Earnings Management During Import Relief Investigations

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1. Introduction

This study tests whether firms that would benefit from import relief (e.g., tariff increases and quota reductions) attempt to decrease earnings through earnings management during import relief investigations by the United States International Trade Commission (ITC). The import relief determination made by the ITC is based on several factors that are specified in the federal trade acts, including the profitability of the industry. Explicit use of accounting numbers in import relief regulation provides incentives for managers to manage earnings in order to increase the likelihood of obtaining import relief and/or increase the amount of relief granted.

While studies of earnings management typically examine situations in which all contracting parties have incentives to "perfectly" monitor (adjust) accounting numbers for such manipulation, import relief investigations provide a specific motive for earnings management that is not

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provided in other earnings management studies. Import relief is a wealth transfer from a group of diffuse losers (consumers) to a group of concentrated winners (all other contracting parties of domestic producers receiving import relief). I argue that consumers do not monitor earnings management as effectively as losers examined in other studies because the loss to each consumer is smaller, and their interests more diverse, than for the contracting parties examined in these studies. Regulators have less incentive to adjust for managers' earnings manipulations since their ultimate payoff for such adjustment is less direct than in other situations previously studied (e.g., union contract negotiations). Furthermore, interviews of ITC regulators indicate that the ITC does not adjust financial data for accounting procedures used or for accrual decisions made by firms.

This study documents the use of accounting numbers in a federal government program as a basis for wealth transfers (i.e., import relief). An estimate of the discretionary component of total accruals is used as the measure of earnings management rather than the discretionary component of a single accrual (as used in McNichols and Wilson [1988]). The discretionary component of total accruals is more appropriate in this context because the ITC is interested in earnings before taxes, which includes the effects of all accrual accounts, and, as such, managers are likely to use several accruals to reduce reported earnings. Firm-specific expectations models are developed to estimate normal (non-discretionary) accruals. The expectations models control for the effects of economic conditions on the level of accruals. I conduct a cross-sectional analysis to test whether estimated discretionary accruals (i.e., residuals from the estimated expectations models) tend to be income-decreasing during the import relief investigation period. The methodology developed in this study extends the methodology used in other earnings management studies; specifically, time-series models are developed to estimate total nondiscretionary accruals and cross-sectional tests of the earnings management hypothesis are applied. The results of these tests are consistent with the hypothesis that managers decrease earnings through earnings management during import relief investigations. This evidence

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1 Examples of other contracting parties are management, shareholders, debtholders, and employees. It should be noted that the long-run effects of import relief are not well understood. It may be the case that the short-term costs to consumers (i.e., wealth transfers due to import relief) are offset in the long-run by benefits from a stronger domestic industry.

2 For example, employees during union contract negotiations (Liberty and Zimmerman [1986]), shareholders in setting management compensation (Healy [1985]), shareholders in management buyouts (DeAngelo [1986]), and shareholders in proxy contests (DeAngelo [1988]).

3 As I discuss later, the ITC has been organized in such a way as to minimize the effect of voters on the ITC's actions; therefore, the ITC may have less incentive to adjust than regulators in situations in which voters have a more direct influence. In either case, the payoff to regulators for adjusting for managers' opportunistic accounting choices is less direct than it is for other contracting parties such as debtholders and stockholders.
is of particular importance in the light of the current interest in import protection.

The next section provides institutional background for import relief determinations. Section 3 develops the hypothesis to be tested. Section 4 contains the sample selection procedures and descriptive statistics. Section 5 reports the results of the empirical tests. The last section provides conclusions.

2. Role of Accounting Numbers in Foreign Trade Regulation

Foreign trade regulation provides avenues for granting import relief through tariffs, quotas, marketing agreements, and/or federal adjustment assistance. In most cases, an increase in import protection results in a wealth transfer from domestic consumers, domestic importers, and foreign suppliers to domestic producers of the protected good. Agents in the domestic producers’ nexus of contracts, such as employees, stockholders, debtholders, and suppliers, cannot be hurt directly by the import protection and instead may benefit. Managers of firms that would benefit from increased import protection have incentives to take actions to increase the likelihood of obtaining such protection and/or increase the amount of protection granted. The ways in which managers can increase the expected value of the import relief depend on the factors considered by the regulators when making import relief decisions. In the remainder of this section, I review these factors.

2.1 Statutory Provisions of the Foreign Trade Acts

The major statutory provisions of the foreign trade acts that relate to import relief are summarized in Appendix A. The first three statutes, which pertain to general escape clause, countervailing duty, and antidumping investigations, are the primary focus of this study. Title VII of the Tariff Act of 1930 was designed to protect domestic industries from imports that are sold at less than fair value (antidumping) or are benefiting from foreign subsidies (countervailing duty). The general escape clause investigations are based on section 201 of the Trade Act of 1974, which was designed to aid domestic industries that are seriously injured by increased imports. Section 201 is based on article XIX of the General Agreement on Tariffs and Trade (GATT), which permits a country to “escape” (hence the term “escape clause”) temporarily from its obligations under the GATT when increased imports of a specific product are causing or threatening to cause serious injury to domestic producers of a like or directly competitive product. ITC investigations conducted under section 201 provide a basis for the president to invoke article XIX of the GATT.

4 Except to the extent that the contracting parties are also consumers.
The antidumping, countervailing duty, and general escape clause statutes require the ITC to make a favorable injury decision before import relief can be granted.\(^5\) In the case of countervailing duty and antidumping cases, once the ITC has determined that an industry is being injured by imports, the Department of Commerce determines the increase in tariffs necessary to offset the dumping margin or foreign subsidy. If the ITC rules favorably in general escape clause investigations, a recommendation is made by the ITC to the president to grant the industry some specified type of import relief. The president has 60 days to make his import relief decision. If the president does not grant any import relief or grants relief that differs from that recommended by the ITC, Congress can override the president’s decision and accept the ITC’s recommendation by obtaining an affirmative vote in each House within 90 days after the president’s decision. In each of these three types of investigations, the ITC must find that the industry has been injured before import relief can be granted.

The federal trade acts specify the factors to be considered when making import relief decisions. In the case of general escape clause investigations, the Trade Act of 1974 states that in determining injury:

... the Commission shall take into account all economic factors which it considers relevant, including (but not limited to)—

(A) with respect to serious injury, the significant idling of productive facilities in the industry, the inability of a significant number of firms to operate at a reasonable level of profit, and significant unemployment or underemployment within the industry;

(B) with respect to threat of serious injury, a decline in sales, a higher and growing inventory, and a downward trend in production, profits, wages, or employment (or increasing underemployment) in the domestic industry concerned ... (19 USC 2251(b)(2)). [Emphasis added.]

The factors to be considered in antidumping and countervailing duty investigations are as follows:

(1) actual and potential decline in output, sales, market share, profits, productivity, return on investments, and utilization of capacity,

(2) factors affecting domestic prices, and

(3) actual and potential negative effects on cash flow,\(^6\) inventories, employment, wages, growth, ability to raise capital, and investment (Trade Agreements Act of 1979, section 771 (19 USC 1677(7))). [Emphasis added.]

Since injury determinations specifically call for the use of accounting numbers (i.e., profits, sales, and inventories) in foreign trade regulation, the remainder of this paper addresses the three types of investigations that require such determinations.

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\(^5\) The ITC is responsible for making all injury decisions under the foreign trade statutes.

\(^6\) The definition of cash flows used by the ITC is income before tax plus depreciation expense.
2.2 USE OF ACCOUNTING NUMBERS BY THE ITC

The use of accounting numbers by the ITC is not only specified in the trade acts but is also apparent in other ways. A review of 50 petitions filed with the ITC for import relief investigations reveals that most petitioners cite the poor financial condition of the domestic producers as an indication of the industry's need for import protection. In an article regarding the copper industry's petition for import relief, the *Wall Street Journal* states that "the eleven copper producers that filed the complaint cited a $623 million loss last year" (*Wall Street Journal* [January 27, 1984], p. 45). Another indication of the ITC's use of accounting numbers is reflected in the public version of its staff reports, which include a section devoted to industry financial performance. An analysis of the income statement through net operating profit (or loss) before taxes for the industry is always presented. The commissioners' injury opinions, which are included in the ITC staff reports, always include a discussion of the financial performance of the industry. All commissioners and commissioners' aides that I interviewed agreed that the financial condition of the industry is a key factor considered in injury determinations.

The use of accounting numbers by the ITC provides an incentive for managers to manage earnings in order to increase the apparent injury to the firm and, thereby, the industry.

Staff members at the ITC indicated that the footwear industry was a prime candidate for inclusion in this study. Their reasoning was as follows:
follows. The footwear industry originally petitioned for an import relief investigation in 1984. Later that year, the ITC ruled that the footwear industry was not being injured. One reason for this finding was the fact that the footwear industry was relatively profitable in the most recent periods. The petitioners later took their case to their congressional representatives. The federal trade statutes specify that, in the case of general escape clause investigations, one year must elapse between the ITC's recommendation to the president and commencement of another general escape clause investigation unless there is good cause to forego the required waiting period (Trade Act of 1974, 19 USC 2251(e)). The Senate Committee on Finance issued a resolution stating that they believed circumstances had changed since the ITC's recommendation to the president in 1984; therefore, they requested that the ITC institute a second investigation. ITC Chairwoman Stern found in the second investigation (1985) that "while the data in the previous investigation showed that producers of the majority of domestic production were experiencing strong profits, our most recent data show otherwise" (United States International Trade Commission, Publication no. 1717, p. 19). The sudden and dramatic drop in profitability of the footwear industry led some staff members at the ITC to wonder if managers of these firms had taken steps deliberately to decrease reported earnings during the second investigation period. ITC staff members do not believe that the footwear industry is the only case in which managers may have deliberately reduced profits during import relief investigations; instead, they believe that it depicts an obvious case in which deliberate reduction of profits is a possibility.

Managers have greater incentives to make income-decreasing accounting choices if they believe that the regulators do not completely adjust for these choices. Neither the public nor the regulators are necessarily thought to be "fooled" by the accounting numbers reported by domestic producers. Instead, the regulators may be "captured" or may simply not regard "undoing" the reported numbers to be cost effective. On the

11 The waiting period differs if the industry is granted import relief by the president as a result of the earlier investigation. A general escape clause investigation cannot be undertaken unless two years have elapsed since the last day on which import relief was provided (Trade Agreement of 1974, 19 USC 2253(j)).

12 It should be noted that in 1916 the ITC (then called the United States Tariff Commission) was established as a nonpartisan information-gathering agency. Many of the early advocates of the tariff commission had hoped to 'take the tariff out of politics' by establishing a nonpartisan agency to analyze the impact of various tariff structures (Dobson [1976]). But as Dobson also notes, this was an impossible task for an issue as emotional as foreign trade regulation. Over the past 70 years, Congress has attempted to insulate the ITC from politics by limiting the terms of the six commissioners (who are presidential appointees) to one nine-year appointment, limiting the number of commissioners from each political party to three, and staggering the terms of the commissioners. The overall effectiveness of these restrictions is not central to this study, but it appears as though politics have not been completely eliminated from the ITC.
other hand, voters may realize that they could personally benefit from opposing special interest groups (i.e., domestic producers seeking import relief), but this personal gain might not exceed the costs of information search, lobbying, and forming coalitions. As stated by Peltzman [1976, p. 212], “producer protection represents the dominance of a small group with a large per capita stake over the large group (consumers) with more diffused interests.” In summary, while regulators might not adjust the accounting numbers for various reasons, consumers would not be able to form effective coalitions to oppose this practice because the potential benefit to each consumer is too small, and their interests too diverse, to make such opposition cost effective.

