

# THE ACCRUAL ANOMALY: THE DAMPENING EFFECT OF ADJUSTING ENTRIES

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## Abstract

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One of the most critical aspects in the preparation of financial statements is the potential for manipulation through accrual-based earnings management (AEM), because reported earnings can be managed through the interpretation of generally accepted accounting principles (GAAP).

The traditional detection of earnings management (EM) through the use of total accruals leads to confuse the effect of accounting policies choices (AEM) with the consequences of real actions (REM) by managers to achieve a specific reported earnings objective.

To properly detect whether earnings are manipulated through GAAP (thus, through AEM), this paper directly isolates the subjective component of accruals attributable to internal estimates in the income statement.

It was found that there is a very significant negative correlation between subjective adjusting entry values and unadjusted transactional income.

Therefore, the “accrual anomaly” may already be explained in AEM. Similar to a “damper”, adjusting entries appear to absorb earnings in higher unadjusted income companies and release earnings in lower unadjusted income cases. Therefore, lower income seems to be also related to an increase in its subjectivity obtained by estimated values.

**Keywords:** Earnings Management, Accruals, Accrual Anomaly

## 1. INTRODUCTION

One of the most critical aspects in the preparation of financial statements is the potential for manipulation through accrual-based earnings management (AEM), because reported earnings can be managed through the interpretation of generally accepted accounting principles (GAAP).

Accrual adjustment records that are governed by GAAP are fundamental for statement relevance. However, when such records involve judgment and subjective estimates, they are less reliable and more manageable than objective, verifiable, cash-basis transactional records.

Because of the well-known trade-off between relevance and reliability, the subjectivity of the estimates needed for accrual accounting often creates a “gray zone” that separates verifiable economic transactions from the value items included in financial statements.

The purpose of this paper is to provide additional insight into AEM, probing a largely

unexplored field to investigate the “direct” role of estimates in income.

Indeed, many previous researchers who focused on accruals as a whole used “indirect” balance-sheet methods and employed a narrow definition based on working capital, which does not allow for the appropriate consideration of the role of estimates in the income-formation process.

Other researchers have used more accurate “direct” methods focused on cash-flow statements (Collins & Hribarb, 2002; Dechow, 1994, 1998, 2002; Balla et al., 2016); however, these methodologies are potentially susceptible to an ascertainment bias in estimate AEM.

Indeed, the detection of earnings management (EM) through the use of total accruals leads one to confuse the effects of “accounting policies choices” with the consequences of “real actions” by managers to “achieve a specific reported earnings objective” (Scott, 2011). In other words, this approach confuses AEM with “real earnings management” (REM).

As an accountant, we are interested in understanding whether earnings are manipulated through GAAP, and thus through AEM.

Total accruals include, for example, the decrease (increase) in accounts receivable and the increase (decrease) in accounts payable; therefore, accruals include the effect of managing changes in payment times. However, this management implies voluntary changes in external contractual relationships (not internal accounting assessments) and is undoubtedly a real activities manipulation (REM).

To avoid this overlap, we split the income statement into two categories: items derived from external transactions measured by the market and recorded by "transactional entries"; and accrual item corrections derived from estimates and recorded by "adjusting entries."

In Italian income statements, we find both that the weight of "adjusting entries" in "transactional entries" is very high and that there are large, significant qualitative differences in the corrections between single and consolidated financial statements.

Furthermore, and perhaps most interestingly, we find that there is also a very significant negative correlation between adjusting entry values (AV) and accrued earnings (AE).

Therefore, the "accrual anomaly" may already be explained by AEM as the increase in accrued income through positive (less negative) subjective corrections for companies that have negative (less positive) unadjusted incomes. Indeed, it appears possible that a reduction in income is related to an increase in its subjectivity obtained by estimated values.

This observation results in a "dampening effect" of adjusting entries on unadjusted transactional income - i.e., an effect that absorbs income in higher unadjusted income and releases it in lower unadjusted income.

The paper is structured as follows. In the next section, we provide an overview of the literature review about accrual anomaly and the trade-off between relevance and reliability. Section 3 describes the importance of separating transaction-based entries from adjusting entries in analyzing relevance and reliability in the accounting cycle. The research design and methodology methods are presented in Section 4. Dataset and results the main findings are subsequently discussed in Section 5. Section 6 concludes with a summary of the basic results and a discussion of potential implications for researchers, practitioners and regulators.

## 2. LITERATURE REVIEW

The accrual anomaly refers to the negative relationship between accounting accruals and future earnings and stock returns. This pattern, first documented by Sloan (1996), presents an important challenge to rational asset pricing theories (Fama & French, 1992).

