income tax rates were offset by revenue gaining provisions which disallowed some deductions and required other deductions to be postponed. One revenue gaining provision was the uniform capitalization rules (UNICAP) of Internal Revenue Code (IRC) Section 263A.¹

Congress estimated that Section 263A would generate \$32 billion in tax revenue from 1987 to 1991 (U.S. House of Representatives, 1986). This suggests that the implementation of Section 263A should have had a substantial impact on the taxable income of firms. In addition, it can be posited that these rules had an uneven effect on the taxable income of firms of different sizes, inventory methods and industries. The primary objective of this study is to investigate the size of the adjustments corporate taxpayers incurred to determine if the law had an uneven effect on the taxable income of various categories of firms.

There is currently little empirical information available regarding the impact of Section 263A on affected

¹ Unless otherwise indicated, all section references are to sections of the Internal Revenue Code of 1986 as amended.

firms. The effect of UNICAP has generally not been disclosed by firms in their financial statements and the tax return information of these companies is not publicly available. This study reveals adjustments to firm taxable income that resulted from implementation of UNICAP. Discovery of the taxable income effect of UNICAP provides an assessment of how the additional tax burden resulting from this tax law change was distributed among firms of different sizes, inventory methods and industries. Under the assumption that a portion of the tax burden from Section 263A was ultimately paid by shareholders, determining the distribution of this burden provides a measure of the incentive for affected firms to react to this tax law by reducing inventories, relocating their production and distribution facilities outside the United States and/or restructuring their investments away from activities affected by Section 263A.

UNICAP increased the complexity of the tax law for those firms subject to its rules. Each year a firm must identify the costs required to be inventoried, allocate these costs to cost centers and then allocate production costs from cost centers to cost of goods sold or ending inventory. The secondary objective of this study is an investigation of this cost allocation process with a view towards formulating an alternative method of implementing UNICAP that would have virtually the same impact on the

taxable income of firms and be substantially easier to apply.

Identification of a simpler method of implementing UNICAP would reduce compliance costs for taxpayers and enforcement costs for the Internal Revenue Service (IRS). The savings associated with reducing these costs can be substantial (Slemrod, 1990). Research has also shown a positive correlation between complexity and taxpayer noncompliance (Clotfelter, 1983; Witte and Woodbury, 1985). Therefore, decreasing the complexity of UNICAP can provide dual benefits of decreasing administrative costs and increasing taxpayer compliance.

The objectives of this study were attained by examining corporate tax returns and supporting workpapers. The study's major contributions are the empirical assessment of the impact of UNICAP on corporate taxpayers and evaluation of alternative methods of applying the Section 263A rules.

CHAPTER 2

BACKGROUND

Explanation of the Law

Section 263A was enacted to set forth specific rules for distinguishing product costs from period costs. Product costs or inventory costs are costs that are related to transforming the product into marketable form. Direct materials, direct labor and factory overhead are the three categories of product costs typically identified. Period costs are all other costs of operating the business. The distinction between product and period costs has tax consequences for firms because period costs are deductible in the period incurred while product costs are deductible when the product is sold. Thus, a firm that maintains inventory postpones the deduction of all product costs associated with its ending inventory.

Section 263A defines which costs should be treated as product costs. It requires manufacturers, wholesalers and retailers to capitalize into the cost of inventory many items which were previously deducted as period costs. For manufacturers, these costs include tax depreciation in excess of depreciation expense per books, current pension costs and the portion of general and administrative costs related to production of inventory. For wholesalers and retailers, the rules require capitalization of costs these firms have in common with manufacturers - mainly costs

related to purchasing, processing and storage of inventory items. All manufacturers, regardless of size, are required to comply with the new rules. Wholesalers and retailers having average annual gross receipts of \$10 million or less are excluded, apparently to provide some relief for small businesses in these industries.

Prior to Section 263A, Section 471 and its regulations determined which costs taxpayers were required to treat as product costs. Wholesalers and retailers were required to treat the invoice price of goods (less discounts) and transportation costs incurred in obtaining possession as product costs (Regulations Section 1.471-3(b)). For manufacturers, Regulations Section 1.471-11 required direct material and direct labor to be capitalized into cost of inventory and set up a three-category classification scheme for determining which indirect manufacturing costs should be treated as product costs.

Table 1 provides a listing of the indirect manufacturing costs in each of the three categories. All Category One costs were treated as inventory costs. Category Two costs were expensed and Category Three costs were capitalized as product costs or deducted as period costs consistent with the taxpayer's treatment of these items in financial statements. Column Two of Table 1 shows that Section 263A mainly changed the treatment of

TABLE 1
A Comparison of the Treatment of Indirect Manufacturing
Costs Under Section 471 and Section 263A

	<u>Treatment Under</u> <u>Section 471</u>	<u>Treatment Under</u> <u>Section 263A</u>
<u>Category 1 Costs</u>		
■ Repair and Maintenance Exp.	Capitalized	Capitalized
■ Utilities and Rent	Capitalized	Capitalized
■ Ind. Labor and Super. Wages	Capitalized	Capitalized
■ Ind. Materials and Supplies	Capitalized	Capitalized
■ Small Tools and Equipment	Capitalized	Capitalized
■ Quality Control and Inspect.	Capitalized	Capitalized
<u>Category 2 Costs</u>		
■ Marketing, Advertising	Expensed	Expensed
Distribution and Selling	Expensed	Expensed
■ Interest	Expensed	Expensed
■ Research and Experimental	Expensed	Expensed
■ Losses under Section 165	Expensed	Expensed
■ Percentage Depletion > Cost	Expensed	Expensed
■ Tax Depreciation > Book	Expensed	Capitalized
■ Income Taxes on Sales	Expensed	Expensed
■ Past Service Cost of Pension	Expensed	Expensed
■ Nonproduction General and Adm.	Expensed	Expensed
■ Nonproduction Officers' Salary	Expensed	Expensed
<u>Category 3 Costs</u>		
■ Taxes Other Than State and Local Income Taxes	Optional	Capitalized
■ Financial Statement Depr. and Depletion	Optional	Capitalized
■ Employee Benefits	Optional	Capitalized
■ Strike Costs	Optional	Expensed
■ Rework Labor, Scrap and Spoil.	Optional	Capitalized
■ Factory Administrative Exp.	Optional	Capitalized
■ Production Officers' Salaries	Optional	Capitalized
■ Insurance Costs	Optional	Capitalized
■ Administrative Support	Optional*	Capitalized
■ Engineering and Design	Optional*	Capitalized
■ Storage and Warehousing	Optional*	Capitalized
■ Purchasing	Optional*	Capitalized
■ Bid Costs: Awarded Contracts	Optional*	Capitalized
Unawarded Contracts	Optional*	Expensed
■ Intangible Drilling Cost	Optional*	Expensed
■ Mine and Natural Deposits Dev.	Optional*	Expensed

*Category 3 costs not listed in the Section 471 regulations.

Adapted from: "Implementing the New 'Super' Full-Absorption Rules." Richard W. Garrett. Corporate Accounting. Vol. 5, No. 4, (1987): pp. 42-47.

Category Three costs requiring most of them to be treated as product costs. In addition, Section 263A requires capitalization of some costs whose treatment was not specified under the Section 471 regulations. Section 263A added to the capitalization rules in effect under Section 471 and required manufacturers, wholesalers and retailers to follow the same set of rules in determining the cost of their products.

This change in the method of accounting for inventory costs required an adjustment for existing firms for taxable years beginning after 12-31-86. Under Section 481(a), the adjustment was computed as the difference between cost of inventory under the previous method and cost of inventory under Section 263A calculated as of the beginning of taxable year 1987. Since few companies would have had inventory methods that capitalized all costs specified under Section 263A, in the majority of cases the adjustment should have increased the cost of beginning inventory and increased taxable income (See example in Appendix A).

Two elements can be identified in the Section 481(a) adjustment. First, the adjustment results from capitalization of costs that were being deducted in accordance with Section 471, but were required to be capitalized under Section 263A. Second, a portion of the adjustment can result from capitalization of costs that should have been capitalized under Section 471, but were not

due to taxpayer noncompliance. IRS regulations (Temp. Regs. Section 1.263A-1T(e)(11)(iii)) allowed both components to be included as part of a single adjustment which brings the taxpayer into compliance with Section 263A.

Transition rules provided that the adjustment would be included in taxable income over several years under rules set forth in Revenue Procedure 84-74 with the restriction that the adjustment be spread over a period not exceeding four years (Joint Committee on Taxation, 1986). Thus, for most firms, the 1987 adjustment would increase a firm's tax liability for taxable years 1987 - 1990. After the change in accounting for inventory costs is made and the increase to taxable income computed, no future adjustments to taxable income result, assuming the cost of a firm's inventory remains constant.

Under the assumption of constant inventory levels, Section 263A results in a relatively permanent cash flow loss. The rules defer the deduction of additional costs capitalized until inventory is decreased. If a firm's inventory level remains constant or increases throughout its existence, the deduction of additional costs is not recovered until final liquidation of the company. To the extent a company can reduce its inventory level after implementation of Section 263A, the amount of this cash flow loss is reduced.

Capitalizing the proper amount of inventory costs has

become a complex task. The Treasury has published 43 pages of regulations and numerous lengthy notices detailing how the new law should be applied.² Complexity results from the requirement that taxpayers include in cost of inventory a portion of the costs from every department that provides benefits to the production process. Departments such as payroll, personnel and warehousing must all allocate a portion of their costs to the production process. Although IRS regulations (Temp. Regs. Section 1.263A-1T(b)(5) and (6)) provide simplified methods that make the computations easier, companies are not required to use these methods and may benefit by devising more complex but exact methods which minimize additional capitalizable costs.

The Tax Incidence Issue

Section 263A is a tax levied on businesses that carry inventory. Although businesses pay the tax initially, the tax is then shifted to the customers, employees and/or owners of these businesses. These individuals bear the ultimate burden of the tax through higher product prices, lower wages or lower return on investment.³ Uncertainty

² The following is a list of guidance related to the uniform capitalization rules: Temporary Regulations Section 1.263A-1T; Revenue Rulings 89-23 and 89-26; Revenue Procedures 89-16 and 89-17; Notices 87-76, 88-24, 88-86, 88-92, 88-99, 88-104 and 89-67.

³ "Tax incidence" is the term used to describe this shifting of taxes from the entity that initially pays the tax to individuals in the economy who ultimately bear the tax burden.

arises in determining to what extent the tax is shifted to these three groups. Very little data exists which measures the actual incidence of specific taxes (Kotlikoff and Summers, 1987; Rosen, 1988).

In this study, the impact of Section 263A on corporate taxpayers is studied. An argument could be made that Section 263A had no impact on the operation of corporations because the additional tax burden imposed was not borne by corporate shareholders, but was passed on to employees and consumers. Corporations would have no incentive to change the way they conduct business if the tax burden imposed by Section 263A could be easily shifted away from shareholders.

Corporate managers claim the additional tax burden associated with the TRA cannot be passed on to consumers in the form of higher product prices because of price competition within their industries (The Wall Street Journal, 5/14/86; Jacobs, 1986; Galante and Jacobs, 1987). These statements could be politically motivated and stronger support for their claim is provided through economic analysis which shows that under typical assumptions of an upward-sloping supply curve and a downward-sloping demand curve, the burden of a tax is shared by producers and consumers (Rosen, 1988).

Rosen assessed the incidence of a tax under competitive, monopolistic and oligopolistic market

structures using partial equilibrium analysis.⁴ Rosen concluded that the incidence of a tax depends on elasticities of supply and demand within each market. In a market where supply is perfectly elastic, consumers bear the entire tax burden. The opposite result occurs if demand is perfectly elastic - producers bear the entire tax burden. Under the assumption that markets fall somewhere between these two elasticity extremes, it is reasonable to conclude that at least some of the additional tax burden imposed by Section 263A was absorbed by shareholders of affected firms.

Assessing the distribution of the additional tax burden imposed by Section 263A is difficult due to the tax incidence issue. Definitive statements about what group or groups of individuals ultimately paid the additional tax cannot be made. However, Rosen's analysis (1988) shows that the assumption that corporate shareholders did bear some of the additional tax burden imposed by Section 263A is reasonable. Therefore, corporations did have an incentive to react to this tax law change.