Peltzman [1976] also argues that regulators will not exclusively serve one economic interest (e.g., domestic producers) but will instead help the groups that provide the greatest amount of personal gain to the regulator. Thus, not all domestic industries seeking import relief can be expected to obtain the desired relief. If all domestic producers are granted relief, there may be less incentive for them to increase the apparent injury to the industry.13 In a subsequent section, a description of the sample used in this paper is presented which is consistent with Peltzman’s theory that the regulators (i.e., the ITC) will not exclusively serve one economic interest (that of domestic producers).

2.3 ITC SOURCES OF FINANCIAL INFORMATION

The ITC obtains its financial information from the domestic producers’ audited financial statements, 10-Ks, and responses to an ITC questionnaire called the Producer’s Questionnaire. The financial information collected in the Producer’s Questionnaire is similar to that reported in firms’ annual reports, but it is disaggregated by product line and/or establishment.14 Appendix B contains a summary of the data requested in the Producer’s Questionnaire. A company official is required to affirm that the questionnaire is complete and correct to the best of his/her knowledge and beliefs. Domestic producers are required under law to provide the requested data and subpoenas can be used to obtain the information if the producers fail to comply. The ITC attempts to obtain information from all domestic producers unless there are a very large number of small producers, in which case the ITC requests information from a subset of the small producers. The ITC aggregates the data provided by the producers into industry totals.

13 Domestic producers may still have incentives to increase the apparent injury to the industry in order to provide an “excuse” for the ITC to recommend import relief. Also, if the industry granted import relief appears to be injured, it may reduce the risk of retaliation by foreign governments.

14 An establishment is defined by the ITC as “each facility in the United States in which product A is produced, including auxiliary facilities operated in conjunction with (whether or not physically separate from) such production facilities.” This definition was taken from a sample Producer’s Questionnaire provided by the ITC.
The Trade Act of 1979 provides for the verification of information submitted to the ITC by domestic producers. The Act provides that "... the administering authority shall verify all information relied upon in making a final determination in an investigation. ... If the administering authority is unable to verify the accuracy of the information submitted, it shall use the best information available to it as the basis for its determination..." (Trade Act of 1979, section 776 (19 USC 1677e)).

The following details of the verification process used by the ITC were obtained from interviews with members of the investigative staff of the ITC. The ITC does not verify any information in the audited financial statements or 10-Ks, nor do they make any adjustments to these data. Verification of the submitted data is restricted to the product line and/or establishment data provided in the Producer's Questionnaire. Most of the verification process is aimed at determining whether the cost allocation methods used were appropriate and consistently applied. The ITC does not attempt to adjust the financial data for accounting procedures used or for accrual decisions made by the firms' managers.

3. Hypothesis Development

3.1 EARNINGS MANAGEMENT HYPOTHESIS

The ITC's use of reported earnings in injury determinations provides an incentive for managers to make accounting choices that increase the apparent injury of the firm. By doing so, managers may increase the probability of obtaining the desired import relief and/or increase the amount of relief granted; therefore, the link between accounting numbers and injury determinations may result in managers' accounting choices having economic consequences (i.e., wealth transfers from consumers to domestic producers due to import relief). This incentive leads to the following hypothesis.

EARNINGS MANAGEMENT HYPOTHESIS: Managers of domestic producers that would benefit from import protection make accounting choices that reduce reported earnings during ITC investigation periods as compared to noninvestigation periods.

3.1.1. Conflicting Incentives. An assumption underlying this hypothesis is that the import relief incentive to decrease reported earnings is greater than other incentives the managers have to increase reported earnings. Prior research in other contexts (see n. 2) indicates that managers face other economic consequences of their accounting choices that motivate them to make income-increasing rather than income-decreasing accounting choices—for example, debt covenants and management compensation.

15 Interviews were conducted in December 1986 with Richard Laulor, supervisor of the Financial Analysis and Accounting Division of the Office of Investigations, Chand Mehta, accountant, and Dan Dwyer, investigator.
By increasing reported earnings, managers can reduce the restrictiveness of the debt covenants and increase their own compensation through higher bonuses.

Debtholders would benefit by tolerating managers’ income-decreasing accounting choices during import relief investigations, even if it requires them to waive or amend covenants that are violated, since the financial performance of the firm can be expected to improve if import relief is granted. Managers would also benefit from obtaining import relief if the future earnings of the firm are higher than without the relief and higher earnings result in higher bonus payments. Thus, during import relief investigations managers have less incentive to increase reported earnings than they would at other times because it is in the best interests of all contracting parties (except consumers) for the firm to obtain the desired import protection.

3.1.2. Free-Rider Problem. The fact that all domestic producers within an industry stand to benefit if import relief is granted results in a free-rider problem. As a result, managers of firms within an industry may not have equal incentives to manage earnings during import relief investigations. The ITC evaluates the overall results of the industry but does not require that all firms be injured in order to recommend import relief; therefore, the managers of some domestic producers may decide that the results of their operations will not alter the ITC’s ultimate decision and, consequently, they may not manage earnings during import relief investigations. Of course, if a large number of managers adopted this attitude, then, as a group, they could potentially affect the ITC’s ultimate decision. Also, some firms may not decrease reported earnings during import relief investigations because their management compensation and/or debt covenant incentives to manage earnings upward override the import relief incentive.

In order to address the free-rider problem, a supplemental test of the earnings management hypothesis restricts the sample to firms that petitioned for import relief. The petitioners bear the costs, thought to be quite substantial in many cases, of supporting their claims of injury before the ITC. Thus, petitioners may have greater incentives than other domestic producers in the industry to maximize the probability of obtaining import relief and, as a result, petitioners may have greater incentives to manage earnings during import relief investigations.

3.1.3. Investigation Types. The type of import relief investigation may

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16 Evidence presented in Healy [1985] indicates that management compensation plans do not motivate managers to make strictly income-increasing accounting choices but instead the accounting choices depend on the relation of the earnings number (before these choices) to any upper or lower limits specified in the plans.

17 Asarco, Incorporated is an example of a domestic producer that obtained debt covenant amendments when the covenants were violated during an ITC import relief investigation of the copper industry (Asarco, Incorporated, 1984 Annual Report).
also affect managers' incentives to manage earnings during import relief investigations. Antidumping and countervailing duty cases are instituted when there is evidence that unfair trade practices exist, whereas general escape clause cases are instituted when there is no such evidence. Managers may have greater incentives to manage earnings in general escape clause investigations (section 201) than in antidumping or countervailing duty cases because "to be found eligible for relief under section 201, industries need not prove that an unfair trade practice exists, as is necessary under the antidumping and countervailing duty laws and section 337 of the Tariff Act of 1930. However, under section 201, a greater degree of injury, 'serious' injury, must be found to exist." Since a greater degree of injury is necessary to obtain relief, managers may have greater incentives to decrease reported earnings in general escape clause investigations than in other types of investigations; therefore, in an alternative and, perhaps, more powerful test of the earnings management hypothesis, I restrict the sample to general escape clause investigations.

3.2 INVESTIGATION PERIOD

The ITC normally requests information for five years prior to the date the petition was filed for general escape clause cases, and three years for antidumping and countervailing duty cases. In some cases, data for the most recent quarter are also requested. The actual information requested by the ITC in each investigation is indicated in the staff report.

The length of time taken to complete an ITC investigation depends on the type of investigation. The ITC must complete general escape clause investigations within six months after the filing of the petitions. In antidumping and countervailing duty investigations, the ITC must complete their investigations within 120 days after an affirmative preliminary determination (dumping or subsidy) or 45 days after an affirmative final determination by the Secretary of Commerce.

Tests of the hypothesis are restricted to the two most recent years reviewed by the ITC; the year the investigation is completed (year 0) and the prior year (year -1). It is not clear when managers first anticipate...
a future import relief investigation but is unlikely that they would anticipate it prior to year $-1$; thus, they would have no import-relief-related incentive to manage earnings during periods prior to year $-1$. The ITC does not formally request information for year 0 (except, in some cases, for the most recent quarter), but there is evidence that this information enters the ITC's decision process either through the public hearings or by voluntary submission of the data. Interviews with the ITC commissioners and commissioners' aides (see n. 9) and statements made by commissioners in their injury opinions provide evidence that they place greater reliance on results for years $-1$ and 0 than on prior years. The commissioners are looking for a downward trend in financial performance or a drastic decline in the most recent periods, providing greater incentives for managers to decrease reported earnings in the most recent periods.

3.3 LIMITATIONS

The empirical tests might not support the earnings management hypothesis for several reasons. First, managers may believe the ITC adjusts for their discretionary accounting choices, reducing their incentives to use accounting choices to manage earnings. Interviews conducted at the ITC indicate that the ITC does not adjust for accounting choices, and most of the information that the ITC uses in its injury determination is publicly available; therefore, managers should be aware of the ITC's practices. Second, financial performance of the affected firms may be so bad that managers do not need to use accounting choices to manage earnings. If the amount of injury found by the ITC impacts the amount of relief granted, then firms will still have an incentive to manage earnings. Third, managers may rely on cost allocations rather than accruals to manage earnings for the product line investigated by the ITC. Cost allocations can be used by managers to shift revenues and expenses between the product line being investigated by the ITC and other product lines. Finally, the power of the tests may not be sufficient to detect

in which the ITC did not formally request information for the year preceding the completion of the investigation.

23 For example, data through June 30, 1980 were formally collected by the ITC in the automobile investigation but several of the commissioners' opinions refer to results from operations subsequent to June 30, 1980. Commissioner Stern's opinion states that "the current year (ending December 31, 1980) will be the first in recent history in which the industry shows aggregate losses" (United States International Trade Commission, Publication no. 1110, p. 119).

24 For example, in the general escape clause investigation of automobiles which covered the period 1975 through 1979 and the first six months of 1980, Chairman Alberger stated the following in his injury opinion: "In the aggregate most of the indices of the U.S. automobile producers' performance during the period of investigation reveal a healthy picture from 1976 through 1978 and rapidly declining trends thereafter" (United States International Trade Commission, Publication no. 1110, p. 17). Commissioner Alberger found that the industry was injured.
managers' income-decreasing accounting choices. The sample selection procedures and empirical tests described in subsequent sections are designed to mitigate as many of these limitations as possible.

4. Data and Descriptive Statistics

4.1 SAMPLE SELECTION

The sample used in this study is restricted to import relief investigations that require the ITC to make an injury determination: antidumping, countervailing duty, and general escape clause investigations. Further, only investigations pertaining to a broad product line, such as automobiles and footwear, are examined because earnings management for narrow product lines may not be material relative to the consolidated financial statement data used in the empirical tests. Table 1 describes the five industries included in the sample: automobiles, carbon steel, stainless steel, copper, and footwear. These industries represent six investigations (as discussed earlier, there were two footwear investigations). Five of the investigations were considered under the general escape clause provision, and the other was considered under both the antidumping and countervailing duty provisions. Favorable rulings were issued by the ITC in three of the investigations (stainless steel, copper, and the 1985 footwear cases), and the president granted relief for two of the three (the stainless steel and 1985 footwear cases).