Many studies further show that the accrual anomaly can be generalized to different country settings. Pincus, Rajgopal, and Venkatachalam (2007) published the first international investigation of this phenomenon. The researchers document the

occurrence of the accrual anomaly in Australia, Canada and the UK. More recently, Papanastasiopoulos (2014; 2015) has found that the accrual effect on stock returns occurs in 11 European capital markets: Belgium, Denmark, France, Germany, the UK, the Netherlands, Norway, Spain, Sweden, Switzerland, and Italy. He also shows that the accrual effect on stock returns in Europe is influenced by country-level factors, which include culture, equity-market setting, financial analysts' research output, shareholder protection, and ownership structure (see among others: Vicente, Torres and Yetano 2009; Cerqueira, and Pereira 2015).

Many studies are built on the subjectivity that characterizes accruals (e.g., Chan, Chan, Jegadeesh, & Lakonishok, 2006; Dechow & Dichev, 2002; Richardson, Sloan, Soliman, & Tuna, 2006; Xie, 2001). In particular, Xie (2001) decomposes accruals into normal and abnormal components and shows that the accrual anomaly is primarily attributable to the latter component, suggesting that investors misunderstand potential earnings management. Similar findings are found by Chan et al. (2006) and Dechow and Dichev (2002). These researchers provide evidence that firms with low accrual quality have less persistent earnings. Furthermore, in their analysis, Pincus et al. (2007) consider abnormal accruals and find supportive evidence of a significant role for earnings management in explaining the occurrence of the accrual anomaly (see among others: Healy, 1985; Cheng, and Thomas, 2006; Xie, 2001; Changa, Huangb, Wanga and Hwangc, 2014; Ohlson, 2014, Alhadab and Nguyen, 2018, Masahiro, 2018).

Ultimately, accruals appear to be related to future earnings performance because of the accounting distortions associated with their higher subjectivity.

Richardson, Sloan, Soliman, and Tuna (2005) derive a natural link between Sloan's (1996) notion of subjectivity and the concept of reliability, which is well known in the field of accounting standards. Specifically, the researchers provide a comprehensive definition and categorization of balance sheet accruals in which each accrual category is rated according to its reliability; they document that less reliable accruals have lower earnings persistence.

However, based on accounting standards, the researchers state that reliability cannot be considered apart from relevance; reliability and relevance are the two primary qualities that make accounting information useful for decision-making.

FASAB defines reliability as "the quality of information that assures that information is reasonably free from error and bias and faithfully represents what it purports to represent" and relevance as "the capacity of information to make a difference in a decision by helping users to form predictions about the outcomes of past, present, and future events or to confirm or correct prior expectations" (see also: Bushman & Piotroski, 2006; Ryan, 2006).

To be relevant, information must be timely and have predictive value, feedback value, or both. To be reliable, information must have representational faithfulness and be both verifiable and neutral.

Thus, the qualities that distinguish “better” (more useful) information from “inferior” (less useful) information are primarily the qualities of relevance and reliability.

According to Richardson et al. (2005), whereas many studies have evaluated accounting information based on the relevance criterion (see Holthausen & Watts, 2001), relatively little attention has been paid to evaluating accounting information based on the reliability criterion.

One consequence of the emphasis on relevance has been called for the recognition of more relevant, less reliable information in accounting numbers (e.g., Lev and Sougiannis, 1996). However, as articulated by Watts (2003), allowing less verifiable and hence less reliable estimates into accounting numbers can seriously compromise those numbers’ usefulness.

Richardson highlights the crucial trade-off between relevance and reliability and suggests that the recognition of less reliable accrual estimates introduces measurement error. Furthermore, for SFAC7 (see paragraph 42), maximizing the use of accrual accounting information involves a trade-off between relevance and reliability.

EFRAG (2013) argues that the above-mentioned trade-off is only apparent and claims that reliability (faithful representation) is so essential that there should be no trade-off because both characteristics are necessary and must be present.

For example, IAS-IFRS fair value accounting does not enhance relevance, simultaneously detracting from the reliability of financial reporting, which is a misunderstanding of the meaning of reliability; to be useful information, fair value must be relevant and supported by sufficient disclosure to provide a faithful representation (Bauer, O’Brien and Saeed, 2014).

However, as articulated by Watts (2003), researchers and regulators who propose the recognition of relatively unreliable estimates in financial reports should consider the costs generated by their proposals.

Moreover, the same IAS-IFRS requires the arrangement of the most subjective adjusting valuation as changes in fair value in the income statement appendix – “other comprehensive income” (OCI) – to avoid the distribution of less reliable gains (see also Lee et al. 1996).

### 3. RELEVANCE AND RELIABILITY IN THE ACCOUNTING CYCLE

Preparing financial statements requires two types of entries: transaction-based entries and adjusting entries.

Transaction-based entries are the first step in the accounting cycle. This step begins with the fiscal year and continues until the end of the accounting period. These entries are very reliable because they will be recorded only if evidenced by a source document. A disbursement will be supported by the issuance of a check, and an invoice issued to a customer might support a sale. A time report may support payroll costs, and a tax statement may document the amount paid for taxes. A cash register tape may show cash sales, and a bank deposit slip

may show collections of customer receivables; this is only a small sample.