Poff (1991) provides additional evidence that corporate shareholders absorbed some of the tax burden imposed by Section 263A. He modeled the impact of the Section 481(a) adjustment on producers and concluded that the adjustment

⁴ Partial equilibrium analysis analyzes the effect of a tax on a specific market while ignoring its impact on other markets.

was a lump sum tax. "Lump sum taxes are defined as those that do not depend on any action of the individual; there is no way he can change the tax liability" (Atkinson and Stiglitz, 1980, p. 28). Poff's model shows that the initial impact of Section 263A could not be shifted away from corporate shareholders.

This study seeks to assess the incentive of various categories of firms to take actions which would recover the tax associated with the Section 481(a) adjustment. Poff's result that this additional tax could not be avoided initially, strengthens the argument that future actions by firms (such as reduction of inventory) would be taken to recover this tax.

CHAPTER 3

RELEVANT LITERATURE

The Economic Impact of Section 263A

UNICAP was originally proposed in the Treasury Department Report: Tax Reform for Fairness, Simplicity, and Economic Growth: The Treasury Department Report to the President (U.S. Treasury, 1984). The Treasury identified a large disparity in cost capitalization rules used by taxpayers engaged in various activities. The Treasury, House of Representatives (Committee on Ways and Means, 1985) and Senate (Committee on Finance, 1986) reported that in production activities extending beyond one taxable year, pre-TRA law allowed a mismatching of revenues and expenses - the expenses incurred to generate revenues were being reported in a different period than the related revenues. This typically resulted in expenses being deducted prior to the related revenues, thereby providing a tax deferral Congress had not intended. It appears both the Treasury and Congress perceived this tax deferral to be a substantial and unintended tax loophole.

The Treasury and Congressional Committee reports stated that diversity in cost capitalization rules caused capital investment to flow into activities where the tax deferral was greatest, resulting in a misallocation of resources within the U.S. economy. The TRA minimized the ability of firms to defer taxes by enacting Section 263A which requires

all production-related expenses be capitalized into product cost and deducted only when the product is sold.

The Treasury (1984) identified two other pre-TRA tax law provisions that benefited firms involved in production activities: the investment tax credit and accelerated cost recovery rules. These two provisions were seen as benefits accruing mainly to capital-intensive firms - producers with large investments in plant and equipment. The tax benefits associated with the investment tax credit and accelerated cost recovery rules were perceived to be so substantial that individuals would invest in capital-intensive firms when, in the absence of these tax benefits, investments in other activities would produce a greater economic return. This tax-induced investment behavior resulted in a misallocation of resources within the economy. These two tax provisions were changed by the TRA; the investment tax credit for acquiring business assets was eliminated, depreciable lives of assets were lengthened and use of accelerated depreciation methods was reduced.

Generally, the TRA changes were seen as positive steps towards efficiently allocating capital investment within the U.S. economy. Steuerle (Sheppard, 1986b) felt the changes would improve the allocation of capital in the long run by equalizing tax rates across different types of investments, eliminating negative tax rates for new investments which were available under prior law. Gravelle's (Sheppard, 1987)

analysis of effective tax rates provided empirical support for Steuerle's assertion by illustrating how the disparity in effective tax rates across assets had been minimized by the TRA.

Feldstein (1986) generally agreed with Steuerle and Gravelle's statements that the TRA improved capital allocation within the U.S. economy. However, he identified a problem with placing the majority of the tax burden from the TRA on capital-intensive companies; by burdening U.S. producers, the changes favor production of goods outside the U.S. and make U.S. producers less competitive with foreign producers. Feldstein predicted U.S. manufacturers would respond to the TRA by shifting production to foreign countries or abandoning production activities leaving foreign producers as the dominant market players.

Representatives of U.S. companies testifying before Congress prior to the enactment of the TRA had asserted that the bill's provisions would encourage businesses to locate overseas (Parker, 1985a and 1985b). The Treasury proposal for making these tax law changes had centered on the benefits of reallocating resources within the economy and implied that a decrease in production activities and an increase in service activities would result in greater economic efficiency. However, the Treasury failed to identify the incentive that these changes would provide for production of goods outside the U.S.

Although this issue was raised prior to enactment, Congress was apparently persuaded to ignore this incentive by arguments that tax law has a minor affect on investment decisions (Sheppard, 1986a).

In addition, increasing business taxes was a politically palatable alternative for Congress. As discussed previously (See The Tax Incidence Issue, Chapter 2), it is not clear what group of individuals bears the tax burden imposed on business. The fact that individuals ultimately bear the burden of business tax increases is not understood by the average taxpayer nor is it publicized by Congress or the press (Ballentine, 1986). Congress found it politically easier to raise revenue by increasing taxes on an unidentified group of individuals under the guise of a business tax.

Another incentive TRA changes provided is the motivation for affected firms to decrease their investment in inventory and future investments in depreciable assets. A firm that continues to maintain production and distribution facilities within the U.S. can recover the cash flow loss imposed by Section 263A to the extent it can reduce its inventory. With regard to depreciable assets, a firm will reduce its purchases because the tax incentives associated with owning these assets have been substantially reduced.

The general consensus among commentators was that the

TRA was a major detriment to capital-intensive companies due to loss of the investment tax credit and reduced depreciation allowances. However, UNICAP was a major revenue-raising part of the TRA and the burden of this change also fell heavily on capital-intensive firms. All three changes provided firms an incentive to react to the TRA in the three ways mentioned: shifting of production and distribution facilities outside the U.S., shifting of investment towards service activities and reduction of investment in inventory and depreciable assets.

The impact of UNICAP provides one measure of the incentive for affected firms to react. Specifically, a firm severely impacted by Section 263A has a strong incentive to: [1] move production and distribution facilities outside the U.S. where cost capitalization rules are more lenient, [2] shift investment towards activities not impacted by Section 263A and/or [3] reduce inventory levels.

Of the three reactions to Section 263A, reduction of inventory levels is the alternative most readily available to affected firms. The other two alternatives require a more drastic restructuring of corporate operations and these decisions are more long-term in nature. In addition, reducing inventories is a cost saving strategy that is already in vogue among U.S. companies. O'Boyle (1990) notes that the ratio of inventory to sales for U.S. companies has followed a consistent downward trend since the

early 1980s and cites high interest rates and other costs of carrying inventory as the motivation for managers to reduce inventory levels.

Avoiding Section 263A through the movement of production and distribution facilities overseas is an alternative available to companies that sell substantial amounts of their product to foreign customers. Foreign corporations owned by U.S. shareholders are not excluded from UNICAP. However, controlled foreign corporations⁵ whose production and distribution activities are limited to the country of organization and non-controlled foreign corporations are impacted by the rules only when dividends are paid to U.S. shareholders.⁶ Due to the enactment of Section 263A, companies with substantial foreign sales have an incentive to locate production and distribution facilities that provide products to foreign customers outside the U.S., setting up foreign corporations that are

⁵ A controlled foreign corporation is a foreign corporation where more than 50 percent of the total combined voting power of all classes of stock entitled to vote or the total value of the stock of the corporation is owned by U.S. shareholders on any day during the foreign corporation's taxable year (Section 957(a)).

⁶ When dividends are paid, the Section 263A rules must be used in calculating earnings and profits to determine if any of the dividend is a nontaxable return of capital. The rules also affect the apportionment of income and expenses between U.S. and foreign sources for purposes of calculating the Foreign Tax Credit. See Gunn and Luscher (1987) for a discussion of the impact of Section 263A on these calculations.

not required to follow Section 263A in the calculation of taxable income.

The final incentive mentioned is restructuring corporate operations away from production and distribution activities towards service activities. Elimination of the investment tax credit and generous depreciation deductions along with the additional burden of complying with Section 263A provides firms an incentive to seek investment opportunities in the service sector. Service activities are not impacted by Section 263A and their investment in capital is relatively small. Thus, loss of the investment tax credit and generous depreciation allowances was not considered detrimental to service firms.

Hypotheses

This section sets forth the hypotheses that will be tested to identify the impact of Section 263A on affected firms. The impact of this tax law change will be measured as the adjustment to beginning inventory required in implementation (i.e. the Section 481(a) adjustment). A priori, it is hypothesized that the relative adjustment size will differ for firms of different sizes, inventory methods, and industries. In addition, the absolute size of the Section 481(a) adjustment should be correlated with inventory level.

Firm size has been shown to affect the results of research in financial accounting in the capital markets area

and in tax research in examining effective corporate tax rates. In research on the economic consequences of accounting regulation, firm size is frequently found to be a significant variable (Bernard, 1989). In the tax research area, Porcano (1986) found that when firms were categorized by amount of assets, the largest firms had the lowest effective tax rates.

It is expected that a size effect will be revealed also in the application of UNICAP. Large firms are more likely to have cost accountants and in-house tax specialists or have access to tax practitioners with specialized knowledge. These three groups have the expertise necessary to identify allocation methods that comply with Section 263A rules and yet minimize its effect. Therefore, larger firms should have had relatively smaller adjustments and less incentive to react to Section 263A.

Jackson, Milliron and Toy (1988) provide support for the above assertion that larger firms had access to expertise which aided them in computing relatively smaller adjustments. They measured tax practitioner expertise based on professional status, percent of time spent in return preparation versus tax planning, type of information sources used and professional group affiliation. Cluster analysis was used to identify four levels of expertise. The authors then measured average asset size of practitioners' business customers and found practitioners with the greatest

expertise had more business clients with average assets over \$1 million. The expectation that large firms had greater expertise which allowed them to compute relatively smaller Section 481(a) adjustments is expressed in Hypothesis 1:

H₁ The relative size of the Section 481(a) adjustment was smaller for large firms.

It is hypothesized that firms using the Last-In-First-Out (LIFO) inventory method had relatively smaller Section 481(a) adjustments and therefore less incentive to react to Section 263A. For all firms, cost of beginning inventory was recomputed for taxable year 1987 under Section 263A rules. For a non-LIFO firm, this resulted in costs incurred in the most recent year(s) being added to its inventory. However, for a LIFO firm, costs to be added were those incurred in years during which LIFO layers were accumulated. This should have resulted in a relatively smaller adjustment because costs related to those LIFO layers were not impacted by inflation occurring after those layers were added. Thus, LIFO firms should have had relatively smaller Section 481(a) adjustments as expressed in Hypothesis 2:

H₂ The relative size of the Section 481(a) adjustment was smaller for firms using the LIFO inventory method.

Prediction of a difference in relative size of the

Section 481(a) adjustment among industries is based on the perception that tax deferral benefits available prior to UNICAP were more substantial in the manufacturing industry (Seago, 1987). Wholesalers and retailers purchase products with production costs already capitalized. Section 263A requires capitalization of only minor additional costs by these taxpayers. Therefore, relatively larger Section 481(a) adjustments should have occurred in the manufacturing industry as expressed in Hypothesis 3:

- H₃ The relative size of the Section 481(a) adjustment was greater for manufacturing firms than it was for nonmanufacturing firms (wholesalers and retailers).

Firms in wholesale and retail industries must capitalize any costs they have in common with manufacturers. A difference between wholesalers and retailers is hypothesized based on the fact that wholesalers must capitalize all storage costs while retailers are allowed to expense on-site storage costs. Therefore, the Section 481(a) adjustment for wholesalers should have been relatively larger than the adjustment for retailers. This expectation is stated in Hypothesis 4:

- H₄ The relative size of the Section 481(a) adjustment was greater for wholesale firms than it was for retailers.

Finally, firm inventory level should have affected the

absolute size of the Section 481(a) adjustment. The relationship between inventory level and the Section 481(a) adjustment is illustrated by the following equation which firms followed when revaluing 1986 ending inventory under the IRS simplified method:

$$\frac{\text{Add'l. Section 263A Costs}}{\text{Total Prod. Costs (pre-263A)}} \times \text{Inventory (pre-263A)} = \text{Section 481(a) Adjustment.}$$

The equation shows that two factors can cause a difference among firms in the Section 481(a) adjustment:

- [i] differences in the ratio of additional Section 263A costs to pre-Section 263A production costs and
- [ii] differences in pre-Section 263A inventory cost. This second factor should have had a significant impact on the size of the Section 481(a) adjustment.