Relief granted to the footwear industry was in the form of adjustment assistance paid to displaced workers and, as such, did not directly benefit the domestic producers. Stainless steel was the only industry that obtained a substantial amount of relief as a direct result of the ITC investigations. Voluntary import limit agreements were reached with foreign governments in the automobile and carbon steel industries.

Data from firms' annual financial statements are used to construct a proxy for firms' earnings management. Data for overall operations are used rather than segment data because the segment data do not provide enough information to compute an estimate of firms' earnings management (i.e., accruals). Table 2 summarizes the sample selection criteria. Financial data for 49 firms in the five industries are available on Compustat. One firm with foreign ownership is excluded from the sample because this firm may not have benefited from import relief. Also, two firms that expressed opposition to import relief are omitted from the sample because they have incentives to increase rather than decrease reported earnings during the investigation.²⁵ Five firms are excluded from

²⁵ Firms' positions on import relief were obtained or inferred from ITC staff reports, transcripts of ITC hearings, industry data identifying importers, and Wall Street Journal articles. Both of the opposing firms were substantial importers of the goods in question; therefore, import relief may hurt these firms. Thus, these firms may have incentives to decrease the apparent injury to the firm so as to decrease the likelihood of obtaining relief and/or amount of relief granted.
TABLE 1
Sample of Firms

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Firms</th>
<th>Year 0</th>
<th>Type of Investigation</th>
<th>ITC Decision</th>
<th>Relief Granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Automobiles</td>
<td>4</td>
<td>1980</td>
<td>General escape clause</td>
<td>Unfavorable</td>
<td>None</td>
</tr>
<tr>
<td>2 Carbon Steel</td>
<td>5</td>
<td>1982</td>
<td>Antidumping and countervailing duty*</td>
<td>Few favorable, most</td>
<td>Tariffs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unfavorable</td>
<td></td>
</tr>
<tr>
<td>3 Stainless and Alloy</td>
<td>2</td>
<td>1983</td>
<td>General escape clause</td>
<td>Favorable</td>
<td>Quotas and Tariffs</td>
</tr>
<tr>
<td>Tool Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Copper</td>
<td>4</td>
<td>1984</td>
<td>General escape clause</td>
<td>Favorable</td>
<td>None</td>
</tr>
<tr>
<td>5 Footwear</td>
<td>8</td>
<td>1984</td>
<td>General escape clause</td>
<td>Unfavorable</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1985</td>
<td>General escape clause</td>
<td>Favorable</td>
<td>Adjustment Assistance</td>
</tr>
</tbody>
</table>

* Year 0 is the year the ITC investigation was completed.

b The copper industry was not granted relief by the president in spite of the favorable ITC decision. The text discusses the process by which import relief is granted.

* In April 1981, Japan announced a proposal to voluntarily limit the number of automobiles exported to the United States. The first year of the limits was to end March 31, 1982.

* In October 1982, an agreement was reached between the United States and the Common Market whereby the Common Market would voluntarily limit exports of carbon steel products to the United States. The limits were to begin November 1, 1982. As a result of this agreement, the U.S. producers agreed to withdraw any unsettled antidumping and countervailing duty investigations.

* The carbon steel investigation involved 95 separate antidumping and countervailing duty cases.

The ITC recommended that the president impose import quotas. The president rejected this recommendation and instead provided adjustment assistance to displaced workers in the footwear industry. The adjustment assistance provided funds to retrain displaced workers. The domestic producers, in essence, received no import relief.
TABLE 2
Summary of the Sample Selection Criteria

<table>
<thead>
<tr>
<th>Description</th>
<th>Autos</th>
<th>Copper</th>
<th>Carbon Steel</th>
<th>Footwear</th>
<th>Stainless Steel</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of domestic producers—on</td>
<td>4</td>
<td>11</td>
<td>12</td>
<td>15</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>Compustata</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firms omitted from the sample:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign ownership</td>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposed relief (importers)</td>
<td>(1)</td>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>Division/subsidiary of a firm in another line of business</td>
<td>(5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(5)</td>
</tr>
<tr>
<td>Too few time-series observations</td>
<td>(4)</td>
<td>(4)</td>
<td></td>
<td></td>
<td></td>
<td>(8)</td>
</tr>
<tr>
<td>Highly diversified firms</td>
<td>(3)</td>
<td>(2)</td>
<td></td>
<td>(5)</td>
<td></td>
<td>(10)</td>
</tr>
<tr>
<td>Total number of firms omitted from the sample</td>
<td>0</td>
<td>(7)</td>
<td>(7)</td>
<td>(7)</td>
<td>(5)</td>
<td>(26)</td>
</tr>
<tr>
<td>Total included in the sample</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>23</td>
</tr>
</tbody>
</table>

*The domestic producers were obtained from the ITC staff reports, petitions filed with the ITC, and correspondence files maintained on microfiche at the ITC.

the sample because they are divisions or subsidiaries of a firm in another line of business. Firms with too few time-series observations (less than 14 years) are also excluded from the sample as estimation of the expectations models would be hindered (eight firms). Domestic producers with operations in several different industries (highly diversified) are excluded since earnings management for the segment being investigated by the ITC may not be detectable in the aggregated data (ten firms). Also, the ITC may rely less heavily on the overall results of these diversified firms when making injury decisions. The empirical tests are based on the resulting sample of 23 firms from five industries.

4.2 MEASURE OF EARNINGS MANAGEMENT

Earnings management can be achieved by various means such as the use of accruals, changes in accounting methods, and changes in capital structure (e.g., debt defeasance, debt–equity swaps). This study focuses on total accruals as the source of earnings management. More specifically, discretionary accruals are used as a measure of managers’ earnings manipulations during import relief investigations. Previous studies such as DeAngelo [1986], Healy [1985], and McNichols and Wilson [1988], which also use some type of discretionary accruals measure, discuss the partitioning of total accruals into discretionary and nondiscretionary components.

The discretionary portion of total accruals is used in this study to capture earnings management rather than the discretionary portion of a single accrual account (as used in McNichols and Wilson [1988]) because total accruals should capture a larger portion of managers’ manipulations.
Total accruals are calculated as the change in noncash working capital before income taxes payable less total depreciation expense. The change in noncash working capital before taxes is defined as the change in current assets other than cash and short-term investments less current liabilities other than current maturities of long-term liabilities and income taxes payable. This accrual measure excludes accruals related to income taxes because the ITC bases its evaluation on income before taxes.

4.3 DESCRIPTIVE STATISTICS

The descriptive statistics presented here are based on the expectations model used by DeAngelo [1986]. DeAngelo used total accruals from a prior period \((t - k)\) as a measure of the “normal” total accrual. She defines the “abnormal” total accrual \((\Delta TA)\) as the difference between current total accruals and normal total accruals, which, in turn, can be separated into discretionary and nondiscretionary accruals:

\[
\Delta TA_t = (TA_t - TA_{t-k}) = (DA_t - DA_{t-k}) - (NA_t - NA_{t-k}).
\] (1)

DeAngelo tested whether the average value of the abnormal accrual was significantly negative during the event period. This test relies on the assumption that the average change in nondiscretionary accruals, \((NA_t - NA_{t-k})\), is approximately zero, so that a change in total accruals, \((TA_t - TA_{t-k})\), primarily reflects a change in discretionary accruals, \((DA_t - DA_{t-k})\). Table 3 summarizes scaled changes in accruals, earnings, cash flow, and revenue before taxes for the sample for years \(-5\) through \(+1\). The scaled changes are computed as first differences of the variables \((X_t - X_{t-1})\), divided by total assets at time \(t - 1\). Table 3 presents the mean and median change for each of the variables, as well as the number of negative and positive changes, \(t\)-statistics (null hypothesis that the average change is zero), and significance levels for the nonparametric Wilcoxon signed-ranks test.

Changes in accruals scaled by total assets are reported in panel A of table 3. Prior to year 0, all of the accrual changes are relatively small. The change in accruals in year 0 is negative with a \(t\)-statistic of \(-1.824\). If the change in accruals is viewed in isolation, year 0 suggests that managers are making income-decreasing accrual decisions. These results, however, must be interpreted cautiously because panels B through D indicate that changes in earnings, cash flows, and revenues are also significantly less than zero in year 0.

\[\text{Cash flows are defined to be earnings (or income) less accruals throughout this paper.}\]

\[\text{The composition of total accruals (TA)}\_t\] is as follows: \(TA_t = [\Delta \text{Current Assets}_t (4) - \Delta \text{Cash}_t (1)] - [\Delta \text{Current Liabilities}_t (5) - \Delta \text{Current Maturities of Long-Term Debt}_t (44) - \Delta \text{Income Taxes Payable}_t (71)] - \text{Depreciation and Amortization Expense}_t (14)\), where the change \((\Delta)\) is computed between time \(t\) and time \(t - 1\); Compustat data item numbers are indicated parenthetically.
### TABLE 3
Accrual Changes, Earnings Changes, Cash Flow Changes, and Revenue Changes Before Taxes Scaled by Total Assets*

<table>
<thead>
<tr>
<th></th>
<th>Year $-5$</th>
<th>Year $-4$</th>
<th>Year $-3$</th>
<th>Year $-2$</th>
<th>Year $-1$</th>
<th>Year 0</th>
<th>Year $+1$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Accrual Changes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.050</td>
<td>-0.038</td>
<td>0.025</td>
<td>-0.020</td>
<td>-0.004</td>
<td>-0.038</td>
<td>0.034</td>
</tr>
<tr>
<td>$t$-statistic</td>
<td>0.717</td>
<td>-0.987</td>
<td>1.197</td>
<td>-1.039</td>
<td>-0.331</td>
<td>-1.824</td>
<td>1.488</td>
</tr>
<tr>
<td>Median</td>
<td>-0.009</td>
<td>-0.019</td>
<td>0.004</td>
<td>-0.035</td>
<td>0.003</td>
<td>-0.058</td>
<td>0.050</td>
</tr>
<tr>
<td>#negative:#positive</td>
<td>13:10</td>
<td>14:9</td>
<td>10:13</td>
<td>15:8</td>
<td>11:12</td>
<td>17:6</td>
<td>9:14</td>
</tr>
<tr>
<td>Significance level for Wilcoxon signed-ranks test</td>
<td>0.134</td>
<td>0.201</td>
<td>0.227</td>
<td>0.084</td>
<td>0.492</td>
<td>0.029</td>
<td>0.062</td>
</tr>
<tr>
<td><strong>Panel B: Earnings Changes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.529</td>
<td>0.092</td>
<td>-0.059</td>
<td>-0.025</td>
<td>0.013</td>
<td>-0.109</td>
<td>0.030</td>
</tr>
<tr>
<td>$t$-statistic</td>
<td>1.012</td>
<td>2.594</td>
<td>-0.917</td>
<td>-1.485</td>
<td>0.519</td>
<td>-5.398</td>
<td>1.295</td>
</tr>
<tr>
<td>Median</td>
<td>0.000</td>
<td>0.031</td>
<td>0.016</td>
<td>-0.012</td>
<td>0.009</td>
<td>-0.095</td>
<td>0.030</td>
</tr>
<tr>
<td>#negative:#positive</td>
<td>11:12</td>
<td>4:19</td>
<td>10:13</td>
<td>14:9</td>
<td>9:14</td>
<td>21:2</td>
<td>8:15</td>
</tr>
<tr>
<td>Significance level for Wilcoxon signed-ranks test</td>
<td>0.384</td>
<td>0.000</td>
<td>0.818</td>
<td>0.208</td>
<td>0.704</td>
<td>0.000</td>
<td>0.147</td>
</tr>
</tbody>
</table>
### Panel C: Cash Flow Changes