Subsequently, the reliability of these records is very high, and the comparison between revenues and costs produced solely by movements with cash and evidenced receivables and payables consequently shows very reliable earnings (an “extensive cash earning”, which sums changes in cash to changes in documentable operating receivables and liabilities).

As described in every manual, source documents and related transaction-based entries usually serve as the trigger for accounting because one of the most important principles that should be followed in balance sheet preparation is the “matching principle”.

The matching principle requires that expenses incurred in producing revenues be deducted from the revenues they generated during the accounting period.

This matching of expenses and revenues is necessary for relevance in the accrued income statement, but it involves non-transactional entries (adjusting entries) based on accounting estimates.

In certain instances, these estimates may be related to expenditures that affect multiple periods, such as the cost and depreciation of property, plant, and equipment (increases expense estimates in the income statement and reduces assets on the balance sheet) or unsold stocks or capitalization (decreases expenses by the estimates and increases assets).

In other instances, the estimates may be related to expected future events such as the provision for charges and risks (increases expense estimates and increases potential or contingent liabilities).

Particular types of adjusting entries are consolidation-adjusting entries. These topside entries are made by a parent company preparing consolidated financial statements.

Topside journal entries are a normal and necessary part of accounting and involve offsetting (eliminating) the carrying amount of the parent’s investment in each subsidiary and as the parent’s portion of equity of each subsidiary, along with recognizing and estimating identifiable assets and liabilities of the acquiree at fair value and goodwill, tax effects and non-controlling interests. Assets and goodwill are then amortized or impaired over subsequent periods and transferred to the income statement from the balance sheet. Of course, estimated profits or losses in separate income statements resulting from intragroup transactions estimated in the group assets (such as inventory and fixed assets) are also eliminated (Mindzak & Zeng, 2018).

Additionally, these estimates increase relevance, but because they require internal evaluations and subjectivity, they decrease the reliability of consolidated financial statements.

Accounting standards govern all these estimation activities in detail; however, the subjective component of these assessments cannot be eliminated.

For example, IASB in the Basis for Conclusions on the Exposure Draft Conceptual Framework for Financial Reporting (ED/2015/3) notes that the level

of measurement uncertainty effects may decrease the relevance of an estimate.

IAS 8 states (par 48) that “accounting estimates by their nature are approximations” and reaffirms that “estimation is inherently subjective” (par 51). Dir. 2013/34 EU (pt. 22) states that “the recognition and measurement of some items in financial statements are based on estimates, judgments and models rather than exact depictions. As a result of the uncertainties inherent in business activities, certain items in financial statements cannot be measured precisely but can only be estimated. Estimation involves judgments based on the latest available reliable information. The use of estimates is an essential part of the preparation of financial statements”.

For the IFAC (International Standard on Auditing - ISA 540 par. A9), “accounting estimates are imprecise (...) and can be influenced by management judgment. Such judgment may involve unintentional or intentional management bias (for example, as a result of motivation to achieve the desired result). The susceptibility of an accounting estimate to management bias increases with the subjectivity involved in making it. Unintentional management bias and the potential for intentional management bias are inherent in subjective decisions that are often required in making an accounting estimate” (Bradshaw, Richardson & Sloan, 2001).

Nevertheless, even though previous researchers are interested in the role played by accruals in income relevance and reliability, they study total accruals (TACC) as the difference between operating cash flow (CFO) and accrual earnings before extraordinary items and discontinued operations (EXBI) (Collins & Hribarb, 2002; Pae, 2005).

$$TACC = CFO + EXBI \quad (1)$$

Furthermore, researchers argue that the accruals components of earnings have a greater degree of subjectivity but inevitably, within accruals, merge very different reliable items.

I believe that the distinction between “cash earnings” and “accruals” does not accurately grasp reliability since only the estimated component of accrual is truly subjective.

Directly examining total accrual (Collins & Hribarb, 2002), TACC, includes the following:

$$TACC = CHGAR + CHGINV + CHGAP + CHGTAX + CHGOTH + DEP \quad (2)$$

where, CHGAR is the decrease (increase) in accounts receivable, CHGINV is the decrease (increase) in inventory, CHGAP is the increase (decrease) in accounts payable, CHGTAX is the increase (decrease) in taxes payable, CHGOTH is the net change in other current assets, and DEP is depreciation expense.

However, this method confuses “AEM” with “REM.” For example, changes in operating receivables and liabilities arising out of transactions with external economies are included in the accruals, but they are very reliable items, being evidenced by either active and passive invoices or other objective

documentation. The component of provisions for risks and charges arising from internal estimates is not as reliable. Only this component can be affected by a strained subjective earnings management valuation. In contrast, false invoices are real fraud.

Richardson et al. (2005) implicitly admit that only a difference “e” between the credit book value accrual “A” and what is ultimately collected on the credit sales “A\*” could be biased from the subjective accrual errors resulting from aggressive and conservative accounting (Marselinus, 2017; Li, 2018; Nera Marinda et al. 2018). However, this aspect is then neglected.