Generally, the lower a firm's inventory prior to implementation of Section 263A, the smaller the Section 481(a) adjustment. Consider the extreme case. A firm that ended taxable year 1986 with zero inventory balance would have had a Section 481(a) adjustment of zero even though the ratio of additional Section 263A costs to pre-Section 263A production costs may have been substantial. In contrast, firms with higher inventory balances should have had larger Section 481(a) adjustments as stated in Hypothesis 5:

H₅ The size of the Section 481(a) adjustment was greater for firms with higher inventory balances.

A firm with a low inventory balance can have a large Section 481(a) adjustment if the ratio of additional Section 263A costs to total production costs under Section 471 is large. However, if inventory level is low, the ratio would have to be inordinately large to produce a large Section 481(a) adjustment.

Based on the above theory and assumptions, large retailers that used the LIFO inventory method should have had the smallest adjustments relative to other categories of firms and the least motivation to react to Section 263A. In contrast, it is expected that small manufacturers that used non-LIFO inventory methods had relatively larger adjustments and the strongest motivation to react.

Administrative Efficiency

This section discusses the impact of Section 263A in terms of the administrative costs it imposes on firms subject to its rules. The administrative costs of a tax include out-of-pocket expenses and time required in complying with the rules and costs incurred by the government in processing returns and enforcing taxpayer compliance. The magnitude of these costs provides a basis for the secondary objective of this study, assessing proposals for simplifying the Section 263A rules.

As discussed previously (see The Economic Impact of Section 263A), economists generally felt that changes made by the TRA improved economic efficiency by improving the

allocation of capital within the U.S. economy. Gains in allocative efficiency achieved through Section 263A must be measured against losses in "administrative efficiency" that result from the enactment of complex capitalization rules. Administrative efficiency decreases whenever the tax law becomes more complex. Given the general consensus that the Section 263A rules are extremely complex, administrative efficiency is a relevant issue.

Slemrod (1990) has identified administrative costs as a component to be included in models assessing the economic efficiency of tax regimes. Optimal taxation models typically either assume administrative costs are zero or consider their impact apart from the efficiency aspects of a tax system. Slemrod asserts that administrative costs incurred in the compliance with and enforcement of tax laws can cause an otherwise optimal taxation system to be inefficient compared with systems that are administratively simpler. He suggests that optimal taxation theory, which considers the efficiency of a tax without factoring in administrative costs, should be replaced with an "optimal tax systems" framework which considers administrative costs an integral component in choosing the most efficient tax regime.

Heller and Shell (1974) made a first attempt at incorporating administrative costs into optimal taxation theory. They provided a basis for Slemrod's comment that

administrative costs can be the overriding factor in the choice of the most efficient tax system. Their model showed circumstances where production efficiency should be sacrificed for the sake of administrative efficiency gains achieved through use of a simpler tax system.

Slemrod's ideas are certainly relevant with respect to UNICAP. Although allocative efficiency may have been increased through enactment of uniform rules for substantially all multiperiod production and distribution activities, rule complexity causes inefficiency which may offset gains achieved by uniform rules. Indeed, if Summer's (1987) conclusion that the efficiency gain from eliminating differential taxation of various types of capital income is small, then administrative costs of UNICAP may have resulted in a less-efficient economy.

Some evidence of the administrative inefficiency of Section 263A can be found in a study by Colley, Segal and Volkan (1991). Thirteen firms in their sample provided start-up cost and recurring cost figures for compliance with UNICAP.

The average start[-]up cost for system modifications was \$50 million for the ten manufacturing firms and \$98,000 for the three service [nonmanufacturing] firms. The averages for recurring costs were \$35 million and \$78,000, respectively. The start[-]up costs for system modifications represent 9 percent and 16 percent of inventories in manufacturing and service firms, respectively.

In their sample of 47 firms, the Section 481(a) adjustment

as a percentage of inventory was 7.49% for manufacturers and 1.71% for nonmanufacturers. These results provide evidence that the compliance cost of Section 263A may have overwhelmed its effect on tax liability.

Illustrations of administrative inefficiency resulting from the TRA in general and UNICAP in particular, have appeared in the popular press. First, in 1987, the Treasury Department estimated that corporations would provide \$276 million less revenue over five years due to companies' resistance to measures which increase their tax burden (Wall Street Journal, 2/4/87). The specific tax burden mentioned in this article was the corporate alternative minimum tax, but UNICAP provides an even greater opportunity for resistance since the rules allow taxpayers substantial discretion in application to their specific situation. This news release reveals that the Treasury expects administrative costs of enforcement to increase due to the TRA.

Second, The National Association of Wholesale-Distributors estimated per firm cost of complying with Section 263A at \$20,000 to \$40,000 per year while estimating that the average wholesaler or retailer would pay only \$1,000 in additional tax (Galante and Jacobs, 1986). Although the figures are estimates and may exaggerate Section 263A's complexity, they portray Section 263A as a grossly inefficient method of raising tax revenue.

Summary

Relevant theory addressing the impact of the TRA and UNICAP has identified potential reactions by firms affected by Section 263A. Concern has been expressed that affected firms may move operations overseas or abandon production and distribution of products in favor of service activities. Five hypotheses have been generated predicting which firms could be expected to react most aggressively to Section 263A. Finally, discussion of administrative costs of UNICAP identifies the potential for complex tax laws to decrease overall economic efficiency due to high administrative costs providing a motivation for simplifying Section 263A rules.

CHAPTER 4

METHODOLOGY

Section 263A eliminated a substantial tax deferral and may have increased allocative efficiency within the U.S. economy. Section 263A apparently affected firms unequally, providing differing incentives to react to this change. In addition, this change has resulted in an increase in tax law complexity. This section sets forth a plan for accomplishing two objectives; [1] to determine the relative impact of Section 263A, revealing which categories of firms incurred the greatest additional tax burden and [2] to evaluate several alternative methods of implementing Section 263A in an effort to decrease complexity.

Although footnote disclosures in some firms' financial statements reveal the effects of Section 263A, the amount of additional costs capitalized and their effect on tax liability are typically not disclosed by affected firms. In order to acquire this information, corporate tax return data was obtained from public accounting firms.⁷

Assessing the Impact of Section 263A

Firm data was analyzed using multiple regression. The model (hereafter, quadratic model) was as follows⁸:

⁷ See Appendix B for tax return information collected.

⁸ The original models proposed failed to properly analyze the data. Several modifications were made in developing this model. The original models and their results are disclosed in Appendix C.

$$\begin{aligned}
\text{ADJ} &= b_0 + b_1 \text{SIZE} + b_2 \text{LIFO} + b_3 \text{INV} \\
&+ b_4 \text{SIZE}^2 + b_5 \text{INV}^2 + b_6 \text{SIZE} \times \text{LIFO} \\
&+ b_7 \text{SIZE} \times \text{INV} + b_8 \text{LIFO} \times \text{INV} + b_9 \text{IND}_m \\
&+ b_{10} \text{IND}_w + \epsilon,
\end{aligned}$$

where:

- ADJ is the firm's Section 481(a) adjustment scaled by net receipts for taxable year 1986,
- SIZE is a continuous variable indicating a firm's net receipts for taxable year 1986, divided by 10,000,⁹
- LIFO is a {0,1} variable which equals one if the firm values over 50% of its ending inventory for taxable year 1986 using the LIFO inventory method and zero otherwise,
- INV is a continuous variable calculated by dividing a firm's ending inventory by net receipts for taxable year 1986,
- SIZE² is a continuous variable calculated by squaring the SIZE variable,
- INV² is a continuous variable calculated by squaring the INV variable,
- SIZE x LIFO is an interaction term which allows the impact of using the LIFO inventory method to vary with firm size,¹⁰
- SIZE x INV is an interaction term which allows the impact of firm size to vary with inventory level,
- LIFO x INV is an interaction term which allows the impact of using the LIFO inventory method to vary with inventory level,
- IND_m is a {0,1} variable which equals one if the firm is classified as a manufacturer based on its business code and zero otherwise,

⁹ Net receipts was scaled by 10,000 to improve the mathematical accuracy of the regression coefficients.

¹⁰ A priori, there is no reason to expect any interaction effects. Interaction variables have been included in the model to verify that no interaction exists.

IND_w is a $\{0,1\}$ variable which equals one if the firm is classified as a wholesaler based on its business code and zero otherwise, and

ϵ is a residual term.

The dependent variable is the difference in cost of beginning inventory under the company's previous inventory accounting method and its cost under Section 263A (i.e. the Section 481(a) adjustment) scaled by net receipts. Scaling the Section 481(a) adjustment results in a dependent variable that measures the relative impact of Section 263A. Thus, small closely-held companies can be compared with large publicly-traded companies without the effect of firm size dominating the effect of all other independent variables. The regression model is then used to assess whether the Section 481(a) adjustment as a percentage of net receipts differs among firms based on their size, inventory method and industry. In addition, the model verifies the positive relationship between size of the Section 481(a) adjustment and inventory level.

Firm size was measured using net receipts for the taxable year prior to implementation of Section 263A (taxable year 1986). A $SIZE^2$ variable was included in the model to allow for a nonlinear relationship.

Total assets also was considered as a possible measure of firm size. However, assets are acquired at various times throughout a company's life and are carried at their acquisition cost regardless of changes in market value.

Using assets as a firm size measure could result in two firms with identical net receipts being placed in different size categories merely because one firm is older and therefore the historical cost of its assets is lower. Sales was considered a more valid measure of firm size because sales for all firms are valued in current dollars.

Firm inventory method was operationalized based on the percentage of beginning inventory valued under the LIFO inventory method as revealed by Item 8c on Schedule A of Form 1120. Although this variable is continuous, it was entered into the model as categorical because a substantial number of firms either value 100% of their inventory using LIFO or exclude its use entirely.

Firm inventory level was measured as a firm's ending inventory for taxable year 1986 divided by net receipts. Since net receipts was used to scale both inventory and the Section 481(a) adjustment, this variable directly measures the impact of firm inventory level on the size of the Section 481(a) adjustment. The square of the inventory variable was added to allow for a nonlinear relationship between the dependent variable and inventory variable.

Each firm was classified into one of three industry groups based on business code (Form 1120, Item C), which generally corresponds to its Standard Industrial Classification (SIC) Code. The business codes of affected industries are: 2010 to 3998 (manufacturers), 5008 to 5190

(wholesalers) and 5220 to 5995 (retailers). Although firms can be classified further based on their two-and three-digit business codes, these three industry divisions were the focus of this study.

Including the SIZE² and INV² variables produces a second-order Taylor Series approximation of the unknown underlying function and improves the fit of the model if the function is nonlinear. An additional second-order Taylor Series approximation was estimated by performing a logarithmic transformation of all variables in the model (except for LIFO, IND_m and IND_w)¹¹ to determine if a logarithmic model was a more appropriate functional form. The logarithmic model was as follows:

$$\begin{aligned} \ln\text{ADJ} = & b_0 + b_1 \ln\text{SIZE} + b_2 \text{LIFO} + b_3 \ln\text{INV} \\ & + b_4 [\ln\text{SIZE}]^2 + b_5 [\ln\text{INV}]^2 + b_6 \ln\text{SIZE} \times \text{LIFO} \\ & + b_7 \ln\text{SIZE} \times \ln\text{INV} + b_8 \text{LIFO} \times \ln\text{INV} \\ & + b_9 \text{IND}_m + b_{10} \text{IND}_w + \epsilon, \end{aligned}$$

where:

$\ln\text{ADJ}$ is a continuous variable calculated by scaling a firm's Section 481(a) adjustment by net receipts for taxable year 1986 and then taking the natural logarithm of this figure,

$\ln\text{SIZE}$ is a continuous variable calculated by scaling a firm's net receipts for taxable year 1986 by 10,000 and taking the natural logarithm of this figure,

¹¹ No exponential or logarithmic transformation of these variables was performed since they are categorical.