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>0.479</th>
<th>0.130</th>
<th>-0.084</th>
<th>-0.005</th>
<th>0.016</th>
<th>-0.071</th>
<th>-0.004</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-statistic</td>
<td>1.054</td>
<td>1.866</td>
<td>-1.097</td>
<td>-0.231</td>
<td>0.876</td>
<td>-2.995</td>
<td>-0.155</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>0.029</td>
<td>0.068</td>
<td>-0.018</td>
<td>-0.007</td>
<td>0.004</td>
<td>-0.052</td>
<td>-0.032</td>
</tr>
<tr>
<td></td>
<td>#negative:#positive</td>
<td>8:15</td>
<td>2:21</td>
<td>13:10</td>
<td>12:11</td>
<td>10:13</td>
<td>16:7</td>
<td>14:9</td>
</tr>
<tr>
<td></td>
<td>Significance level for Wilcoxon signed-ranks test</td>
<td>0.085</td>
<td>0.001</td>
<td>0.472</td>
<td>0.842</td>
<td>0.575</td>
<td>0.007</td>
<td>0.984</td>
</tr>
</tbody>
</table>

### Panel D: Revenue Changes

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>0.320</th>
<th>0.236</th>
<th>0.144</th>
<th>0.042</th>
<th>0.034</th>
<th>-0.188</th>
<th>-0.017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-statistic</td>
<td>2.387</td>
<td>5.225</td>
<td>2.460</td>
<td>0.975</td>
<td>0.597</td>
<td>-3.776</td>
<td>-0.416</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>0.236</td>
<td>0.265</td>
<td>0.193</td>
<td>0.006</td>
<td>0.033</td>
<td>-0.223</td>
<td>-0.040</td>
</tr>
<tr>
<td></td>
<td>#negative:#positive</td>
<td>1:22</td>
<td>1:22</td>
<td>7:16</td>
<td>10:13</td>
<td>8:15</td>
<td>18:5</td>
<td>13:10</td>
</tr>
<tr>
<td></td>
<td>Significance level for Wilcoxon signed-ranks test</td>
<td>0.000</td>
<td>0.000</td>
<td>0.016</td>
<td>0.368</td>
<td>0.453</td>
<td>0.003</td>
<td>0.555</td>
</tr>
</tbody>
</table>

---

* The scaled changes in the variables were computed as the first differences of the variables (X_t - X_{t-1}) divided by total assets at time t - 1. The composition of total accruals (TA_t) is as follows: \[ TA_t = (\Delta \text{Current Assets}, (4) - \Delta \text{Cash}, (1)) - (\Delta \text{Current Liabilities}, (5) - \Delta \text{Current Maturities of Long-Term Debt}, (44) - \Delta \text{Income Taxes Payable}, (71)) - \Delta \text{Depreciation and Amortization Expense}, (14) \], where the change (\Delta) is computed between time t and time t - 1; Compustat data item numbers are indicated parenthetically.

b Year 0 is defined to be the year the ITC completes its import relief investigation. In this table, year 0 for footwear is 1984.

* The t-statistics are computed cross-sectionally as follows: \[ \text{mean}/[\text{standard deviation} \times (\text{sample size})^{-1}] \]. The significance tests are one-tailed for accrual changes in years -1, 0, and +1 and two-tailed for changes in accruals in years -5 through -2 and for all changes in earnings, cash flow, and revenue. Accrual changes are predicted to be negative (i.e., income-decreasing) in years -1 and 0 and positive in year +1. No prediction is made concerning the changes in other variables.
As Kaplan [1985] notes, changes in several working capital accounts and, thereby, accruals, depend upon the economic circumstances of the firm. For example, if nondiscretionary accruals are a function of revenues, then the negative change in accruals may simply be due to changes in nondiscretionary rather than discretionary accruals. The effect of declining revenues on accruals is of particular importance in this study because firms in industries facing rising imports can be expected to have declining revenues. If revenues affect the level of nondiscretionary accruals, then an expectations model used to measure nondiscretionary accruals must take this relation into account. A test of the earnings management hypothesis that attempts to control for the effect of changing economic circumstances on accounting accruals is presented in section 5.

Since the sum of a firm’s income over all years must equal the sum of its cash flows, managers must at some point in time reverse any “excessive” earnings-decreasing (or increasing) accruals made in the past. Also, after the ITC investigations are completed, managers’ incentives to increase reported earnings for reasons related to compensation and/or debt covenants will return. If managers do not expect to petition for import relief again in the near future (the earliest consideration of a new investigation is limited by the trade statutes) and there is no ex post settling up by the foreign trade regulators, managers will bear no costs by increasing reported earnings after the final import relief decision has been made. The results for year +1 indicate that changes in accruals are not significantly greater than zero (t-statistic of 1.488) nor are changes in earnings (t-statistic of 1.295). Changes in cash flows and revenues in year +1 also are not significantly different from zero. These results may be due to the fact that managers tend to reverse “excessive” earnings-decreasing accruals over a period of more than one year or that they face other incentives that conflict with the reversal such as the intention to petition for import relief again in the near future or to avoid any ex post settling up by the regulators.

5. Tests of the Hypothesis

5.1 ACCRUALS MODEL

The descriptive statistics presented in section 4 can be interpreted as support for the earnings management hypothesis only if one assumes that the difference between current- and prior-year accruals is due solely to changes in discretionary accruals because nondiscretionary accruals are assumed to be constant from period to period. To relax this assumption, I use the following expectations model for total accruals to control...
for changes in the economic circumstances of the firm:

\[ TA_{it} / A_{it-1} = \alpha_i [1 / A_{it-1}] + \beta_1 [\Delta REV_{it} / A_{it-1}] \]
\[ + \beta_2 [PPE_{it} / A_{it-1}] + \epsilon_{it} \] (2)

where:

- \( TA_{it} \) = total accruals in year \( t \) for firm \( i \);
- \( \Delta REV_{it} \) = revenues in year \( t \) less revenues in year \( t - 1 \) for firm \( i \);
- \( PPE_{it} \) = gross property, plant, and equipment in year \( t \) for firm \( i \);
- \( A_{it-1} \) = total assets in year \( t - 1 \) for firm \( i \);
- \( \epsilon_{it} \) = error term in year \( t \) for firm \( i \);
- \( i = 1, \ldots, N \) firm index (\( N = 23 \));
- \( t = 1, \ldots, T_i \) year index for the years included in the estimation period for firm \( i \) (\( T_i \) ranges between 14 and 32 years).

In order to provide a longer time series of observations, the definition of total accruals used in tests of the earnings management hypothesis reported in this section has been modified from that used in section 4. The total accruals measure used in this section is not adjusted for current maturities of long-term debt and income taxes payable because several early observations are missing from the Compustat tapes. Excluding the adjustment for current maturities of long-term debt and income taxes payable increases the average number of observations for each firm from 12.9 to 25.2.

In equation (2), gross property, plant, and equipment and change in revenues are included in the expectations model to control for changes in nondiscretionary accruals caused by changing conditions. Total accruals (\( TA \)) includes changes in working capital accounts, such as accounts receivable, inventory and accounts payable, that depend to some extent on changes in revenues. Revenues are used to control for the economic environment of the firm because they are an objective measure

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29 The composition of total accruals (\( TA \)) used in section 5 is as follows: \( TA_{t} = [\Delta \text{Current Assets}_{t} (4) - \Delta \text{Cash}_{t} (1)] - [\Delta \text{Current Liabilities}_{t} (5) - \text{Depreciation and Amortization Expense}_{t} (14)] \), where the change (\( \Delta \)) is computed between time \( t \) and time \( t - 1 \); Compustat data item numbers are indicated parenthetically. The descriptive statistics for changes in accruals, earnings, and cash flows using this modified definition of total accruals for years \(-1, 0, \text{and } +1\) are very similar to those presented in table 3, although some of the significance levels are somewhat lower.

30 Since regression equation (2) is used to estimate “normal” accruals, levels of total accruals rather than the changes in total accruals are used in this equation. In addition to being conceptually superior, the use of total accruals makes estimation of the expectations model more amenable. Unlike other time-series processes which need to be differenced in order to obtain stationarity, total accruals tends to be a white noise process. The average first-order autocorrelation for total accruals (\( TA \)) is 0.075, whereas it is \(-0.498\) for changes in total accruals (\( \Delta TA \)). Autocorrelations for the accruals measure used in section 4 (i.e., total accruals adjusted for current maturities of long-term debt and income taxes payable) are similar, with an average of \(-0.076\) for total accruals and \(-0.505\) for changes in total accruals.
of the firms' operations before managers' manipulations, but they are not completely exogenous.\textsuperscript{31} Gross property, plant, and equipment is included to control for the portion of total accruals related to nondiscretionary depreciation expense. Gross property, plant, and equipment is included in the expectations model rather than changes in this account because total depreciation expense (versus the change in depreciation expense) is included in the total accruals measure.\textsuperscript{32} All variables in the accruals expectations model are scaled by lagged assets to reduce heteroscedasticity. As described in Kmenta [1986], a weighted least squares approach to estimating a regression equation with a heteroscedastic disturbance term (i.e., the unscaled regression equation) can be obtained by dividing both sides of the regression equation by an estimate of the variance of the disturbance term (i.e., resulting in a scaled regression equation). In this case, lagged assets \((A_{it-1})\) are assumed to be positively associated with the variance of the disturbance term.\textsuperscript{33}

Ordinary least squares is used to obtain estimates \(a_i, b_{1i}\), and \(b_{2i}\) of \(\alpha_i, \beta_{1i}\), and \(\beta_{2i}\), respectively. This model assumes the relation between non-discretionary accruals and the explanatory variables is stationary. The prediction error is defined as:

\[
\begin{align*}
    u_{ip} &= TA_{ip}/A_{ip-1} \\
    &- \left( a_i[1/A_{ip-1}] + b_{1i}[\Delta REV_{ip}/A_{ip-1}] + b_{2i}[PPE_{ip}/A_{ip-1}] \right),
\end{align*}
\]

where \(p\) = year index for years included in the prediction period. The prediction error, \(u_{ip}\), represents the level of discretionary accruals at time \(p\). The model is estimated using the longest time series of observations available prior to year \(-1\) for each firm. The use of a long time series of observations improves estimation efficiency but also increases the likelihood of structural change occurring during the estimation period.

Table 4 provides descriptive statistics for the multiple regressions estimated over all available observations through year \(-2\). The average residual first-order autocorrelation is \(-0.171\). The Durbin-Watson two-tailed test statistics indicate that the first-order autocorrelation is not significant at the .05 level for 17 of 23 firms and is inconclusive for the

\textsuperscript{31} Reported revenues may be affected to some extent by managers' attempts to decrease reported earnings. For example, managers may postpone the shipment of merchandise during import relief investigation years in order to postpone recognition of revenue until the following year.