Consequently, to provide additional insight into accounting distortions to specifically detect the role of AEM, I propose a different point of view that directly examines the income accounting process, distinguishing between objective “transaction-based values” and subjective “adjusting-based values” and “directly” investigating the role of estimates in income.

Therefore, if I call un-adjusting earnings “extensive cash earnings” (ECE) (I use the term “extensive” because it sums changes in cash to changes in documentable operating receivables and liabilities) and consider AV and AE post-adjusting earnings, the following relationship exists: Accrued Earnings = Extensive Cash Earnings + Adjusting Entry Values

$$AE_t = ECE_t + AV_t \quad (3)$$

#### 4. RESEARCH QUESTIONS AND METHODOLOGY

The first research question to gain an overall idea of the importance of the phenomenon of accounting estimates in income statements is as follows:

Q1: What is the weight of AV in ECE and AE? It is a basic question from which to start our investigation, which does not find references in the studies on earning management. To detect these variables, I must consider the manner in which AV are shown on financial statements.

Because adjusting entries correct transaction-based entries to enable income to comply with the guideline provided by the matching principle, they “adjust” the income statement as follows:

- Integrating the income statement with profits and losses that are matched in the year but that have not yet been recorded (deferred expenses and revenues, and amortization and depreciation expenses); and
- Correcting the income statement with profits and losses that have been recorded but are not matched in the year (prepaid expenses, unearned revenues, expenses to capitalize, and changes in inventories).

The accounting procedure to operate these integrations and corrections may be doubled and could include the following:

1. Directly integrating or correcting “transactional” income statement revenues and cost items by adjusting entries; and
2. Indirectly inserting specific “non-transactional” adjusting revenue and cost items that integrate or correct “transactional” revenue and cost items into the statement.

**Table 1.** European income statement

<b>Income statement</b>
A) Production value
1) revenues from sales and services
2) change in work in process and finished goods
3) change in work in process on long-term contracts
4) change in internally generated fixed assets
5) other revenues and income
<b>Total Production value (A)</b>
B) Production costs
6) cost of raw materials, consumables and merchandise
7) cost of services
8) cost of rents and leases
9) staff costs
10) amortization, depreciation
11) change in raw materials, consumables and merchandise
12) provisions for risk
13) provision for charges
14) other operating expenses
<b>Total Production costs (B)</b>
<i>Difference between Production value and Production costs (A - B)</i>
C) Financial income and expenses
15) financial income from investments
16) other financial income:
17) interest and other financial expenses:
17bis) Gains and losses on foreign currency translation
<b>Net Financial income (expenses) (C)</b>
D) Adjustments to the carrying value of financial assets
18) appreciations
19) depreciations
<b>Net Adjustments to the carrying value of financial assets (D)</b>
E) Extraordinary gains and losses
20) extraordinary gains
21) extraordinary losses
<b>Net Extraordinary gains and losses (E)</b>
<b>Net income before income taxes (A - B ± C ± D ± E)</b>
22) Current and deferred-prepaid income taxes
23) Net income (loss)

In the European Union (EU), as required by Regulation (EC) No. 1606/2002, listed companies prepare their accounts in accordance with IAS/IFRS, whereas non-listed companies use EU-GAAP.

Because EU-GAAP uses a rigid encoding that facilitates comparison, I use a reclassification of all statements with the European Financial Statement model (see 78/660/CEE and dir. EU 34/2013 and Italian D.Lgs. 127/91 and D.Lgs. 139/15) (Table 1) so that I can detect the following (see Table 2):

1. Direct integrations and corrections from the balance sheet are made for specific asset and liability accounts (dir. EU 34/2013) for changes in the following:
  - Estimated prepayments and accrued income (BS code E - Assets section)
  - Accruals and estimated deferred income (BS code D - Liabilities section)
2. Indirect integrations and corrections from the income statement detect specific “non-transactional” costs and revenue items as follows:
  - Depreciation, amortization and impairment losses (IS code 10).

- Change in work in progress, semi-finished and finished products (IS code 2)
  - Change in long-term work in progress (IS code 3) Work performed for its own purposes and capitalization (IS code 4)
  - Changes in stock goods and in materials and consumables (IS code 11)
  - Provision for risks (IS code 12)
  - Provision for charges (IS code 13)
  - Adjustments to the carrying value of financial assets (IS code D)
  - Tax accruals (IS code 22)
- Therefore, if we consider financial statement items in detail, the (1) becomes:

- (+/-)ECE
- (-) Depreciation, amortization and impairment losses
- (+) Change in work in progress, semi-finished and finished products
- (+) Change in long-term work in progress
- (+) Work performed by the undertaking for its own purposes and capitalization
- (-) Change in stock goods and in materials and consumables
- (-) Provision for risks
- (-) Provision for charges
- (+) Adjustments to the carrying value of financial assets
- (-) Tax accruals
- (+) Estimated change in prepaid-accrued expenses-revenues
- (=) AE

The signs “+” and “-” refer to the polarity of each item for a European income statement compared to AE, for which the sign “+” means “profit” and “-” means “loss”.