- LIFO is a {0,1} variable which equals one if the firm values over 50% of its ending inventory for taxable year 1986 using the LIFO inventory method and zero otherwise,
- lnINV is a continuous variable calculated by dividing a firm's ending inventory by net receipts for taxable year 1986 and taking the natural logarithm of this figure,
- [lnSIZE]² is a continuous variable calculated by squaring the lnSIZE variable,
- [lnINV]² is a continuous variable calculated by squaring the lnINV variable,
- lnSIZE x LIFO is an interaction term which allows the impact of using the LIFO inventory method to vary with firm size,
- lnSIZE x lnINV is an interaction term which allows the impact of firm size to vary with inventory level,
- LIFO x lnINV is an interaction term which allows the impact of using the LIFO inventory method to vary with inventory level,
- IND_m is a {0,1} variable which equals one if the firm is classified as a manufacturer based on its business code and zero otherwise,
- IND_w is a {0,1} variable which equals one if the firm is classified as a wholesaler based on its business code and zero otherwise, and
- ε is a residual term.

Each regression model contains independent variables which measure each of the hypothesized effects. If the hypothesized effect is present, coefficients on the specified variables should be significant and have the predicted signs. Independent variables and the expected signs of their coefficients are shown in Table 2.

TABLE 2

Expected Impact of Independent Variables
on the Section 481(a) Adjustment

<u>Hypothesis</u>	<u>Independent Variable</u>	<u>Effect on Dependent Variable</u>	<u>Coefficient(s)</u>	<u>Predicted Sign</u>
H ₁	SIZE	Decrease	b ₁ and/or b ₄	-
H ₂	LIFO	Decrease	b ₂	-
H ₃	IND _m	Increase	b ₉	+
H ₄	IND _w	Increase	b ₁₀	+
H ₅	INV	Increase	b ₃ and/or b ₅	+

H₃ hypothesizes manufacturers had larger relative adjustments than nonmanufacturers. Including the IND_m variable in the model tests if manufacturers had larger relative adjustments than retailers. This is only a partial test of the hypothesis. A complete test of H₃ was accomplished by coupling the above test with a t-test for differences between the coefficients on the IND_m and IND_w variables. This t-test tests for differences between manufacturers and wholesalers.

Proposals for Simplification

Each year firms must follow cost allocation procedures to determine the amount of additional costs required to be capitalized under Section 263A. The second part of the study tests proposals for simplifying this cost allocation process.

House Ways and Means Committee Chairman Daniel Rostenkowski has made tax simplification a goal of future tax legislation. Taxpayers and tax practitioners have responded to Rostenkowski's request for simplification ideas by suggesting numerous ways tax law could be simplified (Committee on Ways and Means, 1990). Three suggestions for simplifying Section 263A were identified in the Ways and Means Committee report: [1] capitalization of only direct costs eliminating the allocation of mixed service costs to production, [2] implementation of capitalization percentages based on industry code and sales volume and [3] use of an individual firm capitalization ratio for all future years based on a firm's average ratio for the first three years Section 263A was in effect. In addition, this study tests a fourth simplification proposal: [4] capitalization of only pension and depreciation expense related to production based on the hypothesis that these two costs make up the majority of additional costs capitalized under Section 263A.

In order to test the adequacy of suggested proposals, tax workpapers of corporations were reviewed to determine the type and amount of each cost reclassified as a product cost during taxable year 1987: the first full year Section 263A was in effect. The tax workpaper information and tax return data were used to simulate how the implementation of proposals [1] and [4] would impact sample firms. Proposal [3] was tested using a correlation analysis and proposal [2]

was assessed on a qualitative basis. The objective of these tests was to determine if implementation of any of the proposals would result in virtually the same impact on the taxable income of firms as current Section 263A rules.

The restriction that an acceptable simplification proposal have virtually the same impact on firm taxable income was made for two reasons. First, Congress is likely not prepared fiscally or politically to accept a tax law change that substantially reduces current tax revenues or changes tax rates. Second, firms affected by Section 263A have systems in place which comply with the current set of rules and would be less willing to change to an alternative system unless it provides the benefit of greater simplicity without causing a substantial increase in tax liability as compared with current law.

Data Collection and Sample Description

Data on 50 firms was collected from eight public accounting firms in the eastern United States. Two observations were deleted when it was discovered that these companies' Section 481(a) adjustments included substantial amounts of costs that were required to be capitalized under Section 471. These companies included these Section 471 costs in addition to the additional Section 263A costs in their Section 481(a) adjustments as required by the regulations. However, their blatant noncompliance with the Section 471 rules resulted in adjustments that were not

comparable with other firms in the sample who appeared to have been in general compliance with Section 471.¹²

The resultant regression models provide a clearer picture of the impact of Section 263A by eliminating confounding effects caused by noncompliance with pre-Section 263A law. Excluding these firms reduces the error variance and adds explanatory power to the models.

An additional source of confounding could arise from the use of business code to classify firms into industry categories. A company chooses a business code when its initial tax return is filed and may retain the same code even if its business activities change. Thus, a firm could be classified as a retailer based on business code although it has substantial manufacturing activities. Firms with business codes classifying them into the wrong industry could result in outliers, confounding regression results. To minimize this problem, the business code of each firm in the sample was verified against the firm's business activity

¹² The first noncompliant firm was a wholesaler whose Section 481(a) adjustment/net receipts ratio was 28% versus a mean of .66% for other wholesalers in the sample. Correspondence with the corporation's CPA firm revealed that this corporation had failed to comply with Section 471. The second company was a manufacturer whose workpapers revealed substantial amounts of direct materials and direct labor were being capitalized in calculating the Section 481(a) adjustment. Although this firm's Section 481(a) adjustment/net receipts ratio was not substantially greater than that of other manufacturers, it was deleted since noncompliance with Section 471 was excessive and obvious.

as reported on Form 1120, page 3. Several inconsistencies were noted and resolved based on the CPA firm's knowledge of the client's business.

The number of firms in each industry and breakdown between Big Six and non-Big Six CPA firms is shown in Table 3.

TABLE 3

Sample Firms Based on Industry and CPA firm

	Mfg.	Whlse.	Retail	Total
Big Six CPA	11	5	5	21
Non-Big Six CPA	16	5	6	27
Total	<u>27</u>	<u>10</u>	<u>11</u>	<u>48</u>

Means and standard deviations on data for firms in the three industries are presented in Table 4. The sample of retail firms included one extremely large company. Statistics were computed on the retail industry both with and without this firm.

Statistics calculated on the Section 481(a) adjustment, net receipts and percentage of LIFO inventory indicate firms in the sample are heterogeneous both within and among industries. The retailing group contains the largest firms followed by wholesalers and then manufacturers.

TABLE 4
Descriptive Statistics by Industry
(dollars in thousands)

	Mfg.	Whlse.	Retail	Retail
Number of Firms	27	10	11	10
<u>Section 481(a) Adjustment:</u>				
Mean	75	138	370	177
Median	33	112	35	26
Standard Deviation	102	128	703	309
Maximum	357	392	2,296	924
Minimum	-0-	11	-0-	-0-
<u>Net Receipts:</u>				
Mean	13,000	25,000	148,000	43,000
Median	8,000	15,000	22,000	21,000
Standard Deviation	20,000	21,000	350,000	36,000
Maximum	99,000	62,000	1,000,000	114,000
Minimum	437	9,000	13,000	13,000
<u>% of LIFO Inventory:</u>				
Mean	46%	50%	65%	62%
Median	0%	50%	89%	88%
Standard Deviation	49%	53%	43%	45%
Maximum	100%	100%	100%	100%
Minimum	0%	0%	0%	0%

TABLE 4 (continued)
Descriptive Statistics by Industry

	Mfg.	Whlse.	Retail	Retail
Number of Firms	27	10	11	10
<u>Inventory/Net Receipts:</u>				
Mean	.107	.167	.164	.156
Median	.081	.138	.133	.131
Standard Deviation	.080	.170	.093	.094
Maximum	.344	.615	.324	.324
Minimum	.012	.013	.010	.010
Differences Between Means:				
t-statistic	-1.0860		.0550	
(p-value)	(p > .3)		(p > .9)	
Differences Between Medians:				
Z-statistic	1.2312		.2817	
(p-value)	(p = .11)		(p = .39)	
<u>Section 481(a) Adjustment/Net Receipts:</u>				
Mean	.0112	.0066	.0035	.0037
Median	.0041	.0051	.0010	.0010
Standard Deviation	.0213	.0074	.0045	.0048
Maximum	.1037	.0260	.0123	.0123
Minimum	-0-	.0008	-0-	-0-
Differences Between Means:				
t-statistic	.6615		1.1611	
(p-value)	(p > .1)		(p > .1)	
Differences Between Medians:				
Z-statistic	-.4446		-2.1611	
(p-value)	(p = .3)		(p = .014)	

Relative inventory balances are generally higher for wholesalers and retailers compared with manufacturers. However, no significant difference between manufacturers and wholesalers or wholesalers and retailers was found. The finding of no significant differences provides confidence that industry differences in Section 481(a) adjustments are not due to differences in relative inventory balances among the three industries.

The descriptive statistics indicate a wide dispersion in Section 481(a) adjustments within each industry revealing a wide range of values in the adjustments companies made in complying with Section 263A. This diversity provides evidence of differences in cost capitalization rules followed by firms prior to Section 263A. Some of this diversity results from the flexibility under Section 471 which allowed firms more discretion in determining which costs to capitalize. Diversity could also be the result of firms using product costing methods that did not comply with Section 471.

Section 481(a) adjustment/net receipts ratios follow the expected trend with the mean ratio for manufacturers being the largest followed by wholesalers and then retailers. However, the one-tailed t-test indicates no significant difference between the mean Section 481(a) adjustment/net receipts ratio for manufacturers versus wholesalers and wholesalers versus retailers. The Wilcoxon

Rank Sum test indicates no difference between the median Section 481(a) adjustment/net receipts ratio for manufacturers versus wholesalers, but shows wholesalers have significantly higher ratios than retailers.

CHAPTER 5

DATA ANALYSIS AND INTERPRETATION

This section utilizes the models previously developed to identify the relative impact of Section 263A on various categories of firms and verify the positive relationship between the Section 481(a) adjustment and inventory level. In addition, an assessment of suggested simplification proposals is made.

The Impact of Section 263A

Results of estimating the quadratic and logarithmic models are shown in Table 5. The logarithmic transformation required deletion of one manufacturer and one retailer from the sample because these firms had Section 481(a) adjustments of zero. To perform a valid comparison of the two models, the same two observations were deleted in estimating the quadratic model.

The logarithmic model best fit the data.¹³ The results of this model do not indicate any difference in the relative size of the Section 481(a) adjustment between large and small firms. The coefficients on $\ln\text{SIZE}$ and $[\ln\text{SIZE}]^2$ were not significant.

¹³ This model was superior based on tests of assumptions and predictive accuracy. See Appendix D for results of these tests.

TABLE 5
Impact of Section 263A
(p-value in parenthesis)

Model Number of Firms	Quadratic 46	Logarithmic 46
<u>Independent Variables:</u>		
Intercept	-.00861 (.3539)	Intercept -.26051 (.9541)
H ₁ : SIZE (b ₁)	-2.46111e ⁻¹¹ (.8594)	lnSIZE .62458 (.5872)
H ₂ : LIFO (b ₂)	.00799 (.4094)	LIFO -10.3158 (.0083) **
H ₅ : INV (b ₃)	.19981 (.0018) **	lnINV 3.42164 (.0381) *
H ₁ : SIZE ² (b ₄)	7.54271e ⁻²⁰ (.5606)	[lnSIZE] ² -.06004 (.4180)
H ₅ : INV ² (b ₅)	.08034 (.5188)	[lnINV] ² .75076 (.0059) **
SIZExLIFO (b ₆)	2.70554e ⁻¹⁰ (.2326)	lnSIZExLIFO .96599 (.0253) *
SIZExINV (b ₇)	-1.39363e ⁻⁰⁹ (.2432)	lnSIZExlnINV .23341 (.1989)
LIFOxINV (b ₈)	-0.18795 (.0075) **	LIFOxlnINV -1.30014 (.0527)
H ₃ : IND _m (b ₉)	.00222 (.7316)	IND _m .84772 (.1272)
H ₄ : IND _w (b ₁₀)	.00028 (.9665)	IND _w 1.15203 (.0452) *

Model:

F-Statistic	3.42 (.0033) **	F-Statistic 4.65 (.0003) **
R ²	.494	R ² .570

* Significant at $\alpha = .05$
** Significant at $\alpha = .01$

The coefficient on LIFO was negative and significant. However, the interaction effect between SIZE and LIFO was also significant. This interaction is graphed in Figure 1. The graph shows that for non-LIFO firms, firm size did affect the relative size of the Section 481(a) adjustment. Large non-LIFO firms had smaller relative adjustments than small non-LIFO firms. For LIFO firms no size effect is evident. Thus, H_1 is supported, but only for non-LIFO firms.