\textsuperscript{32} Some support for the choice of these variables can be found in a study by Kaplan [1979].

\textsuperscript{33} The need for scaling was assessed by correlating the squared residuals obtained from the unscaled expectations model (i.e., equation (2) without scaling) with squared lagged assets. The resulting correlation of 0.643 indicates that the error term from the unscaled expectations model is highly correlated with lagged assets. Other scaling factors have been used to reduce heteroscedasticity, for example, Lipe [1986] deflated earnings components by the Consumers Price Index and Rayburn [1986] scaled earnings components by the market value of equity.
TABLE 4
Descriptive Statistics for the Multiple Regression Equations for Total Accruals*
(Estimated over years prior to year -1)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Q1b</th>
<th>Q3</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha_i$</td>
<td>11.088</td>
<td>0.208</td>
<td>49.795</td>
<td>-13.771</td>
<td>-1.350</td>
<td>4.447</td>
<td>238.540</td>
</tr>
<tr>
<td>t-statistic</td>
<td>0.084</td>
<td>0.034</td>
<td>0.828</td>
<td>-1.954</td>
<td>-0.377</td>
<td>0.572</td>
<td>1.705</td>
</tr>
<tr>
<td>$\beta_{ti}$</td>
<td>0.035</td>
<td>-0.008</td>
<td>0.144</td>
<td>-0.196</td>
<td>-0.068</td>
<td>0.163</td>
<td>0.375</td>
</tr>
<tr>
<td>t-statistic</td>
<td>0.220</td>
<td>-0.172</td>
<td>2.372</td>
<td>-3.315</td>
<td>-1.850</td>
<td>1.835</td>
<td>4.440</td>
</tr>
<tr>
<td>$\beta_{pi}$</td>
<td>-0.033</td>
<td>-0.030</td>
<td>0.047</td>
<td>-0.141</td>
<td>-0.050</td>
<td>-0.017</td>
<td>0.080</td>
</tr>
<tr>
<td>t-statistic</td>
<td>-1.269</td>
<td>-1.385</td>
<td>1.394</td>
<td>-4.030</td>
<td>-2.238</td>
<td>-0.186</td>
<td>1.086</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.232</td>
<td>0.249</td>
<td>0.152</td>
<td>0.000</td>
<td>0.132</td>
<td>0.310</td>
<td>0.581</td>
</tr>
<tr>
<td>Autocorrelation</td>
<td>-0.171</td>
<td>-0.151</td>
<td>0.167</td>
<td>-0.476</td>
<td>-0.294</td>
<td>-0.048</td>
<td>0.210</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>2.244</td>
<td>2.228</td>
<td>0.395</td>
<td>1.404</td>
<td>1.984</td>
<td>2.547</td>
<td>2.818</td>
</tr>
<tr>
<td>Number of years</td>
<td>25.261</td>
<td>28.000</td>
<td>5.902</td>
<td>14.000</td>
<td>21.000</td>
<td>31.000</td>
<td>32.000</td>
</tr>
</tbody>
</table>

*The descriptive statistics presented are for the estimated multiple regression equation:

$$TA_{it}/A_{i,t-1} = \alpha_i + \beta_{ti}[\Delta REVs_{it}/A_{i,t-1}] + \beta_{pi}[PPE_{it}/A_{i,t-1}] + \epsilon_{it},$$

where:

- $TA_{it}$ = total accruals in year $t$ for firm $i$;
- $\Delta REVs_{it}$ = revenues in year $t$ less revenues in year $t - 1$ for firm $i$;
- $PPE_{it}$ = gross property, plant, and equipment in year $t$ for firm $i$;
- $A_{i,t-1}$ = total assets in year $t - 1$ for firm $i$;
- $\epsilon_{it}$ = error term in year $t$ for firm $i$;
- $i = 1, \ldots, 23$ firm index;
- $t = 1, \ldots, T_i$, year index for the years included in the estimation period for firm $i$.

The composition of total accruals ($TA_{it}$) is as follows: $TA_{it} = [\Delta Current Assets, (4) - \Delta Cash, (1)] - [\Delta Current Liabilities, (5)] - Depreciation and Amortization Expense, (14), where the change ($\Delta$) is computed between time $t$ and time $t - 1$; Compustat data item numbers are indicated parenthetically.

The regression equations are estimated over all available years prior to year -1.

**Q1, Q3 are the first and third quartiles of the distribution, respectively.

The average estimated coefficient for property, plant, and equipment is negative (-0.033), which is the expected sign because property, plant, and equipment are related to an income-decreasing accrual (i.e., depreciation expense). The expected sign for the change in revenues coefficient is not as obvious because a given change in revenue can cause income-increasing changes in some working capital accounts (e.g., increases in accounts receivable) and income-decreasing changes in others (e.g., increases in accounts payable). The average estimated coefficient for the change in revenues is 0.035, whereas the median is -0.008. The average $R^2$ for the regression equations is 0.232.

34 Predictions regarding the sign of the regression coefficients are consistent with the results reported in Jones [1988] for regression equations estimated for four individual components of total accruals: accounts receivable, inventory, accounts payable, and depreciation expense. The coefficient for property, plant, and equipment was significantly negative for the depreciation expense regression and insignificant for all others. The coefficient for the change in revenues was significantly positive for accounts receivable and inventory, significantly negative for accounts payable, and insignificant for depreciation expense. Another approach to estimating total discretionary accruals would be to develop specific models of nondiscretionary accruals for each component of accruals, as is done by McNichols and Wilson [1988], rather than use one model to estimate nondiscretionary accruals for all accrual components, as is done in this paper.
Tests of the earnings management hypothesis are based on the estimate of discretionary accruals, \( u_{ip} \), during years \(-1\) and \(0\). One method of testing the overall significance of managers’ discretionary accruals is to compute a standardized prediction error similar to that used by Patell [1976]. For each prediction error, an estimated standard deviation, \( \hat{\sigma} (u_{ip}) \), is calculated.\(^{35}\) If the prediction errors are normally distributed, then the following ratio of the prediction errors to their standard deviations has a \( t \)-distribution with \( T_i - 3 \) degrees of freedom:

\[
V_{ip} = \frac{u_{ip}}{\hat{\sigma} (u_{ip})}.
\]

The \( V_{ip} \)s are referred to as “standardized prediction errors.” Following Patell, the central limit theorem can be invoked to compute the following test statistic:

\[
Z_{vp} = \frac{1}{\sqrt{T}} \left( \frac{\sum_{i=1}^{N} V_{ip}}{\sum_{i=1}^{N} \left( T_i - 3 \right) / \left( T_i - 5 \right)} \right) / \sigma
\]

which is asymptotically distributed as a unit normal deviate if the prediction errors are cross-sectionally independent.\(^{36}\) In this test, the null hypothesis is that the average prediction error (i.e., discretionary accrual) during import relief investigations is greater than or equal to zero. The existence of cross-sectional correlation results in violations of the assumptions underlying the test statistic, and thus, any inferences based upon the \( Z \) statistic must be made cautiously. In section 5.5, a test is conducted that addresses the cross-sectional correlation problem.

Due to the fact that two footwear cases were conducted by the ITC (i.e., in 1984 and 1985), two sets of tests are conducted: treating 1984 and, also, 1985 as year 0 for the footwear industry. The results treating 1984 as year 0 are reported in the body of the paper; those for 1985 are reported in the footnotes. The results are more supportive of the earnings management hypothesis when 1985 is treated as year 0 for footwear.

Table 5 presents the \( V_{ip} \)s (standardized prediction errors) and related \( Z_{vp} \) statistics. The \( V_{ip} \)s are based on prediction errors from the total accruals expectations models estimated (see equations (2) and (3)) over periods using all available data through year \(-2\). The \( Z \) statistics for years \(-1\) and \(0\) are \(-0.372\) (with a one-tailed significance level of 0.356)

---

\(^{35}\) The variance for the prediction error is derived by Theil [1971, pp. 122–23] as the following: \( E \left[ u_{i,t} u_{j,t}^\prime \right] = \sigma^2 (C_{ip} + I) \), where \( C_{ip} \) equals \( X_p X' X^{-1} X_p' \) in which \( X \) is the matrix of independent variables for the estimation period and \( X_p \) is the matrix for the prediction period. The standard error from the estimation period, \( \hat{\sigma} \), provides an unbiased estimate of \( \sigma \). \( I \) is the identity matrix.

\(^{36}\) In order to apply significance tests based on the \( Z \) statistic, the prediction errors must be normally distributed and the covariance structure is assumed to be as follows: \( \text{cov}(u_{ip}, u_{jp}) = 0 \) when \( i \neq j \) and equals \( \sigma^2 (C_{ip} + I) \) when \( i = j \); where \( C_{ip} = X_p(X'X)^{-1}X_p' \) from the previous footnote. The denominator of the \( Z \) statistic is the sum of the variances of the \( V_{ip} \)s. Since \( V_{ip} \) is a \( t \)-statistic with \( T_i \) degrees of freedom, the variance of \( V_{ip} \) is \( (T_i - 3)/(T_i - 5) \); see Theil [1971, p. 82].
### Table 5

<table>
<thead>
<tr>
<th>Firm Number</th>
<th>Year $-1^b$</th>
<th>Year 0</th>
<th>Year +1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.534</td>
<td>-0.369</td>
<td>-0.519</td>
</tr>
<tr>
<td>2</td>
<td>-1.218</td>
<td>-0.921</td>
<td>-1.806</td>
</tr>
<tr>
<td>3</td>
<td>-0.623</td>
<td>-0.812</td>
<td>0.546</td>
</tr>
<tr>
<td>4</td>
<td>-0.514</td>
<td>-0.502</td>
<td>0.012</td>
</tr>
<tr>
<td>5</td>
<td>0.097</td>
<td>-0.041</td>
<td>0.067</td>
</tr>
<tr>
<td>6</td>
<td>-0.114</td>
<td>-0.515</td>
<td>-0.426</td>
</tr>
<tr>
<td>7</td>
<td>-0.211</td>
<td>0.293</td>
<td>-1.552</td>
</tr>
<tr>
<td>8</td>
<td>-0.128</td>
<td>0.293</td>
<td>-0.609</td>
</tr>
<tr>
<td>9</td>
<td>-0.115</td>
<td>-0.414</td>
<td>0.603</td>
</tr>
<tr>
<td>10</td>
<td>1.641</td>
<td>-1.397</td>
<td>-2.055</td>
</tr>
<tr>
<td>11</td>
<td>-0.795</td>
<td>0.331</td>
<td>-0.738</td>
</tr>
<tr>
<td>12</td>
<td>0.117</td>
<td>-0.749</td>
<td>0.781</td>
</tr>
<tr>
<td>13</td>
<td>0.894</td>
<td>-1.890</td>
<td>-0.976</td>
</tr>
<tr>
<td>14</td>
<td>0.224</td>
<td>-2.004</td>
<td>-0.783</td>
</tr>
<tr>
<td>15</td>
<td>-0.203</td>
<td>-0.218</td>
<td>0.171</td>
</tr>
<tr>
<td>16</td>
<td>0.405</td>
<td>-0.622</td>
<td>0.181</td>
</tr>
<tr>
<td>17</td>
<td>0.328</td>
<td>-0.339</td>
<td>-0.062</td>
</tr>
<tr>
<td>18</td>
<td>-0.772</td>
<td>-1.479</td>
<td>1.795</td>
</tr>
<tr>
<td>19</td>
<td>-0.216</td>
<td>-0.548</td>
<td>-0.483</td>
</tr>
<tr>
<td>20</td>
<td>1.006</td>
<td>-0.248</td>
<td>0.165</td>
</tr>
<tr>
<td>21</td>
<td>-1.805</td>
<td>-0.222</td>
<td>0.252</td>
</tr>
<tr>
<td>22</td>
<td>0.089</td>
<td>-2.318</td>
<td>-0.534</td>
</tr>
<tr>
<td>23</td>
<td>-0.501</td>
<td>-2.794</td>
<td>-0.234</td>
</tr>
</tbody>
</table>