For example,

- “Change in work in progress, semi-finished and finished products” is a positive (+) accrual item in the income statement; therefore, a value “+6” means that this item increases AE. “Change in stocks goods and in materials and consumables” is negative (-); therefore, a value “+4” means that this item decreases AE. Thus, the aggregate value will be + (+6) - (+4) = +2.
- “Provision for charges” is a negative (-) accrual item in the income statement; therefore, a value “+2” indicates that this item decreases AE - (+2) = -2.
- “Tax accruals” is a negative (-) accrual item in the income statement; therefore, a value “-4” means that this item increases AE - (-4) = +4.

To answer the question, I must compare the weight of single adjusting entries with earnings before adjusting entries (ECE). For example, for “depreciation, amortization and impairment losses,” I calculate the following amortization adjusting ratio:

$$\text{Adjusting ratio}_{Dep} = \frac{\text{Depreciation, amortization and impairment losses value}}{\text{Extensive cash earning}} \quad (4)$$

and an overall ratio by algebraically summing single items as follows:

$$\text{Adjusting ratio} = \frac{\Sigma \text{ Adjusting item}}{\text{Extensive cash earning}} \quad (5)$$

Furthermore, I occasionally found negative ECE.

For example, if I find a negative ECE (-) and an increase in inventories (+) or a positive ECE (+) and a

decrease in inventories (-), what should occur?

I choose to consider the absolute value of ECE as follows:

$$\text{Adjusting ratio} = \frac{\Sigma \text{ Adjusting item}}{|\text{Extensive cash earning}|} \quad (6)$$

Consequently, if I have a value of +10% in “Change in work in progress, semi-finished and finished products”, as previously stated, this indicates that an increase in inventories adds 10% to ECE.

If ECE is 100, I have AE of  $100 + 10 = 110$ . However, if ECE is -100, I have AE of  $-100 + 10 = -90$ .

In contrast, if I have a value of -10% in “Change in work in progress, semi-finished and finished products,” this means that a decrease in inventories subtracts 10% from ECE.

If ECE is 100, I have AE of  $100 - 10 = 90$ . If ECE is -100, I have AE of  $-100 - 10 = -110$ .

I am interested in the ECE correction operated by AV; this analysis leads to an emphasis on the weight of the cases in which a low ECE leads to a huge percentage of AV (thus, the high variability).

For example, for a company that operates a constant amortization AV of 40 while its ECE decreases from year to year from 100 to 10, then

to -10, and finally to -100, we record that the amortization adjusting ratio varies from 40% (40/100) to 400% (40/10), 400% (40/|-10|), and finally to 40% (40/|-100|), respectively.

To remove this possible distortion, for each company, I weight each adjusting ratio with the |ECE| value.

Returning to the example, I weight 400% with  $ECE \pm 10$  ten times less than the 40% with  $ECE \pm 100$ .

The descriptive tables show the impact of AV on the ECE, which is measured by the abovementioned indicators.

The first insight concerns the differences between separate and consolidated income statements. From a descriptive comparison of separate and consolidated financial statements, I will observe that although adjusting entries operates similar quantitative corrections, there are large differences between single adjusting items.

Table 2. From extensive cash earning to accrued earning

Extensive Cash accounting	⇒	Accrued accounting	⇒	Other Adjusting Entries	
1) revenues from sales and services	⇒ + - ACCRUALS and PREPAIDS ("D" and "E" items in European balance sheet) ⇒	1) revenues from sales and services*		2) change in work in progress and finished goods	
5) other revenues and income		5) other revenues and income*		3) change in work in progress on long-term contracts	
6) cost of raw materials, consumables and merchandise		6) cost of raw materials, consumables and merchandise*		4) change in internally generated fixed assets	
7) cost of services		7) cost of services*		10) amortization, depreciation and write-downs	
8) cost of rents and leases		8) cost of rents and leases*		11) change in raw materials, consumables and merchandise	
9) staff costs		9) staff costs*		12) provision for risks	
14) other operating expenses		14) other operating expenses*		13) provision for charges	
C) Financial income and expenses		C) Financial income and expenses*		D) Adjustments to the carrying value of financial assets	
E) Extraordinary gains and losses		E) Extraordinary gains and losses		22) deferred-prepaid income taxes	
22) Current income taxes		22) Current income taxes		23) accrued earning	
Extensive CASH EARNING					

To more thoroughly investigate these differences, the second research question is as follows:

Q2: If we consider the values of AV in a company’s financial statement, can we predict whether we are observing a separate or a consolidated statement?

Also, this question does not find references in the studies on the consolidated financial statement and earning management. To answer this question for each pair of financial statements (separate and consolidate) in each group, I calculate the difference for each adjusting item ratio. For example, if the amortization adjusting ratio for a single parent company value is 10% in the separate financial statement and 30% in the consolidated financial statement, I calculate “separate minus consolidated” (-20) and “consolidated minus separate” (+20).