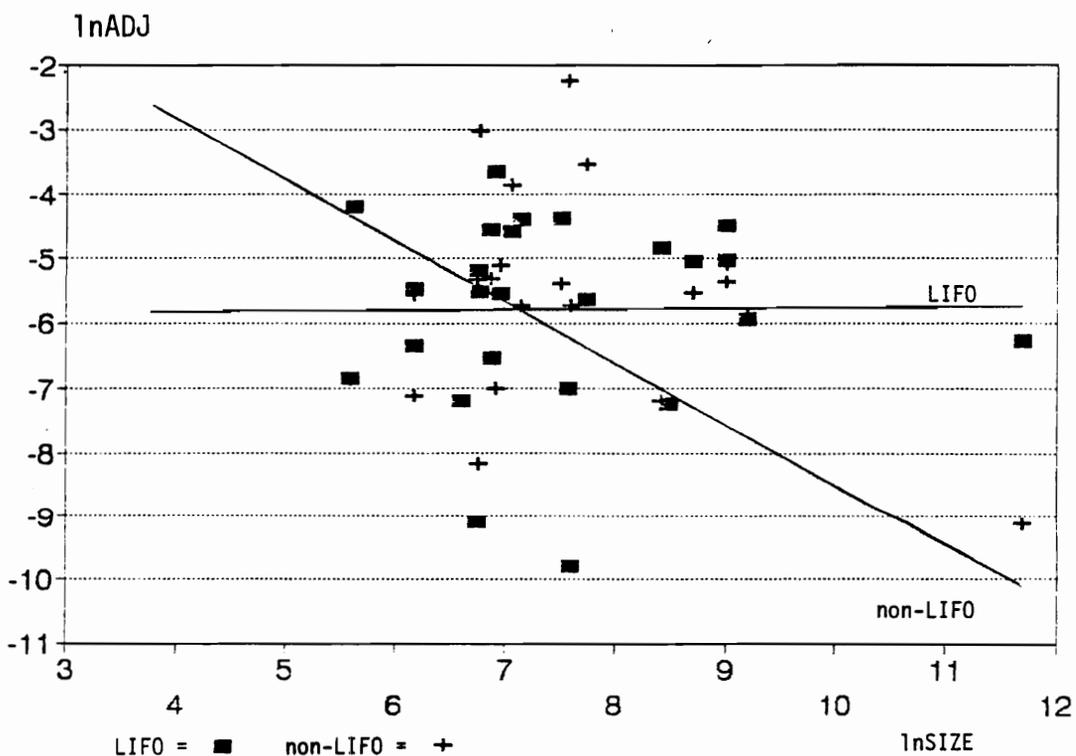


FIGURE 1:
Interaction Effect of Size and LIFO Inventory Method¹⁴

¹⁴ Note that the scale used is logarithmic and y-axis values are negative because Section 481(a)/net receipts ratios are all less than 1.

The significant coefficient on the LIFO variable is depicted on the graph as the difference in the y-intercepts of the two lines. The variable's negative sign reveals small LIFO firms had smaller relative adjustments than small non-LIFO firms. However, no consistent difference between LIFO and non-LIFO firms is indicated. Therefore, H_2 was not supported. The LIFO variable merely separates firms into categories where a size effect occurred (non-LIFO firms) and where size had no effect (LIFO firms).

There was no support for the hypothesis that manufacturers had larger relative adjustments than nonmanufacturers (H_3). The coefficient on the IND_m variable was not significant, indicating no difference between manufacturers and retailers. The t-test between b_9 and b_{10} revealed no significant difference between manufacturers and wholesalers (t-statistic = .5926, p-value > .1).

H_4 predicted the relative size of the Section 481(a) adjustment would be larger for wholesale firms than retailers. The coefficient on the IND_w variable was both positive and significant indicating wholesalers had larger relative adjustments than retailers.

Finally, H_5 predicted firms with higher inventory balances would have larger adjustments. This hypothesis was supported. The coefficients on $\ln INV$ and $[\ln INV]^2$ were positive and significant indicating that, as firm inventory

balances increase, the size of the Section 481(a) adjustment increases at an increasing rate.

Interpretation of Results

The results of the analysis provide evidence supporting the hypothesis that firm size had a negative impact on relative size of the Section 481(a) adjustment, but only for non-LIFO firms. The expectation was that large firms would have access to greater expertise which would aid them in minimizing the size of the adjustment and this expertise effect would be consistent regardless of firm inventory method.

An explanation of the size effect observed for non-LIFO firms is that large firms more accurately complied with pre-Section 263A (Section 471) product costing rules than small firms. With the enactment of Section 263A, firms capitalized product costs to remedy noncompliance with Section 471 and comply with Section 263A. If large firms had fewer costs to capitalize in coming into compliance with Section 471, their Section 481(a) adjustments would have been relatively smaller.

The hypothesis of larger firms having greater expertise can be applied to these non-LIFO firms. Large firms in this category could be expected to have greater expertise involved in the preparation of their tax returns enabling compliance with Section 471 prior to the enactment of Section 263A. Therefore, the Section 481(a) adjustments of

large firms were relatively smaller.

An alternative explanation for this size effect among non-LIFO firms could be willful noncompliance with Section 471 rather than noncompliance due to lack of expertise. The size effect revealed can be explained by noncompliance, but whether the source of this noncompliance is ignorance of the tax law or tax evasion is not revealed. Small firms certainly have more opportunity to successfully evade taxes since large firms are audited more frequently.

There is no evidence of a size effect for LIFO firms. This result apparently occurred because LIFO firms were in compliance with Section 471. Prior to Section 263A, firms using LIFO were required to state inventories at cost under Section 471 rules in the year LIFO was elected (Regs. Section 1.472-2(c) and Klein Chocolate 32 T.C. 437 (1959)). The consequences of failing to comply with LIFO regulations is disallowance of the LIFO election for all noncomplying years (Fischer Industries, Inc. v. Comm. 61 AFTR 2d 88-867). Any noncompliance with Section 471 should have been remedied by LIFO firms when the LIFO election was made. Thus, no size effect was revealed because noncompliance in the LIFO category was minimal.¹⁵

¹⁵ Two observations had been removed from the sample because of blatant noncompliance with Section 471 (see Chapter 4 Data Collection and Sample Description). After suspecting a correlation between firm size and noncompliance, the logarithmic model was rerun including these firms in the sample. The signs of the regression

The analysis revealed only one industry difference; wholesalers had larger relative adjustments than retailers. This result agrees with the expectation that wholesalers capitalized significantly more storage costs than retailers. An equally interesting result was the finding that the relative adjustment for manufacturers was not significantly greater than that of nonmanufacturers. This result contradicts the original expectation that manufacturers would incur the largest relative adjustments in complying with Section 263A.

This finding provides evidence that the tax deferral in the manufacturing industry occurring under pre-Section 263A law may not have been as pervasive as the Treasury and Congress had perceived. Manufacturers may have been capitalizing a majority of the additional product costs required to be capitalized under Section 263A even before its enactment. Some tax practitioners had predicted wholesalers and retailers might have relatively large adjustments because these businesses had previously capitalized few indirect product costs (Herdman and Neary, 1987). This explanation is supported by descriptive statistics in Table 4 which show the median adjustment was

coefficients and their significance remained stable.

highest in the wholesale industry.¹⁶

The distribution of the Section 481(a) adjustment/net receipts ratios contributed to the finding of no difference between the relative adjustments of manufacturers and nonmanufacturers. Descriptive statistics computed on these ratios (see Table 4) indicate the mean ratio for manufacturers is highest, followed by wholesalers and then retailers. However, there is a wide dispersion in ratios within the manufacturing industry compared to the other industries. For manufacturers, the standard deviation is almost twice the mean. This reveals that some manufacturers capitalized few costs prior to Section 263A and these firms had relatively large Section 481(a) adjustments while other manufacturers capitalized substantial costs prior to Section 263A and had relatively small adjustments. The failure to find higher relative adjustments in the manufacturing industry was due in part to the wide dispersion of ratios within this industry.

The final significant result obtained from the analysis

¹⁶ An argument could be made that larger relative adjustments were not found in the manufacturing industry because net receipts was used to scale the Section 481(a) adjustment. If manufacturers have greater profit margins than wholesalers, a manufacturer could have a Section 481(a) adjustment equal to that of a wholesaler, but have a smaller relative adjustment because its net receipts are higher. To test this argument, the logarithmic model was rerun using beginning inventory for taxable year 1986 to scale the Section 481(a) adjustment. Use of this revised model did not change the results of the regression.

was the finding that firms with higher inventory balances had larger adjustments. As mentioned previously, reduction of inventory balances has become a trend in U.S. companies over the last 20 years (O'Boyle, 1990). Firms that recognized the high cost of maintaining inventory and successfully reduced inventory levels were rewarded with lower adjustments upon the enactment of Section 263A.

Use of the logarithmic transformation produces coefficients that can be interpreted as elasticities. The elasticity associated with inventory is noteworthy because it quantifies the benefit gained by reducing inventory. Taking the partial derivative of the logarithmic model with respect to inventory and substituting mean values for $\ln\text{INV}$ and $\ln\text{SIZE}$ results in an elasticity of .3 for LIFO firms and 1.6 for non-LIFO firms. Thus, for this sample, a 1% increase in inventory resulted in a .3% increase in Section 481(a) adjustment for LIFO firms and 1.6% increase for non-LIFO companies.

Although an elasticity with respect to net receipts could be computed, firms are less able to manipulate this figure in response to tax law changes. Therefore, no elasticity was computed for this variable.

Tests of Simplification Proposals

This section tests the adequacy of proposals for simplifying the cost allocation procedures required under

Section 263A. The four proposals (see Chapter 4) were as follows: [1] capitalization of only direct costs, eliminating the allocation of mixed service costs to production, [2] implementation of capitalization percentages based on industry code and sales volume, [3] use of an individual firm capitalization ratio for all future years based on the firm's average ratio for the first three years Section 263A was in effect and [4] capitalization of only pension and depreciation expense related to production.

The information required to test these proposals was available for only a limited number of firms in the sample. Only three retail and two wholesale firms could be included in all the analyses. The small sample of firms from these two industries severely limits the generalizability of any results. Therefore, the proposals were tested using only manufacturers except for proposal [2] where information on five wholesalers was available.

The first simplification proposal suggested eliminating the allocation of mixed service costs to production, requiring firms to capitalize only direct costs. Information on the breakdown between mixed service costs and direct costs is presented in Table 6.

Capitalization of only direct costs would cause a significant loss of tax revenue. In this sample, direct costs make up, on average, only 43.6% of additional capitalizable costs.

TABLE 6
Breakdown of Additional Section 263A Costs

MIXED SERVICE COSTS AS A % OF ADD'L 263A COSTS	DIRECT COSTS AS A % OF ADD'L 263A COSTS
81.0%	19.0%
45.8	54.2
72.7	27.3
59.0	41.0
4.7	95.3
74.8	25.2
53.0	47.0
75.7	24.3
35.5	64.5
57.6	42.4
27.9	72.1
89.1	10.9
Average 56.4%	43.6%

The second proposal suggested implementation of capitalization percentages based on industry code and sales volume. The capitalization percentage (also called the absorption ratio or capitalization ratio) is the ratio of additional costs required to be capitalized under Section 263A divided by total production costs under Section 471.