$Z_{vp}$ statistic\(^{c}\) \(-0.372\) \(-3.459\) \(-1.228\)

\(V_{v}^{}\) is computed as \(u_{v}/(s_{i}(1 + C_{vp}^2))\), where \(C_{vp} = [X_{p} (X'X)^{-1}X_{p}']\) in which \(X\) is the matrix of independent variables for the estimation period, \(X_{p}\) is the matrix for the prediction period, \(u_{v}\) is the prediction error, \(p\) is the prediction year, and \(s_{i}\) is the standard error from estimates of the following regression model:

\[
TA_{it}/A_{it-1} = \alpha_{i}[1/A_{it-1}] + \beta_{1i}[\Delta REV_{it}/A_{it-1}] + \beta_{2i}[PPE_{it}/A_{it-1}] + \epsilon_{it},
\]

where:

- \(TA_{it}\) = total accruals in year \(t\) for firm \(i\);
- \(\Delta REV_{it}\) = revenues in year \(t\) less revenues in year \(t - 1\) for firm \(i\);
- \(PPE_{it}\) = gross property, plant, and equipment in year \(t\) for firm \(i\);
- \(A_{it-1}\) = total assets in year \(t - 1\) for firm \(i\);
- \(\epsilon_{it}\) = error term in year \(t\) for firm \(i\);
- \(i = 1, \ldots, N\) firm index \((N = 23)\);
- \(t = 1, \ldots, T_i\) year index for the years included in the estimation period for firm \(i\).

The composition of total accruals (\(TA_{it}\)) is as follows: \(TA_{it} = [\Delta Current\ Assets, (4) - \Delta Cash, (1)] - [\Delta Current\ Liabilities, (5)] - \Delta Depreciation\ and\ Amortization\ Expense, (14), where the change (\(\Delta\)) is computed between time \(t\) and time \(t - 1\); Compustat data item numbers are indicated parenthetically. The regression equations are estimated over all available years prior to year \(-1\).

\(Year\ 0\) is the year the ITC completed its investigation, whereas year \(-1\) is the previous year and year \(+1\) is the subsequent year. Year 0 for the footwear industry is 1984.

The \(Z_{vp}\) statistic is calculated as \[\sum_{i=1}^{N} V_{v} [\sum_{i=1}^{N} (T_i - 3)(T_i - 5)]^{-\frac{1}{2}},\] where \(T_{i}\) is the number of years in the estimation period.
### Table 6

**Firm and Industry Net Income, Cash Flows, Nondiscretionary Accruals, Discretionary Accruals, and Revenue in Year 0**

<table>
<thead>
<tr>
<th>Firm Number</th>
<th>$\Delta NI$</th>
<th>$\Delta CF$</th>
<th>$NA$</th>
<th>$DA$</th>
<th>$\Delta Rev/A_{t-1}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.164</td>
<td>-0.134</td>
<td>-0.023</td>
<td>-0.017</td>
<td>-0.084</td>
</tr>
<tr>
<td>2</td>
<td>-0.006</td>
<td>-0.013</td>
<td>-0.016</td>
<td>-0.025</td>
<td>0.024</td>
</tr>
<tr>
<td>3</td>
<td>-0.106</td>
<td>-0.115</td>
<td>-0.013</td>
<td>-0.032</td>
<td>-0.035</td>
</tr>
<tr>
<td>4</td>
<td>-0.121</td>
<td>-0.054</td>
<td>0.077</td>
<td>-0.155</td>
<td>0.225</td>
</tr>
<tr>
<td>5</td>
<td>-0.015</td>
<td>-0.135</td>
<td>0.032</td>
<td>-0.006</td>
<td>0.287</td>
</tr>
<tr>
<td>6</td>
<td>-0.020</td>
<td>0.015</td>
<td>-0.004</td>
<td>-0.032</td>
<td>0.110</td>
</tr>
<tr>
<td>7</td>
<td>-0.060</td>
<td>-0.057</td>
<td>-0.049</td>
<td>0.029</td>
<td>-0.223</td>
</tr>
<tr>
<td>8</td>
<td>0.063</td>
<td>0.017</td>
<td>-0.033</td>
<td>0.034</td>
<td>-0.103</td>
</tr>
<tr>
<td>9</td>
<td>0.018</td>
<td>0.178</td>
<td>-0.125</td>
<td>-0.082</td>
<td>-0.479</td>
</tr>
<tr>
<td>10</td>
<td>-0.063</td>
<td>0.193</td>
<td>0.003</td>
<td>-0.095</td>
<td>-0.068</td>
</tr>
<tr>
<td>11</td>
<td>-0.044</td>
<td>-0.235</td>
<td>0.016</td>
<td>0.056</td>
<td>-0.288</td>
</tr>
<tr>
<td>12</td>
<td>-0.023</td>
<td>0.073</td>
<td>0.026</td>
<td>-0.087</td>
<td>0.125</td>
</tr>
<tr>
<td>13</td>
<td>-0.133</td>
<td>-0.016</td>
<td>-0.004</td>
<td>-0.111</td>
<td>-0.307</td>
</tr>
<tr>
<td>14</td>
<td>-0.318</td>
<td>-0.239</td>
<td>0.030</td>
<td>-0.161</td>
<td>-0.386</td>
</tr>
<tr>
<td>15</td>
<td>-0.039</td>
<td>0.007</td>
<td>0.026</td>
<td>-0.093</td>
<td>-0.208</td>
</tr>
<tr>
<td>16</td>
<td>-0.031</td>
<td>-0.014</td>
<td>-0.016</td>
<td>-0.035</td>
<td>-0.121</td>
</tr>
<tr>
<td>17</td>
<td>-0.077</td>
<td>-0.042</td>
<td>-0.047</td>
<td>-0.016</td>
<td>-0.364</td>
</tr>
<tr>
<td>18</td>
<td>-0.061</td>
<td>-0.009</td>
<td>-0.045</td>
<td>-0.037</td>
<td>-0.328</td>
</tr>
<tr>
<td>19</td>
<td>-0.125</td>
<td>-0.022</td>
<td>-0.070</td>
<td>-0.033</td>
<td>-0.631</td>
</tr>
<tr>
<td>20</td>
<td>-0.251</td>
<td>-0.207</td>
<td>-0.027</td>
<td>-0.017</td>
<td>-0.502</td>
</tr>
<tr>
<td>21</td>
<td>-0.092</td>
<td>-0.256</td>
<td>-0.045</td>
<td>-0.022</td>
<td>-0.417</td>
</tr>
<tr>
<td>22</td>
<td>-0.115</td>
<td>0.029</td>
<td>-0.004</td>
<td>-0.174</td>
<td>-0.273</td>
</tr>
<tr>
<td>23</td>
<td>-0.113</td>
<td>0.044</td>
<td>-0.028</td>
<td>-0.234</td>
<td>-0.266</td>
</tr>
</tbody>
</table>
EARNINGS MANAGEMENT DURING INVESTIGATIONS

<table>
<thead>
<tr>
<th>Panel B: Industry Data</th>
<th>( \Delta NI )</th>
<th>( \Delta CF )</th>
<th>NA</th>
<th>DA</th>
<th>( \Delta Rev/A_{t-1} )</th>
<th>ITC Decision</th>
<th>Relief Granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autos</td>
<td>-0.143</td>
<td>-0.098</td>
<td>-0.026</td>
<td>-0.112</td>
<td>-0.365</td>
<td>Unfavorable</td>
<td>None</td>
</tr>
<tr>
<td>Carbon</td>
<td>-0.143</td>
<td>-0.066</td>
<td>-0.027</td>
<td>-0.071</td>
<td>-0.403</td>
<td>Most unfavorable</td>
<td>Tariffs</td>
</tr>
<tr>
<td>Stainless</td>
<td>-0.035</td>
<td>-0.003</td>
<td>0.005</td>
<td>-0.064</td>
<td>-0.164</td>
<td>Favorable</td>
<td>Quotas/Tariffs</td>
</tr>
<tr>
<td>Copper</td>
<td>-0.099</td>
<td>-0.079</td>
<td>0.006</td>
<td>-0.057</td>
<td>0.032</td>
<td>Favorable</td>
<td>None</td>
</tr>
<tr>
<td>Footwear (1984)</td>
<td>-0.018</td>
<td>0.006</td>
<td>-0.017</td>
<td>-0.023</td>
<td>-0.080</td>
<td>Unfavorable</td>
<td>None</td>
</tr>
</tbody>
</table>

*The following regression equation is used to obtain estimates of nondiscretionary accruals (NA) and discretionary accruals (DA):

\[
TA_{it}/A_{it-1} = \alpha_i [1/A_{it-1}] + \beta_i [\Delta REV_{it}/A_{it-1}] + \beta_2 [PPE_{it}/A_{it-1}] + \epsilon_{it},
\]

where:

- \( TA_{it} \) = total accruals in year \( t \) for firm \( i \);
- \( \Delta REV_{it} \) = revenues in year \( t \) less revenues in year \( t - 1 \) for firm \( i \);
- \( PPE_{it} \) = gross property, plant, and equipment in year \( t \) for firm \( i \);
- \( A_{it-1} \) = total assets in year \( t - 1 \) for firm \( i \);
- \( \epsilon_{it} \) = error term in year \( t \) for firm \( i \);
- \( i = 1, \ldots, 23 \) firm index;
- \( t = 1, \ldots, T_i \) year index for the years included in the estimation period for firm \( i \).