Subsequently, based on these values, I set a

logistic regression model by adding industry as a control variable.

In summary, I calculate the likelihood of estimating whether a difference is derived from the following:

- Separate-consolidate; or
- Consolidate-separate.

For example, does a difference of +20 in the amortization adjusting ratio value increase or decrease the likelihood that we are operating a difference between the “consolidated minus separate”?

I establish the following logistic regression model:

$$\text{Logit}(p_{\text{cons}}) = \alpha_0 + \alpha_1 (\Delta \text{ in Depreciation and amortization and impairment losses}) + \alpha_2 (\Delta \text{ in Change in work in progress, semi-finished and finished products}) + \alpha_3 (\Delta \text{ in Change in long-term work in progress}) + \alpha_4 (\Delta \text{ in Capitalized internal construction}) + \alpha_5 (\Delta \text{ in Change in stock goods and in materials and consumables}) + \alpha_6 (\Delta \text{ in Provision for risks}) + \alpha_7 (\Delta \text{ in Provision for charges}) + \alpha_8 (\Delta \text{ in Adjustments to the carrying value of financial assets}) + \alpha_9 (\Delta \text{ in Tax accruals}) + \alpha_{10} (\Delta \text{ in Change in estimated prepaid-accrued expenses-revenues}) + \alpha_{11} \text{List} + \alpha_{12-20} \text{Industry}$$

where  $\alpha_{11}$  List and  $\alpha$  from 12 to 20 are other control variables that represent the “industry effect.”

The last research question may be the most important and sensitive.

I want to deeply delve into the real function of the values of adjusting entries. Specifically, I question whether subjective AV only correct transaction-based entries (ECE) to enable income to comply with the matching principle guideline or whether they also adjust transaction-based entries to match accrued income (AE) within desired values. This question leads to the following:

Q3: Is there a relationship among the result before adjusting entries (ECE), AE, and the sum of AV?

At the individual firm level, I can also theoretically assume an indirect correlation between the AV and the ECE.

For example, consider a company that is indifferent to renting or buying equipment. The company would obtain the same AE (I posit 80); however, in the first case of rental, there is a transactional cost (I posit 20). For purchases, there is amortization, and thus an adjusting entry (I always posit 20). Clearly, there is an indirect correlation

between AV and ECE as follows:

$$\begin{aligned} \text{Rental: } & \text{ECE } 80 \quad \text{AV } 0 \quad \text{AE } 80 \\ \text{Purchase: } & \text{ECE } 100 \quad \text{AV } 20 \quad \text{AE } 80 \end{aligned}$$

However, it is very difficult to establish a correlation similar to the overall level; for instance, companies with a more positive ECE also have, on average, a more negative AV correction.

Furthermore, we do not expect to find any precise quantitative correlation between AV and AE.

Otherwise, it would be more plausible to assume that the AV estimated value intervenes similarly to a damper on the unadjusted transactional income ECE, which absorbs income in higher unadjusted income and releases it in lower adjusted income.

Methodologically, to answer this question for each separate and consolidated income statement, I select ECE and the sum of AV.

Next, I correlate ECE, AV, listed/not listed, and separate/consolidated.

Finally, to estimate, I construct a regression model using least squares for all 7,480 income statements as follows:

$$AV = \beta_0 + \beta_1 ECE + \beta_2 Type + \beta_3 ECE * Type + \beta_4 List + \beta_{5-20} Industry + \varepsilon \tag{7}$$

### 5. DATASET AND RESULTS

I select financial statements using the Aida database (Italian component of Bureau van Dijk’s Amadeus database), which reports Italian financial statements according to the European model required by Italian law (see 78/660/CEE and dir. EU 34/2013; D.Lgs. 127/91 and D.Lgs. 139/15). The database is also for listed companies subject to IAS/IFRS standards that

are formally reclassified as EU GAAP.

I select parent companies that present complete financial statements for 2015, both separate and consolidated, and as in previous research, I remove financial firms (corresponding to the “K” NACE industry codes “Financial and insurance activities,” see Table 3). I find 3,740 companies for 7,480 financial statements.

Details of the sample are shown in Tables 4-6.

Table 3. List of NACE codes

A	Agriculture, forestry and fishing
B	Mining and quarrying
C	Manufacturing
D	Electricity, Gas, steam and air conditioning supply
E	Water supply; sewerage; waste management and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transporting and storage
I	Accommodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific and technical activities
N	Administrative and support service activities
O	Public administration and defense; compulsory social security
P	Education
Q	Human health and social work activities
R	Arts, entertainment and recreation
S	Other services activities
T	Activities of households as employers; undifferentiated goods - and services - producing activities of households for own use
U	Activities of extraterritorial organizations and bodies

Table 4.