In assessing the impact of Section 263A, no relationship was revealed between relative size of the Section 481(a) adjustment and firm size (measured using net receipts) in the LIFO firm category. Use of sales as a factor in implementing standard capitalization percentages for both LIFO and non-LIFO firms would not produce adjustments similar to those discovered under Section 263A

rules. Therefore, this proposal was evaluated by searching for a systematic relationship between capitalization percentage and business code. Information was available for five wholesalers and ten manufacturers and is presented in Table 7. The table provides no evidence of consistency in capitalization percentages within the two industries or within firms grouped by two- or four-digit business codes. Implementation of capitalization percentages based on business code would impose uniformity upon firms that exhibit substantial diversity under the current set of rules.

TABLE 7
Relationship Between Capitalization
Percentage and Business Code

	BUSINESS CODE	CAPITALIZATION PERCENTAGE
Wholesale:	5190	.0103
	5170	.0539
	5098	.0266
	5070	.0416
	5008	.0427
Industry Average		.0350
Manufacturing:	3998	.1965
	3845	.3459
	3540	.0342
	3460	.0602
	3070	.0792
	3070	.0628
	3070	.0799
	2799	.0200
	2510	.0231
	2430	.0207
Industry Average		.0922

The third proposal suggested implementing a fixed capitalization ratio for each firm based on the firm's average ratio for the first three years. Testing the adequacy of this proposal would require information from workpapers for three taxable years. Accessing this information was considered prohibitively expensive. Therefore, a limited test of the third proposal was performed by testing the correlation between a firm's Section 481(a) adjustment (the adjustment it made to revalue its inventory at the end of taxable year 1986) and additional Section 263A costs remaining in inventory at the end of taxable year 1987.

This test assesses the consistency of a firm's capitalization ratio from 1986 to 1987 assuming constant inventory levels. Additional Section 263A costs remaining in inventory is calculated under the IRS simplified method as follows:

$$\frac{\text{Add'l. Section 263A Costs}}{\text{Total Prod. Costs (pre-263A)}} \times \text{Inventory (pre-263A)} = \text{Additional 263A Costs in Inventory}$$

If pre-Section 263A inventory remains constant, the correlation tests whether a firm with a high capitalization ratio in 1986 also had a high capitalization ratio in 1987 compared with other firms in the sample.

The required information for both years was available for 11 manufacturers. The Pearson Correlation Coefficient was 0.9267 (p-value = .0001) and the Spearman Rank Correlation was 0.8909 (p-value < .001). Both tests indicate firms incurring large Section 481(a) adjustments when revaluing 1986 ending inventory also tended to capitalize large amounts of costs into 1987 ending inventory. The high correlation provides evidence that, over time, firms may have a consistent capitalization ratio. Thus, computing a three-year average ratio and applying this ratio to future years may be an ideal simplification proposal.

The fourth proposal suggested capitalization of only certain costs (pension and depreciation expense) as an alternative to capitalization of all production-related costs. Table 8 provides a breakdown of the additional product costs for taxable year 1987 from the workpapers of 12 manufacturers.

Contrary to expectation, pension and depreciation expense made up only a very small percentage of additional capitalizable costs. Labor made up the largest percentage of capitalizable costs - 42% on average.

Consideration was also given to capitalization of the top four cost categories in each industry. This proposal succeeds in identifying between 34.9 and 97.6% of costs capitalized under current law. Given the current need for

stable tax revenues, a simplification proposal that loses between 2.4 and 65.1% of revenues currently collected is probably not a desirable alternative. Once again, diversity among companies appears to render this proposal inadequate.

TABLE 8
Specific Cost Categories as a Percentage
of Additional Section 263A Costs

Firm No.	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Pension	44.1					
Deprec.	1.8	45.8	2.7	4.0	1.0	10.8
Labor	42.7	5.4	63.9	56.5	87.9	50.2
Fringe Benefits	.4	4.7	2.0			1.9
Payroll Tax	1.7		5.0	2.5	2.5	7.4
Rent	1.1			5.4		
Repairs		2.8	1.8			
Utilities	1.1	2.7	3.1	4.7	1.9	
Insurance	3.4	5.0	4.3	16.7	5.3	4.5
Freight		.9				
Other	3.7	32.7	17.2	10.2	1.4	25.2
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Summation of Top 4 Cost Categories (excluding Other):						
	92.0	60.9	76.3	83.3	97.6	72.9
Summation of Pension and Deprec. Categories:						
	45.9	45.8	2.7	4.0	1.0	10.8

TABLE 8 (Continued)

Specific Cost Categories as a Percentage
of Additional Section 263A Costs

Firm No.	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>Avg.</u>
Pension	53.5					1.2	8.2
Deprec.	.2	9.3	1.7	3.9	11.4	62.0	12.9
Labor	28.8	56.9	24.9	12.9	69.2		41.6
Fringe Benefits	10.5	2.0	.6	1.9			2.0
Payroll Tax	.4	6.1	1.3	5.5			2.7
Rent				3.5			.8
Repairs	.1						.4
Utilities	.1			6.4	9.5		2.5
Insurance		1.4	7.0	27.9			6.3
Freight							.1
Other	6.4	24.3	64.5	38.0	9.9	36.8	22.5
Total	<u>100.0</u>						

Summation of Top 4 Cost
Categories (excluding Other):

93.2 74.3 34.9 52.7 90.1 63.2

Summation of Pension
and Deprec. Categories:

53.7 9.3 1.7 3.9 11.4 63.2

Of the four simplification proposals tested, the suggestion of using a fixed capitalization ratio for each firm based on the average ratio for the firm's first three years under Section 263A appears to be the most promising. It treats firms as equitably as current law and appears to maintain tax revenues. In measuring the relative impact of Section 263A and assessing the adequacy of simplification proposals, diversity among firms in pre-Section 263A product costing methods was evident. Proposals [1], [2] and [4] attempt to treat either all firms or categories of firms uniformly and fail to account for this diversity. Proposal [3] most adequately deals with this diversity.

CHAPTER 6

CONCLUSIONS, EXTENSIONS AND LIMITATIONS

This study contributes to tax policy literature by revealing the impact of UNICAP on the taxable income of corporations, showing that the tax burden from this law change fell more heavily on small non-LIFO firms. In addition, wholesalers paid relatively more tax than retailers. These firms have relatively more incentive to react to this tax law by reducing inventories, relocating their production facilities outside the United States and/or restructuring their investments away from activities affected by Section 263A. In addition, this study has shown there is potential for decreasing the complexity of Section 263A by identifying a method that appears to capitalize the same amount of costs capitalized under Section 263A without utilizing the allocation procedures required under current law.

Assessment of the Impact of Section 263A

Section 263A resulted in a heavier tax burden for small non-LIFO companies. Small non-LIFO firms in all three industries have an incentive react to Section 263A in the three ways cited. The detrimental impact on small firms is particularly significant since there is evidence that small firms are the primary source of new jobs (Brown, 1989; Bluestone, 1988; Harrison, 1989) and innovation (Rothwell and Zegveld, 1981) in the U.S. Burdening small firms

inhibits the growth of a vibrant sector of the U.S. economy.

The heavier tax burden borne by small non-LIFO companies appears to be the result of noncompliance by these firms with pre-Section 263A product costing rules. Section 263A apparently reduced noncompliance with Section 471 by providing firms the opportunity to correct their product costing methods. However, if failure to comply with Section 471 was due to lack of expertise available to small firms, noncompliance with Section 263A among these firms may be of an even greater magnitude because of Section 263A's complex allocation rules. Small firms may be just as unable to correctly apply Section 263A as they apparently were with respect to Section 471.

Noncompliance by small non-LIFO firms could be the result of tax evasion by these taxpayers rather than noncompliance due to lack of expertise. If small LIFO firms had relatively smaller Section 481(a) adjustments than small non-LIFO firms because LIFO firms complied with Section 471, this suggests the expertise to comply with product costing rules is available to small firms. Noncompliance by small non-LIFO firms in this study and small firms in general is a source of inequity in the tax system and is not easily remedied. The IRS obviously believes enforcing compliance by smaller firms is not cost effective given the infrequency with which they audit these firms.

Wholesalers provide a vital service to the economy by

purchasing from producers in large volume and maintaining an inventory of products that is readily available to retailers. Relative to retailers, wholesalers were penalized more severely by Section 263A for providing the service for which they exist - holding and distributing inventory. Section 263A gives these taxpayers the incentive to reduce inventory levels to the extent possible. However, a substantial reduction in inventory would not seem feasible given that the function of these firms is to serve as a buffer between producers and retailers. Reducing their inventories inhibits their ability to make products available on short notice and reduces their value in the economy.

Moving facilities overseas and establishing a foreign subsidiary would be an option available to few wholesalers. Controlled foreign corporations can avoid compliance with Section 263A in the calculation of their taxable income only if the companies they buy from and sell to are located in the same foreign country. Few wholesale firms would have operations that fit into this category.

Section 263A may be the burden which drives some wholesalers into the service sector of the U.S. economy. Service activities can be established with a minimum investment in inventory and capital assets. Congress either knowingly or unknowingly provided incentives to enter service activities when enacting the TRA. The TRA enacted

Section 263A, repealed the investment tax credit and reduced depreciation allowances. All three changes resulted in a higher tax burden for capital-intensive firms compared to service firms. This study shows Section 263A gave wholesalers an incentive to abandon their current line of business in favor of investments in the service sector.

A final potential reaction by wholesalers in response to Section 263A is abandonment of wholesaling in favor of investment in retail activities. Due to the relatively lighter tax burden imposed on retailers under Section 263A, switching into a related industry like retailing may be a logical step for some wholesalers. Given the vital function the wholesale industry provides in the economy, it is doubtful Congress anticipated the possible reaction of wholesalers abandoning their current line of business in favor of service and retail activities.

The positive relationship between the Section 481(a) adjustment and inventory balance illustrates the penalty imposed by Section 263A for holding inventory. Section 263A either penalizes firms for the inefficiencies associated with carrying excess inventory or prompts them to reduce inventories to a less efficient level.

Poff's (1991) research indicates, in the general case, Section 263A causes firms to maintain inventory levels that are less efficient. As discussed in the case of wholesalers, Section 263A inhibits them from fulfilling

their function as an inventory buffer. The negative impact of this incentive is also illustrated in the popular press where one corporate manager discusses the incentive Section 263A gives him for decreasing inventory despite the fact that maintaining readily available inventory is part of his marketing strategy (Galante and Jacobs, 1987).

The findings of this study provide insight into the effects of the congressional decision to enact this law. Section 263A has imposed a disproportionate amount of tax burden on small non-LIFO companies which seems unwise given the strides small companies make in the areas of product innovation and job creation. In addition, this study shows Section 263A imposed a disproportionate amount of tax burden on wholesalers relative to retailers. Thus, it can be expected that wholesalers reacted more aggressively than retailers to minimize the impact of Section 263A. The consequences of their reaction may have been reduction of an important function in the U.S. economy as wholesalers elected to abandon their current line of business in favor of investments in the service and retail sectors.

Finally, this study confirms the positive relationship between the impact of Section 263A and inventory balance. This finding combined with Poff's evidence that Section 263A provides companies the incentive to reduce inventory to a potentially inefficient level reveals Section 263A may have produced greater inefficiency in the economy rather than the

increased efficiency anticipated.

Assessment of Simplification Proposals

Of the four simplification proposals tested, the suggestion of using a fixed capitalization ratio for each firm based on the average ratio for the firm's first three years under Section 263A appears to meet the two simplification objectives of maintaining current tax revenues and reducing compliance costs. The capitalization ratios needed in calculating the three-year average have already been determined and could no longer be manipulated as a tax avoidance tool. A firm's only other method of lessening the tax impact of this proposal is through reduction of inventory. As shown previously, firms already had an incentive to reduce inventories when Section 263A was enacted. It can be assumed firms have already utilized this technique for reducing tax liability to the extent possible.