The composition of total accruals (\( TA_{t} \)) is as follows: \( TA_{t} = [\Delta Current\ Assets, \ (4) - \Delta Cash, \ (1)] - [\Delta Current\ Liabilities, \ (5)] - Depreciation\ and\ Amortization\ Expense, \ (14) \). The change (\( \Delta \)) is computed between time \( t \) and time \( t - 1 \). Computstat data item numbers are indicated parenthetically. The regression equations are estimated over all available years prior to year \(-1\). Nondiscretionary accruals (\( NA \)) are predictions based on the estimated regression coefficients from the above equation. Discretionary accruals (\( DA \)) are the related prediction error. \( \Delta NI \) is the change in net income divided by lagged assets. \( \Delta CF \) is the change in cash flows divided by lagged assets where cash flows are defined as the difference between earnings and total accruals. \( \Delta NI \) and \( \Delta CF \) in this table differ from that reported in table 3 due to the inclusion of income taxes in the amounts reported in this table.
and $-3.459$ (with a one-tailed significance level of $0.0003$), respectively.\textsuperscript{37} Thus, year 0 provides support for the earnings management hypothesis whereas year $-1$ does not.\textsuperscript{38} The $Z$ statistic for year $+1$ is $-1.228$ with a one-tailed significance level of $0.109$.\textsuperscript{39} Based on this test, there does not appear to be a reversal of discretionary accruals in year $+1$, which is consistent with the descriptive statistics presented in table 3.\textsuperscript{40}

Table 6 reports, by firm and industry, change in net income, change in cash flows, estimated nondiscretionary accruals, estimated discretionary accruals, and change in revenues scaled by lagged assets. The Wilcoxon signed-ranks test reveals that the discretionary accrual for year 0 is significantly less than zero, with a significance level of 0.001. The industry data are presented in order to provide some information about the relation between the financial variables and the ultimate ITC decision. A review of the data does not result in an obvious relation between the financial variables and the ITC decision. For example, the automobile industry not only has the largest negative cash flow change, but also the largest income-decreasing discretionary accruals, yet the industry was not deemed to be injured by imports (i.e., the ITC issues an unfavorable decision). Due to the limited number of industries included in this sample, statistical testing of the relation between the various financial variables and the ITC decision was not possible.

\textsuperscript{37} When the analysis is based on the accruals measure from section 4, discretionary accruals are also significantly negative in year 0 but the significance levels are substantially lower ($t$-statistic of $-2.275$ with a significance level of 0.011 when 1984 is treated as year 0, and $-2.249$ with a significance level of 0.012 when 1985 is treated as year 0). The $Z$ statistics are negative and insignificant for year $-1$ and positive and insignificant for year $+1$.

\textsuperscript{38} When 1985 is treated as year 0 for the footwear industry, the $Z$ statistic for year 0 increases in absolute magnitude to $-3.802$ with a significance level less than 0.0001. This result is consistent with the notion that the footwear industry took additional steps during the second investigation (1985) to decrease reported earnings. Since the $Z$ statistic is based on time-series regressions that control for the effect of changing revenues on accruals, the decreases in accruals reported in table 3 do not appear to be caused entirely by decreases in revenues.

\textsuperscript{39} When 1985 is treated as year 0 for the footwear industry, the $Z$ statistic decreases in absolute magnitude to $-0.799$ with a one-tailed significance level of 0.212.

\textsuperscript{40} $Z$ statistics are also computed for years $-5$ through $+1$ using regression equations estimated over periods using all available data through year $-6$ as the basis for obtaining the "normal" accrual. This allowed for a wider comparison of significance levels for the $Z$ statistics obtained for investigation years to those obtained in noninvestigation years. The $Z$ statistics for years $-5$, $-4$, $-2$, and $-1$ are negative and relatively small compared to their standard errors, with $Z$ statistics ranging from $-0.274$ to $-1.021$. The $Z$ statistic for year 0 is also negative but more significant ($-3.137$ with a significance level of 0.0008) than for any of the other years, lending support to the earnings management hypothesis. The $Z$ statistic is positive for year $-3$ but is not statistically significant. The $Z$ statistic for year $+1$ is negative and relatively small ($-1.552$) which does not indicate that managers reversed their income-decreasing accruals in year $+1$. The results of this estimation are consistent with those reported in table 5.
5.2 **TEST FOR MODEL MISSPECIFICATION**

Scatter plots of the regression equation residuals do not exhibit a nonlinear relation between abnormal accruals and changes in revenue; therefore, the negative residuals for year 0 do not appear to be the result of this type of model misspecification. In order to obtain additional information regarding possible model misspecification for periods in which there are large decreases in revenues, the accruals expectations model is estimated for 459 firms that are not in the ITC investigation sample. The 459 firms represent all firms not in the ITC investigation sample having 25 years of data available on *Compustat* (1961–85). The residuals for 1980 through 1985 are each divided by the standard error from the estimated regression model resulting in 2,754 $V_{it}$ values. The $V_{it}$s are divided into deciles based on the size of the change in revenues scaled by assets.

The first two columns of table 7 report the average change in revenue scaled by lagged assets ($\Delta REV_{it}/A_{it-1}$) and $V_{it}$ for each decile. Visual inspection of $\Delta REV_{it}/A_{it-1}$ and $V_{it}$ across the deciles does not reveal any systematic relation between the two variables. A systematic relation between the two variables might indicate that the nondiscretionary accruals model is misspecified. Since the year 0 mean change in revenues scaled by lagged assets for the ITC investigation sample (−0.188 from table 3) falls within decile 1 in table 7, it is also important to compare the average $V_{it}$ for decile 1 to all other deciles to provide some evidence that the nondiscretionary accruals model is not misspecified for extreme decreases in revenues.

Paired comparisons for the mean $V_{it}$s by decile are computed and the resulting significance levels are reported in table 7. The question of interest is whether the mean $V_{it}$ for the decile containing the largest decrease in revenues (decile 1) differs from the other deciles. If decile 1 is found to differ significantly from the other deciles, it could indicate that the accruals expectations model is inappropriate when changes in revenues are large and negative. The results in table 7 indicate that the most significant difference between decile 1 and any of the other deciles is significant at the 0.171 level. The mean $V_{it}$ for decile 1 is greater than the means for deciles 3 and 5 and less than the means for the other deciles. Decile 3 has the smallest mean $V_{it}$ value and is the only decile that differs from other deciles at significance levels of 0.10 or less. This analysis provides some evidence that the significant negative $Z$ statistic in year 0 for the ITC sample is not due to the relative inability of the expectations model to predict accruals during periods of severe economic downturn.

5.3 **SENSITIVITY ANALYSES**

Sensitivity analyses, not reported here, of the results reported in table 5 were conducted to ascertain the effect various companies and industries
<table>
<thead>
<tr>
<th>Mean $\Delta REV_{it}/A_{i,t-1}$</th>
<th>Mean $V_{it}$</th>
<th>Decile (F Tests)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>$-0.361$</td>
<td>$-0.169$</td>
<td>1</td>
</tr>
<tr>
<td>$-0.115$</td>
<td>$-0.130$</td>
<td>2</td>
</tr>
<tr>
<td>$-0.040$</td>
<td>$-0.278$</td>
<td>3</td>
</tr>
<tr>
<td>$0.010$</td>
<td>$-0.113$</td>
<td>4</td>
</tr>
<tr>
<td>$0.050$</td>
<td>$-0.191$</td>
<td>5</td>
</tr>
<tr>
<td>$0.090$</td>
<td>$-0.165$</td>
<td>6</td>
</tr>
<tr>
<td>$0.133$</td>
<td>$-0.160$</td>
<td>7</td>
</tr>
<tr>
<td>$0.185$</td>
<td>$-0.148$</td>
<td>8</td>
</tr>
<tr>
<td>$0.264$</td>
<td>$-0.111$</td>
<td>9</td>
</tr>
<tr>
<td>$0.539$</td>
<td>$-0.835$</td>
<td>10</td>
</tr>
</tbody>
</table>

*The deciles of changes in revenues scaled by lagged total assets are defined so that the first decile (decile 1) is the largest decrease and the tenth decile (decile 10) is the largest increase. The null hypothesis for the F test (from the ANOVA) is that the mean $V_{it}$ for each decile are equal. The resulting F statistic is 0.9216, which has a significance level of 0.5049. The $V_{it}$ are calculated for 459 firms for years 1980 through 1985 (sample size of 2,754). The $V_{it}$ are computed as $e_{it}/s_{it}$ where $e_{it}$ is the residual and $s_{it}$ the standard error from the following regression model (estimated over the years 1961 through 1985 for each firm):

$$TA_{it}/A_{i,t-1} = \alpha_i[1/A_{i,t-1}] + \beta_i[\Delta REV_{it}/A_{i,t-1}] + \beta_{3i}[PPE_{it}/A_{i,t-1}] + e_{it},$$

where:

- $TA_{it}$ = total accruals in year $t$ for firm $i$;
- $\Delta REV_{it}$ = revenues in year $t$ less revenues in year $t - 1$ for firm $i$;
- $PPE_{it}$ = gross property, plant, and equipment in year $t$ for firm $i$;
- $A_{i,t-1}$ = total assets in year $t - 1$ for firm $i$;
- $e_{it}$ = error term in year $t$ for firm $i$;
- $i = 1, \ldots, 23$ firm index;
- $t = 1, \ldots, T_n$ year index for the years included in the estimation period for firm $i$.

The composition of total accruals ($TA_{it}$) is as follows: $TA_{it} = [\Delta Current Assets, (4) - \Delta Cash, (1)] - [\Delta Current Liabilities, (5)] - Depreciation and Amortization Expense, (14)$, where the change ($\Delta$) is computed between time $t$ and time $t - 1$; Compustat data item numbers are indicated parenthetically.

* The sign of the significance levels indicates whether the difference between the vertical decile and the horizontal decile is positive or negative. For example, the first entry of $-0.621$ indicates that the mean $V_{it}$ for decile 1 minus the mean for decile 2 is negative with a significance level of 0.621.
had on the $Z$ statistic. If firm 23 (an auto company) or the entire auto industry is excluded from the analysis, the resulting $Z$ statistics are negative and significant at the 0.002 and 0.005 levels, respectively. If the footwear industry is omitted from the sample because a second investigation was conducted in this industry in 1985 (year +1 in table 5), the absolute magnitude of the $Z$ statistic increases ($-3.771$) for year 0 and decreases ($-0.562$) for year +1.

5.4 ALTERNATIVE TESTS

Table 8 presents results for two alternative tests. As discussed in section 3, managers may have greater incentives to manage earnings if they are petitioners or if the ITC investigation is being conducted under the general escape clause. The $Z$ statistic for the petitioning firms for year 0 ($-2.833$) is smaller in absolute magnitude than for the entire sample. The lower $Z$ statistic may be due to a smaller sample size. Thus, the average $V_{ip}$s ($\bar{V}_{p}$) are compared to the entire sample rather than the $Z$ statistics. In year 0, $\bar{V}_{p}$ is greater in absolute magnitude for the petitioners ($-0.800$) than it is for the entire sample ($-0.760$), indicating

<table>
<thead>
<tr>
<th>Description</th>
<th>$Z_{vp}$</th>
<th>$Average V_{ip}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year $-1^b$</td>
<td>Year 0</td>
</tr>
<tr>
<td>All companies, see table 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(n = 23)^c$</td>
<td>$-0.372$</td>
<td>$-3.459$</td>
</tr>
<tr>
<td>Include only petitioners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(n = 14)$</td>
<td>$-0.264$</td>
<td>$-2.833$</td>
</tr>
<tr>
<td>Include only escape clause cases $(n = 18)$</td>
<td>$-0.788$</td>
<td>$-2.772$</td>
</tr>
</tbody>
</table>

$^a$ The $Z_{vp}$ statistic is calculated as $\sum_{i=1}^{N} V_{p} [\sum_{i=1}^{N} (T_{i} - 3)(T_{i} - 5)]^{-\frac{1}{2}}$, where $T_{i}$ is the number of years in the estimation period. $V_{p}$ is computed as $u_{ip}/(s_{i}(1 + C_{ip}^{2}))$, where $C_{ip} = [X_{p}(X'X)^{-1}X'_{p}]$ in which $X$ is the matrix of independent variables for the estimation period, $X_{p}$ is the matrix for the prediction period, $u_{ip}$ is the prediction error, $p$ is the prediction year, and $s_{i}$ is the standard error from estimates of the following regression model:

$$TA_{it}/A_{it-1} = \alpha_{1}/A_{it-1} + \beta_{1}(\Delta REV_{it}/A_{it-1}) + \beta_{2}(PP_{it}/A_{it-1}) + \epsilon_{it}$$

where:

- $TA_{it}$ = total accruals in year $t$ for firm $i$;
- $\Delta REV_{it}$ = revenues in year $t$ less revenues in year $t - 1$ for firm $i$;
- $PP_{it}$ = gross property, plant, and equipment in year $t$ for firm $i$;
- $A_{it-1}$ = total assets in year $t - 1$ for firm $i$;
- $\epsilon_{it}$ = error term in year $t$ for firm $i$;
- $i = 1, \ldots, 23$ firm index;
- $t = 1, \ldots, T_{i}$ year index for the years included in the estimation period for firm $i$.