	Listed	No Listed	Tot.
Separate	230	3,510	3,740
Consolidate	230	3,510	3,740
Tot.	460	7,020	7,480

Table 5. Legal Form

SPA	2.449	65.5%
SRL	1.059	28.3%
Oth.	232	6.2%
Tot.	3.740	100%

Table 6. Industry (NACE Eurostat codes)

A	B	C	D	E	F	G	H	I	J	L	M	N	P	Q	R	S	Total
9	10	1186	66	48	178	466	163	26	136	342	1698	103	3	2	0	9	3,740

To answer the first question (Q1) regarding the weight of AV on ECE and AE, I report the descriptive statistics from the adjusting ratios for separate and consolidated statements, distinguishing

subsequently between EU GAAP adopters (non-listed companies) and IAS/IFRS adopters (listed companies) (see Table 7).

Table 7 Descriptive statistics

ALL INCOME STATEMENTS (3,740S+3,740C)		MEAN (%)			ST. DEV	
		S	C	A	S	C
Extensive Cash Earning (ECE)		100	100			
Adjusting entries Value (AV)		-46.3	-47.4	-1.2	1,02	0,93
Depreciation and amortization and impairment losses	-	36.8	69.8	33.1	0,54	0,82
Change in work in progress, semi-finished and finished products	+	0.0	0.6	0.6	0,20	0,24
Change in long-term work in progress.	+	4.7	7.7	3.0	0,37	0,41
Capitalized internal construction	+	2.6	6.4	3.8	0,12	0,19
Change in stocks goods and in materials and consumables	-	2.2	-0.8	-3.0	0,23	0,29
Provision for risks	-	3.8	3.4	-0.4	0,18	0,16
Provision for charges	-	1.0	1.1	0.1	0,07	0,06
Adjustments to the carrying value of financial assets	+	-11.3	-1.3	10.0	0,62	0,19
Tax Accruals	-	-1.8	-4.6	-2.9	0,15	0,18
Change in prepaid-accrued expenses-revenues	+	-0.3	8.3	8.6	0,18	0,41
Accrued Earning (AE)		53.7	52.6	-1.2		
Σ AV		90.0	132.2	42.2	1,20	1,49

NO LISTED INCOME STATEMENTS (3,510S+3,510C)		MEAN (%)			ST. DEV	
		S	C	A	S	C
Extensive Cash Earning (ECE)		100	100			
Adjusting entries Value (AV)		-49.7	-48.9	0.7	1,18	1,04
Depreciation and amortization and impairment losses	-	40.0	59.4	19.4	0,60	0,77
Change in work in progress, semi-finished and finished products	+	0.3	1.1	0.8	0,25	0,33
Change in long-term work in progress.	+	1.7	7.5	5.8	0,37	0,48
Capitalized internal construction	+	3.0	6.3	3.3	0,15	0,24
Change in stocks goods and in materials and consumables	-	-1.0	-1.6	-0.6	0,28	0,34
Provision for risks	-	4.2	4.0	-0.2	0,23	0,22
Provision for charges	-	1.7	1.8	0.0	0,10	0,07
Adjustments to the carrying value of financial assets	+	-9.2	-1.8	7.3	0,75	0,22
Tax Accruals	-	-1.7	-2.2	-0.5	0,14	0,15
Change in prepaid-accrued expenses-revenues	+	-2.3	-0.5	1.8	0,22	0,23
Accrued Earning (AE)		50.3	51.1	0.7		
Σ AV		97.8	124.4	26.6	1,42	1,43

LISTED INCOME STATEMENTS (230S+230C)		MEAN (%)			ST. DEV	
		S	C	A	S	C
Extensive Cash Earning (ECE)		100	100			
Adjusting entries Value (AV)		-42.3	-46.1	-3.8	0,78	0,80
Depreciation and amortization and impairment losses	-	32.9	79.5	46.6	0,45	0,78
Change in work in progress, semi-finished and finished products	+	-0.3	0.1	0.4	0,12	0,09
Change in long-term work in progress.	+	8.3	7.9	-0.4	0,36	0,34
Capitalized internal construction	+	2.0	6.5	4.5	0,06	0,11
Change in stocks goods and in materials and consumables	-	6.0	-0.1	-6.1	0,14	0,21
Provision for risks	-	3.3	2.8	-0.5	0,12	0,08
Provision for charges	-	0.1	0.4	0.3	0,01	0,03
Adjustments to the carrying value of financial assets	+	-13.8	-0.8	12.5	0,40	0,27
Tax Accruals	-	-1.9	-6.9	-5.0	0,16	0,19
Change in prepaid-accrued expenses-revenues	+	2.0	16.3	14.3	0,12	0,43
Accrued Earning (AE)		58.3	53.9	-4.4		
Σ ADJ		80.9	139.4	58.5	0,84	1,39



I pose 100 ECE for all (ALL) the companies in the sample, considering not only separate (S) and consolidated (C) income statements but also the difference ( $\Delta$ ) between them.

I do the same thing in the following columns by separating non-listed companies (NOT LISTED) from listed companies (LISTED).