The proposal reduces compliance costs by eliminating the annual procedure of identifying the amount of additional product costs. In the example in Appendix E, Steps One through Four are required to identify these additional product costs and calculate the capitalization ratio used in Step Five. Steps One through Four are eliminated if a capitalization ratio has already been determined. In addition, auditing compliance with Section 263A becomes more expedient. If cost allocation procedures were correctly applied in the first three years, subsequent audits require

only verification that the three-year average capitalization ratio was used to value inventory in the current year.

This simplification proposal is a feasible alternative from the taxpayer's perspective given that information to implement the proposal is readily available. Thus, compliance costs of implementing this proposal would be minimal. Furthermore, the proposal is firm specific and therefore most likely to treat firms as equitably as current law.

One problem with the use of a constant capitalization ratio is that no allowance is made for changes in the structure of firm operations. Over time, a firm may reduce indirect production costs, lowering its actual capitalization ratio. Changes causing the capitalization ratio to increase could occur as well.

A suggestion for dealing with changes in firm operations was presented in the Ways and Means Committee's Written Proposals on Tax Simplification (Committee on Ways and Means, 1990). Use of an average capitalization ratio could be elected at the taxpayer's option. If the taxpayer perceives his capitalization ratio has changed, he could revert to the procedure of computing the ratio annually. Another option would be to allow the taxpayer to elect to calculate a new three-year average (to be applied prospectively) if business operations change.

These elections would allow taxpayers with stable operations to eliminate the recurring administrative costs associated with calculating the capitalization ratio annually, but give taxpayers the option of changing their capitalization ratio if business operations change. The flexibility of allowing taxpayers to change their ratios will cause some loss of tax revenue. Indeed, given the rapid rate of technological change, many firms may eventually elect to change their capitalization ratio. However, given the high administrative costs associated with recalculating this ratio, a change would not be elected by taxpayers unless a substantial change in business operations has occurred. In these situations a change is probably warranted on the basis of tax equity.

Testing of simplification proposals has provided evidence that the administrative costs of Section 263A can be reduced. This finding is significant given evidence from Colley, Segal and Volkan (1991) that compliance costs outweighed the tax liability impact of Section 263A. Congress should consider simplification of Section 263A by pursuing methods similar to the ideal proposal identified in this study.

Extensions

A fruitful extension of this research would be assessment of the impact of Section 263A using a randomly selected sample of corporate tax returns. Estimation of the

regression models used in this study with other samples would provide useful comparisons. Currently only the IRS has access to a random sample of tax return data for individual corporations. The significant findings of this study may enhance IRS interest in providing this data.

This study has provided a simplification proposal which appears to capitalize the same amount of product costs as current Section 263A rules. Due to limited access to data, only a limited test of this proposal using 11 manufacturing firms was conducted. More comprehensive tests of this proposal using a larger sample and more diverse firms should be conducted to determine its adequacy.

In addition, this proposal should be compared with an alternative proposal recently introduced in the U.S. House of Representatives (Committee on Ways and Means, 1991). The Ways and Means Committee proposal suggests implementation of function or department capitalization ratios based on a four-year average ratio of production costs to total costs for each department or function. The new proposal may result in greater accuracy since average ratios are computed at the department or function level. However, the compliance costs of this proposal are also higher since more calculations are required. Comparisons should be made to determine which proposal dominates in providing both simplification and stable tax revenues.

Limitations

This study is limited by the constraints of the sample. The sample includes only corporate taxpayers. Partnerships and sole proprietorships involved in manufacturing, wholesaling and retailing are also subject to UNICAP, but were not included. Therefore, results of the analyses can only be generalized to corporate taxpayers. However, all taxpayers affected by Section 263A are subject to the same rules and elections and no systematic difference between corporate and noncorporate taxpayers is suspected.

The sample was obtained from CPA firms that agreed to participate in the study (about 50% of the CPA firms contacted, participated). In addition, sample firms were not randomly selected. Both these factors introduce bias into the sample. However, no systematic difference between sample firms and firms in the population of corporate taxpayers is suspected.

Use of a nonrandom sample of relatively small firms may be more of a concern in the conclusions reached regarding simplification proposals. Although evidence from this study indicates Proposal [3] best meets the objectives of maintaining current tax revenues and reducing compliance costs, the other proposals could have fared better with a different sample. For example, the expectation that pension and depreciation expense would make up the majority of additional Section 263A costs was formulated based on

experience with companies much larger than those in the sample. Proposals [1], [2] and [4] should not be discarded until a larger, more representative sample of firms can be obtained to assess their adequacy.

REFERENCES

- Atkinson, Anthony B. and Joseph E. Stiglitz. Lectures on Public Economics. McGraw-Hill: New York, New York (1980): 23-61.
- Ballentine, Gregory J. "Where is the Income Tax Rationale for the Shift to Higher Corporate Taxes?" Tax Notes. (February 3, 1986): 443-446.
- Bernard, Victor L. "Capital Markets Research in Accounting During the 1980s: A Critical Review." Working Paper. (May, 1989).
- Bluestone, Mimi. "High-Tech Leads the Way in Job Growth." Business Week. (December, 19, 1988): 95.
- Brown, Buck. "New Data on Job Growth Shows Some Surprises." Wall Street Journal. (March 23, 1989): B1.
- Clotfelter, Charles T. "Tax Evasion and Tax Rates: An Analysis of Individual Returns." The Review of Economics and Statistics. (August, 1983): 363-373.
- Colley, J. Ron, Mark A. Segal and Ara G. Volkan. "Preliminary Observations on the Impact of the Uniform Inventory Capitalization Rules: A Pilot Study." Working Paper. (July, 1991).
- Committee on Ways and Means. "Tax Reform Act of 1985." Internal Revenue Cumulative Bulletin 1986-3 Volume 2. Washington, D.C.: U.S. Government Printing Office (1985): 615-638.
- Committee on Ways and Means. "Written Proposals on Tax Simplification." Washington, D.C.: U.S. Government Printing Office (May 25, 1990).
- Committee on Ways and Means. "Tax Simplification Bill of 1991." H.R. 2775 and H.R. 2777. Commerce Clearing House: Chicago, Illinois (June 26, 1991): 12-13.
- Committee on Finance. "Tax Reform Act of 1986." Internal Revenue Cumulative Bulletin 1986-3 Volume 3. Washington, D.C.: U.S. Government Printing Office (1986): 133-152.
- Feldstein, Martin. "A Gamble With Capital Formation." The Wall Street Journal. (May 19, 1986): 20.

- Galante, Steven P. and Sanford L. Jacobs. "Senate Tax Plan's Biggest Plus is Decline in Individual Rates." The Wall Street Journal. (May 12, 1986): 27.
- Galante, Steven P. and Sanford L. Jacobs. "New Inventory-Expense Rules Increase Costs at Many Firms." The Wall Street Journal. (June 29, 1987): 27.
- Garrett, Richard W. "Implementing the New 'Super' Full-Absorption Rules." Corporate Accounting. (1987, Vol. 5, No. 4): 42-47.
- Gunn, John W. and Jennifer L. Luscher. "Effect of New Uniform Capitalization Rules on Foreign Transactions." The Journal of Taxation. (August, 1987): 90-94.
- Harrison, Bennett. "Who Innovates?" Technology Review. (April, 1989): 15 and 77.
- Heller, Walter P. and Karl Shell. "On Optimal Taxation with Costly Administration." American Economic Review. (May, 1974): 338-345.
- Herdman, Robert K. and Robert D. Neary. "After Tax Reform: Accounting for Inventories." Financial Executive. (November/December, 1987): 16-20.
- Internal Revenue Service. Corporation Income Tax Returns: 1986 Statistics of Income. Washington D.C.: U.S. Government Printing Office (1989).
- Jackson, Betty R., Valerie C. Milliron and Daniel R. Toy. "Tax Practitioners and the Government." Tax Notes. (October 17, 1988): 333-341.
- Jacobs, Sanford L. "Small-Business Conferees Voice Worries About Impact of Overhaul." The Wall Street Journal. (August 19, 1986): 7.
- Jarque, C. M. and A. K. Bera. "Efficient Tests for Normality, Homoscedasticity and Serial Independence of Regression Residuals." Economics Letters. 6 (1980): 255-259.
- Joint Committee on Taxation. "Conference Committee Report on the Tax Reform Act of 1986." Internal Revenue Cumulative Bulletin 1986-3 Volume 4. Washington, D.C.: U.S. Government Printing Office (1986): 302-309.

- Kotlikoff, Laurence J. and Lawrence H. Summers. "Tax Incidence." In Handbook of Public Economics: Volume II. edited by Alan J. Auerbach and Martin Feldstein. North Holland: Amsterdam (1987): 1043-1092.
- O'Boyle, Thomas F. "Last in, Right Out: Firms' Newfound Skill In Managing Inventory May Soften Downturn." The Wall Street Journal. (November 19, 1990): A1 and A6.
- Parker, Wilbur. "Business Groups Debate Economic Impact of Reform." Tax Notes. (July 1, 1985a): 11-12.
- Parker, Wilbur. "Multinationals Assail Impact of Administration Proposal on U.S. Competitive Position." Tax Notes. (July 15, 1985b): 234-235.
- Poff, J. Kent. "An Economic Analysis of Uniform Capitalization of Inventory Costs Under Section 263A of the Internal Revenue Code of 1986." Unpublished dissertation, Virginia Polytechnic Institute and State University. (May, 1991).
- Porcano, Thomas M. "Corporate Tax Rates: Progressive, Proportional, or Regressive." The Journal of the American Taxation Association. (Spring, 1986): 17-31.
- Rosen, Harvey S. Public finance. Richard D. Irwin: Homewood, Illinois (1988): 264-290.
- Rothwell, Roy and Walter Zegveld. Industrial Innovation and Public Policy. Greenwood Press: Westport, Connecticut (1981): 184-193.
- Seago, W. Eugene. "Uniform Capitalization Applied to Small Business Inventories." Tax Notes. (December 14, 1987): 1157-1166.
- Sheppard, Lee A. "Myths Debunked at Senate Finance Reform Hearing." Tax Notes. (February 10, 1986a): 479-481.
- Sheppard, Lee A. "Brookings Conference Explores New Tax Law." Tax Notes. (December 8, 1986b): 879-881.
- Sheppard, Lee A. "Economists Analyze the 1986 Act's Corporate Tax Shift." Tax Notes. (February 9, 1987): 536-537.

- Slemrod, Joel. "Optimal Taxation and Optimal Tax Systems." Journal of Economic Perspectives. (Winter, 1990): 157-178.
- Spanos, Aris. Statistical Foundations of Econometric Modelling. Cambridge University Press, Cambridge, England (1986).
- Summers, Lawrence H. "Should Tax Reform Level the Playing Field?" National Bureau of Economic Research Working Paper No. 2132. Cambridge, Massachusetts. (January, 1987).
- United States House of Representatives. House Report No. 841. 99th Congress, Second Session. (1986): 873.
- United States Treasury Department. "Tax Reform for Fairness, Simplicity and Economic Growth: The Treasury Department Report to the President." Volume 2. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. (November, 1984): 152-176 and 202-211.
- The Wall Street Journal. "'Painful' to Insurance Industry, 'Moot' to Oil Firms: Tax Bill Viewed by Most as the End of Uncertainty." (May 14, 1986): 3 and 11.
- The Wall Street Journal. "Tax Report." (February 4, 1987): 1.
- White, Halbert. "A Heteroskedasticity-consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." Econometrica. (May, 1980): 817-838.
- Witte, Ann D. and Diane F. Woodbury. "The Effect of Tax Laws and Tax Administration on Tax Compliance: The Case of the U.S. Individual Income Tax." National Tax Journal. (March, 1985): 1-13.

APPENDIX A

IMPLEMENTATION OF SECTION 263A

Assumptions:

- Firm must treat \$2,000 of purchasing costs as a product cost under Section 263A.
- \$400 of this \$2,000 remains in ending inventory at year end.