The composition of total accruals ($TA_{t}$) is as follows: $TA_{t} = [\Delta Current \ Assets, (4) - \Delta Cash, (1) - [\Delta Current \ Liabilities, (5)] - Depreciation \ and \ Amortization \ Expense, (14)]$, where the change ($\Delta$) is computed between time $t$ and time $t - 1$; Compustat data item numbers are indicated parenthetically. The regression equations are estimated over all available years prior to year $-1$.

$^c$ Year 0 is the year the ITC completed its investigation. In this table, year 0 for the footwear industry is 1984.

$^c$ The number of observations included in the $Z$ statistics is $n$. 

TABLE 8
Alternative Tests of the Earnings Management Hypothesis

![Table 8](image-url)
that discretionary accruals for the petitioners are more income-decreasing. When the sample is limited to general escape clause investigation firms, both the \( Z \) statistic \((-2.772)\) and \( \bar{V}_p \) \((-0.690)\) for year 0 are smaller in absolute magnitude. As such, the results do not indicate that these firms made more income-decreasing accruals than firms being investigated under the countervailing duty and antidumping statutes.

5.5 PORTFOLIO TEST

As noted earlier, cross-sectional correlation results in violations of the assumptions underlying the \( Z \) test statistic. Since the firms are clustered by industry and, within industry, by time there is potential for cross-sectionally correlated accruals. One way to address the problem of cross-sectional correlation is to group the firms by industry and to analyze the discretionary accruals for the industries. One such method of testing portfolio prediction errors is set forth in Mandelker [1974]. The residuals (i.e., discretionary accruals) from equation (2) are averaged across all firms within an industry for each time period during the regression estimation period.\(^4\) The estimated standard deviation of these average residual terms is computed for each portfolio (industry). Average prediction errors are computed for each portfolio for year 0 and standardized by the estimated standard deviation for the portfolio as follows:

\[
us_{fp} = u_{fp}/\sigma_f,
\]  

(6)

where:

\( us_{fp} \) = average standardized prediction error for portfolio \( f \) at time \( p \);
\( u_{fp} \) = average prediction error for portfolio \( f \) at time \( p \);
\( \sigma_f \) = estimated standard deviation of the portfolio \( f \) residuals;
\( f \) = portfolio (industry);
\( p \) = time period.

A \( t \)-statistic is computed to test whether the average prediction errors are different from zero as follows:

\[
T_p = \bar{us}_{p}/[S/(n_f)^{1/2}]
\]  

(7)

where:

\( \bar{us}_{p} \) = average of \( us_{fp} \) across all portfolios \( f \) at time \( p \);
\( S \) = estimated standard deviation of \( \bar{us}_{p} \), \( (S = 1) \);
\( n_f \) = number of portfolios.

\(^4\) The regression equations are estimated over the same number of time periods for each firm within an industry, although the number varied across industries. The number of periods included in the estimation is limited to the number of observations for the firm in each industry with the fewest available observations. When the same estimation period is used to compute \( Z \) statistics for each firm in an industry, the results are \(-0.754\), \(-3.290\), and \(-0.953\) for year \(-1\), year 0, and year \(+1\), respectively (footwear year 0 is 1984). These results are similar to those using the maximum number of available observations for each firm, which are reported in table 5.
The resulting year 0 overall $t$-statistic for all five industries is $-5.008$, which is significant at less than the 0.001 level. When each industry is omitted from the $t$-statistic calculation (one at a time), the resulting four-industry $t$-statistics range from $-3.635$ to $-5.035$. The portfolio tests indicate that after the problems related to cross-sectional correlation are mitigated by grouping firms into industry portfolios (which also results in grouping by year), the discretionary accruals in year 0 are still significantly income-decreasing. The results also indicate that the significant $t$-statistics are not the result of a single influential industry.

In summary, the empirical tests using total accruals indicate that discretionary accruals are income-decreasing in year 0, providing support for the earnings management hypothesis. Discretionary accruals are not significantly different from zero in years $-1$ and $+1$.

6. Conclusions

The results of the empirical tests reported here support the earnings management hypothesis suggesting that managers make income-decreasing accruals during import relief investigations. Discretionary accruals are more income-decreasing during the year the ITC completed its investigation (year 0) than would otherwise be expected. Tests of the earnings management hypothesis are based on firm-specific expectations models used to estimate "normal" total accruals. These models allow for changes in nondiscretionary accruals that are caused by changes in economic conditions. The expectations models developed here represent an attempt to improve upon the measures of discretionary total accruals used in prior research; specifically, time-series models are developed to estimate total nondiscretionary accruals and cross-sectional tests of the earnings management hypothesis are applied to the resulting discretionary accruals measure.

In addition to providing evidence that managers manage earnings during import relief investigations, the results of this study may prove useful to regulators at the ITC. The ITC may benefit by taking into account the evidence provided herein that managers appear to be making income-decreasing accruals during import relief investigation periods. Of course, the ITC relies on several factors in making their injury decisions which may reduce the problem of relying on the reported earnings numbers.\footnote{For example, injury itself is necessary but not sufficient to obtain a favorable injury decision. The injury must be shown to have been caused by foreign imports.}
# APPENDIX A

*Summary of Major Statutory Provisions Related to Import Relief*

<table>
<thead>
<tr>
<th>STATUTE</th>
<th>REQUIREMENTS FOR RELIEF</th>
<th>IMPORT RELIEF AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ESCAPE-CLAUSE INVESTIGATIONS—Sections 201 and 203 (review) of the Trade Act of 1974.</td>
<td>ITC determines that the article is being imported in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to a domestic industry that produces the same article or one in direct competition with the imported article.</td>
<td>Remedy is recommended to the president. The remedy may include relief, such as an increase in duties, the establishment of quantitative restrictions, the negotiation of orderly marketing agreements, or specified types of adjustment assistance.</td>
</tr>
<tr>
<td>2. COUNTERVAILING DUTY INVESTIGATIONS—Sections 703 (preliminary) and 705 (final) of the Tariff Act of 1930.</td>
<td>(i) Department of Commerce determines that a foreign company is receiving a subsidy for articles imported into the United States (U.S.) and (ii) the ITC determines that an industry in the U.S. is materially injured, threatened with material injury, or that establishment of an industry is materially retarded by reason of the imports.</td>
<td>Countervailing duty imposed by the Department of Commerce.</td>
</tr>
</tbody>
</table>
3. **ANTIDUMPING INVESTIGATIONS**—Sections 733 (preliminary) and 735 (final) of the Tariff Act of 1930.

   (i) Department of Commerce determines that imported articles are being or likely to be sold at less than fair value (for the country of origin) and (ii) same as 2 (ii).

   Dumping duty imposed by the Department of Commerce.

4. **REVIEW OF OUTSTANDING ANTIDUMPING AND COUNTERVAILING DUTY ORDERS**—Sections 104(b) and 751 of The Trade Agreements Act of 1979.

   A review is made to determine whether circumstances have changed subsequent to an antidumping or countervailing duty order that render the current order unnecessary. Unless there is good cause a review will not be conducted within 24 months of the original determination.

   The outstanding antidumping or countervailing duty order may be upheld, modified, or revoked.

5. **GENERAL PURPOSE INVESTIGATIONS**—Section 332 of the Tariff Act of 1930.

   This type of investigation is basically a fact-finding investigation of any matter involving tariffs or international trade initiated by the president, the House Ways and Means Committee, Senate Finance Committee, or the ITC.

   This type of investigation results in the issuance of a report but does not lead directly to import relief.
## APPENDIX A—continued

<table>
<thead>
<tr>
<th>STATUTE</th>
<th>REQUIREMENTS FOR RELIEF</th>
<th>IMPORT RELIEF AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. UNFAIR IMPORT PRACTICE INVESTIGATIONS—Section 337 of the Tariff Act</td>
<td>(i) ITC determines that unfair methods of competition or unfair acts are occurring in the importation of articles into the U.S. or in their sale and (ii) that the effect of tendency of such importation is to destroy or substantially injure an efficiently and economically operated industry, or to prevent establishment of such an industry, or to restrain or monopolize trade and commerce. (Most of these complaints relate to violations of U.S. patents.)</td>
<td>ITC may issue orders excluding the articles from entry or issue cease and desist orders.</td>
</tr>
<tr>
<td>of 1930.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. IMPORT INTERFERENCE WITH AGRICULTURAL PROGRAMS INVESTIGATIONS—Sec-</td>
<td>ITC determines that imports are materially interfering with programs of the Department of Agriculture.</td>
<td>Findings and recommendations are made to the president. Import fees or quotas may be imposed by the president.</td>
</tr>
<tr>
<td>tion 22 of the Agricultural Adjustment Act.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

Information Collected in the Producer's Questionnaire for ITC Final Investigations

A. Practical Annual Capacity
B. Production
C. End-of-Period Inventories
D. Purchases
   1. Imports
   2. Other Purchases
E. Shipments
   1. Intracompany and Intercompany Transfers
   2. Domestic Shipments
   3. Export Shipments
   4. Amounts Made to End Users and Distributors
F. Employment and Wages
G. Income-and-Loss and Other Financial Information
   1. Methods of Allocation
   2. Income from Operations
   3. List of Unusual or Nonrecurring Expenses
   4. Asset Valuation: Original Cost and Book Value
   5. Capital Expenditures
   6. Capital and Investment—Actual and potential negative effects of imports on firm's growth, investment, and ability to raise capital
   7. Research and Development Expenses
H. Prices
I. Competition from Imports—Price Suppression/Depression
J. Competition from Imports—Lost Sales

REFERENCES


43 Companies must report all information by establishment, and if 85% or less of the establishment is devoted to the product line in question, the information must also be provided by product line. An establishment is defined by the ITC as “each facility in the United States in which product A is produced, including auxiliary facilities operated in conjunction with (whether or not physically separate from) such production facilities.” For preliminary investigations, less detailed information is collected in parts B, C, D, E, and G of the questionnaire. This information was obtained from a sample copy of a Producer's Questionnaire provided by the ITC.


———. Investigation Number TA-201-44, Publication no. 1110, December 1980.

———. Investigation Number TA-201-55, Publication no. 1717, August 1985.