	1986 <u>WITHOUT 263A</u>	1987 <u>WITH 263A</u>
Sales	50,000	50,000
Cost of Goods Sold:		
Beginning Inventory	5,000	5,400
Purchases	10,000	10,000
Additional 263A Costs	<u>-0-</u>	<u>2,000</u>
Cost of Goods Available	15,000	17,400
Ending Inventory	<u>< 5,000 ></u>	<u>< 5,400 ></u>
Cost of Goods Sold	<u><10,000></u>	<u><12,000></u>
Gross Profit	40,000	38,000
Selling and Administration	<u>< 2,000 ></u>	<u>-0-</u>
Taxable Income b/f Adjust.	38,000	38,000
Section 481(a) Adjustment	<u>-0-</u>	<u>100</u>
Taxable Income	<u>38,000</u>	<u>38,100</u>

Net effect is 1/4 of \$400 of deductions taken in 1986 are added to 1987 taxable income.

APPENDIX B
FORM 1120 DATA ITEMS

	1986 (Tax Years Beginning After 12/31/85)	1987 (Tax Years Beginning After 12/31/86)
--	--	--

Page 1:

Business Code - Item C
(Include only firms with codes 2010 - 3998 and 5008 - 5995)

Net Receipts - Ln 1c		
Salaries and Wages - Ln 13a		
Depreciation - Ln 20		
Schedule A Depr. - Ln 21a		
Pension - Ln 24		
Employee Benefits - Ln 25		
Net Operating Loss - Ln 29a		
Taxable Income - Ln 30		

Page 2, Schedule A:

Beginning Inventory - Ln 1		
Cost of Labor - Ln 3		
Additional 263A Cost - Ln 4a (if there is an entry)***		
Ending Inventory - Line 6		
% of LIFO Inventory - Line 8c (if there is an entry)		

Page 4, Schedule L:

Beginning of Year Depreciable Assets - Line 9 column a		
End of Year Depreciable Assets - Line 9 column c		
Beginning of Year Total Assets - Line 14 column b		

APPENDIX C

ORIGINAL MODELS AND RESULTS

$$[a] \quad \text{ADJ} = b_0 + b_1 \text{SIZE} + b_2 \text{LIFO} + b_3 \text{SIZE}^2 + b_4 \text{LIFO}^2 + b_5 \text{SIZE} \times \text{LIFO} + \epsilon,$$

$$[b] \quad \text{ADJ} = b_0 + b_1 \text{SIZE} + b_2 \text{LIFO} + b_3 \text{SIZE}^2 + b_4 \text{LIFO}^2 + b_5 \text{SIZE} \times \text{LIFO} + b_6 \text{IND}_m + \epsilon,$$

$$[c] \quad \text{ADJ} = b_0 + b_1 \text{SIZE} + b_2 \text{LIFO} + b_3 \text{SIZE}^2 + b_4 \text{LIFO}^2 + b_5 \text{SIZE} \times \text{LIFO} + b_6 \text{IND}_w + \epsilon,$$

where:

ADJ is the firm's Section 481(a) adjustment scaled by net receipts for taxable year 1986,

SIZE is a continuous variable indicating a firm's net receipts for taxable year 1986,

LIFO is a continuous variable indicating the percentage of beginning inventory valued under the LIFO inventory method as revealed by Item 8c on Schedule A,

SIZE² is a continuous variable calculated by squaring net receipts for taxable year 1986,

LIFO² is a continuous variable calculated by squaring the percentage of beginning inventory valued under the LIFO inventory method,

SIZE x LIFO is an interaction term which allows the impact of using the LIFO inventory method to vary with firm size,

IND_m is a {0,1} variable which equals one if the firm is classified as a manufacturer based on its business code and zero otherwise,

IND_w is a {0,1} variable which equals one if the firm is classified as a wholesaler based on its business code and zero otherwise, and

ϵ is a residual term.

The results of the initial regression models are reported in Table 9. The initial models did not provide support for any of the hypothesized effects. None of the three models explained a significant portion of the variation in the dependent variable. Therefore, ways of improving the specification of the models were considered. The final models and their results are presented in Chapters 4 and 5 respectively.

TABLE 9

Relative Impact of Section 263A
(p-value in parenthesis)

Model	[a]	[b]	[c]
Number of Firms	48	48	21
<u>Independent Variables:</u>			
Intercept	.01619 (.0007) **	.01399 (.0382) *	-9.11724e ⁻⁰⁶ (.9983)
SIZE	-2.41536e ⁻¹⁰ (.0907)	-2.11948e ⁻¹⁰ (.1776)	-7.58013e ⁻¹³ (.9917)
SIZE ²	1.77390e ⁻²⁰ (.8692)	8.44155e ⁻²¹ (.9391)	-1.21476e ⁻²⁰ (.8558)
LIFO	.00476 (.9187)	.00617 (.8961)	.01878 (.4991)
LIFO ²	-0.01562 (.7414)	-0.01646 (.7308)	-0.01452 (.5971)
SIZExLIFO	2.40091e ⁻¹⁰ (.2309)	2.21027e ⁻¹⁰ (.2838)	1.40851e ⁻¹¹ (.8977)
IND _m		.00259 (.6441)	
IND _w			.00437 (.2073)
<u>Model:</u>			
F-statistic	.91 (.4840)	.78 (.5904)	.68 (.6698)
R ²	.098	.102	.225
*	Significant at $\alpha = .05$		
**	Significant at $\alpha = .01$		

APPENDIX D

TESTS OF ASSUMPTIONS AND PREDICTIVE ACCURACY

Tests of Assumptions

Diagnostic tests were performed on the quadratic and logarithmic models to test the assumptions of homoscedasticity, linear conditional mean and normality of the regression error terms. The results of these tests are presented in Table 10.

TABLE 10
Ordinary Least Squares Regression
Tests of Assumptions

	<u>Quadratic</u>	<u>Logarithmic</u>
Homoscedasticity:	Satisfied	Satisfied
F-statistic	1.2217	.3119
Degrees of Freedom	(p = .3356) [15,19]	(p = .9894) [17,17]
Linearity:	Violated	Satisfied
F-statistic	6.909	.3791
Degrees of Freedom	(p < .005) [2,33]	(p > .25) [2,33]
Normality:	Violated	Satisfied
CHI ²	156.204	3.219
Degrees of Freedom	(p < .001) [2]	(p > .1) [2]

Homoscedasticity is the condition where the variance of the error terms is assumed constant and not a function of any of the independent variables. This assumption was tested using a test suggested by White (1980). The results indicate both models satisfy the assumption of constant

variance.

The assumption of linear conditional mean was tested using the auxiliary regression (Spanos, 1986):

$$\hat{e}_i = \alpha_i + \beta_{1i} + \dots + \beta_{ki} + \delta_2 \hat{Y}_i^2 + \delta_3 \hat{Y}_i^3 + e_i$$

An F-test is used to test the null hypothesis that $\delta_2 = \delta_3 = 0$. The test statistic is:

$$F_0 = \frac{[n - k]}{q} \frac{[RSSE - USSE]}{[RSSE]} \sim F_{(q, n - k)}$$

where,
RSSE = restricted sum of squares error
USSE = unrestricted sum of squares error
n = number of observations
k = number of parameters in the unrestricted model
q = number of restrictions.

This assumption was violated by the quadratic model, but satisfied by the logarithmic model.

Normality was testing using a test suggested by Jarque and Bera (1980) which is a dual test for skewness and kurtosis (heavy tails). Only the logarithmic model meets the assumption that the error terms have a Gaussian distribution. Based on the above tests, the logarithmic model is a statistically adequate summary of the data.

Comparison of Predictive Accuracy

A comparison test of the quadratic and logarithmic models was performed to verify the logarithmic model as the best fit. The test compares the R^2 and p-values of the two models after accounting for the logarithmic transformation.

The logarithmic model predicts the natural logarithm of the Section 481(a) adjustment/net receipts ratio. Predicted values from this regression were transformed back into the original scale by taking the antilog of each value. These values were then regressed on the actual Section 481(a)/net receipts ratios to obtain F-statistic and R² values comparable to those of the quadratic model. The logarithmic model is clearly superior on predictive grounds as shown in Table 11.

TABLE 11
Comparison of Quadratic and Logarithmic Models
Based on Predictive Accuracy

	<u>Quadratic</u>	<u>Logarithmic</u>
R ²	.494	.707
F-statistic	3.42	106.09
	(p = .0033)	(p = .0001)

Collinearity and Outlier Tests

To further establish adequacy of the logarithmic model, the effect of collinearity and highly influential observations was assessed. The correlation matrix of independent variables in the logarithmic model indicated lnSIZE and [lnSIZE]² were highly correlated. The model was rerun deleting [lnSIZE]². The signs of the regression coefficients and their significance remained stable. Influence diagnostics indicated two observations were highly influential. The model was rerun deleting both of these

observations. Once again, the coefficients and their significance remained stable. The above procedures provide evidence the model is robust.

APPENDIX E

APPLICATION OF SIMPLIFIED METHODS

Step One: Identify costs that are now inventoriable:

Tax depreciation > financial amount	100,000
Current pension costs	20,000
Purchasing and Selling Dept. Payroll	60,000

Step Two: Identify cost centers and allocation bases:

1. Production - 2 employees, \$50,000 payroll
 - \$500,000 of depreciable assets
 - \$600,000 of other production costs

2. Purchasing & Selling (mixed service cost dept.)
 - 2 employees, \$60,000 payroll currently treated as a period cost
 - \$25,000 of depreciable assets
 - \$65,000 of other selling costs

Step Three: Allocate new inventoriable costs to cost centers:

	Depreciable Assets	% Of Total	Excess Depr.	Allocated Depr.
Production	\$500,000	95%	\$100,000	\$95,000
Purchasing & Sell.	<u>25,000</u>	5%	100,000	5,000
Total	525,000			

	Number of Employees	% Of Total	Pension Cost	Allocated Pension
Production	2	50%	\$20,000	\$10,000
Purchasing & Sell.	<u>2</u>	50%	20,000	10,000
Total	4			

APPENDIX E (continued)

APPLICATION OF SIMPLIFIED METHODS

Step Four: Allocate mixed service costs to production:

Mixed Service Costs X	<u>Production Costs (excl. mixed service costs)</u> Total Costs (excl. mixed service costs)	=
[5,000]		
[+10,000]	X $\frac{650,000 + 95,000 + 10,000}{650,000 + 95,000 + 10,000 + 65,000}$	= <u>69,000</u>
[+60,000]		

Step Five: Allocate production costs between cost of goods sold and ending inventory:
(assume ending inventory under the former method of accounting method is \$20,000)

[1 + (<u>Additional Section 263A Costs</u>)]	X	Ending Inventory	
[(Total Production Costs(pre-263A))]		(pre-263A)	
[1 + $\frac{95,000 + 10,000 + 69,000}{650,000}$]	X	20,000	= <u>25,400</u>

NOTE: Simplified methods are followed in steps four and five. All firms must develop and follow procedures similar to those used in steps one through three regardless of whether a simplified method is elected.

In this example, additional Section 263A costs can be identified as 99.6% (\$99,600) of excess depreciation and 96% (\$19,200) of current pension costs and 92% (\$55,200) of Purchasing and Selling Department payroll.

PAUL G. SCHLOEMER

- EDUCATION Ph.D in Business Administration with a major in Accounting, Virginia Polytechnic Institute and State University, October, 1991.
- Master of Accountancy, Miami University (of Ohio), August, 1984.
- Bachelor of Science in Business Administration with majors in Accounting and Finance, Bowling Green State University, May, 1983.
- TEACHING
EXPERIENCE Instructor, Virginia Polytechnic Institute and State University, 1991.
- Graduate Teaching Assistant, Virginia Polytechnic Institute and State University, 1988 to 1990.
- ACCOUNTING
WORK
EXPERIENCE Senior Tax Consultant, Deloitte, Haskins and Sells, Columbus, Ohio, 1985 to 1988.
- Auditor, Price Waterhouse, Columbus, Ohio, 1984 to 1985.
- HONORS Pauline Corn Graduate Teaching Assistant Award, Virginia Polytechnic Institute and State University, 1991.
- PERSONAL Born December 1, 1957

Paul Schloemer