Row AV is the sum of (-) Depreciation amortization and impairment losses, (+) Change in work in progress, semi-finished and finished products, (+) Change in long term work in progress, (+) Work performed by the undertaking for its own purposes and capitalized, (-) Change in stock goods and in materials and consumables, (-) Provision for risks, (-) Provision for charges, (+) Adjustments to the carrying value of financial assets, (-) Tax accruals, and (+) Change in prepaid-accrued expenses-revenues.

In ALL, I can observe that the value of AV, which varies on average from -46.3 to -47.4, is very similar for separate and consolidated statements. Therefore, adjusting entries operates a similar reduction on ECE and  $AE = ECE + AV$  vary on average only from 53.7 for separate to 52.6 for consolidated statements. However, from a statistical point of view, comparing all the separate with all the consolidated statements, this difference is significant ( $129984403 = 77.17$ ,  $p < 0.05$  for equal variances not assumed). The differences are also significant for single items.

Instead, by decomposing single AV, the differences between values of separate (S) and consolidated (C) income statements are remarkable. The “depreciation and amortization and impairment losses” effect varies, on average, from 36.8 to 69.8, which is plausible if we consider that to construct a consolidated financial statement, I substitute in the parent separate financial statement shareholding with the assets and goodwill of each subsidiary, which is then either amortized or impaired.

However, because the number of AV for separate and consolidated income statements is comparable, deep qualitative differences in single adjusting items are implied.

I will analyze these differences afterward using a logistic regression model.

The last row indicates the average weight (by |ECE|) of the sum of absolute values of adjusting

entries on |ECE| of each company to highlight the overall dimension of estimates in the income statements.

Therefore,  $\Sigma |AV| = |Depreciation, amortization and impairment losses| + |Change in work in progress, semi-finished and finished products| + |Change in long term work in progress| + |Work performed by the undertaking for its own purposes and capitalized| + |Change in stock goods and in materials and consumables| + |Provision for risks| + |Provision for charges| + |Adjustments to the carrying value of financial assets| + |Tax Accruals| + |Change in estimated prepaid-accrued expenses-revenues|.$

Compared to  $ECE = 100$ , the sum of estimates  $\Sigma |AV|$  is very high, and it varies in the listed companies from 90 to 132.2.

On average, comparing non-listed and listed separate statements, non-listed companies have lower AV ( $M = -49.7$ ,  $St.Dev. = 1.18$ ) than do listed companies ( $M = -42.3$ ,  $St.Dev. = 0.78$ ). For equal variances not assumed, this difference is statistically significant ( $t(64994607) = 309.82$ ,  $p < 0.05$ ). The differences are also significant for single items.

On average, comparing non-listed and listed consolidated statements, non-listed companies have lower AV ( $M = -48.9$ ,  $St.Dev. = 0.81$ ) than do listed companies ( $M = -46.1$ ,  $St.Dev. = 1.04$ ). For equal variances not assumed, this difference is significant ( $t(112208605) = 1709.55$ ,  $p < 0.05$ ). The differences are also significant for single items.

As previously noted, comparing the results of separate financial statements (S) with those of consolidated financial statements (C), adjusting entries operate similar corrections (AV); however, there are also large differences between single adjusting items.

To more thoroughly investigate these differences, the second research question (Q2) posits whether analyzing the values of adjusting entries in a specific parent company couple of financial statements (hiding whether separate or consolidated) can distinguish separate financial statements from consolidated statements.

Setting the previously described logistic regression model, I obtain the following results (Table 8):

**Table 8. Weight of adjusting item values in characterizing consolidated income**

	<i>Adjusting Item</i>	<i>a</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sign.</i>	<i>Exp(B)</i>
$\Delta$ in	Depreciation and amortization and impairment losses	3.66	0.12	1007.73	1	0	38.78
$\Delta$ in	Change in work in progress, semi-finished and finished products	-0.59	0.07	81.22	1	0	0.55
$\Delta$ in	Change in long-term work in progress	0.18	0.09	4.32	1	0.04	1.2
$\Delta$ in	Capitalized internal construction	2.35	0.37	39.64	1	0	10.49
$\Delta$ in	Change in stocks goods and in materials and consumables	0.07	0.05	2.02	1	0.16	1.08
$\Delta$ in	Provision for risks	-2.29	0.21	115.15	1	0	0.1
$\Delta$ in	Provision for charges	-2.37	0.17	184.59	1	0	0.09
$\Delta$ in	Adjustments to the carrying value of financial assets	0.48	0.04	151.99	1	0	1.62
$\Delta$ in	Tax Accruals	1.42	0.17	68.07	1	0	4.15
$\Delta$ in	Change in prepaid-accrued expenses-revenues	-0.39	0.1	16.33	1	0	0.68
	Constant	0	0.03	0	1	1	1

Note: Nagelkerke R Square: .515; Cox & Snell R Square: .386; 2 Log likelihood: 6260.330

Logistic regression confirms the role of “Depreciation and amortization and impairment losses” adjusting item values in characterizing the consolidated income statement with respect to the separate statement ( $\alpha_1 = 3.66$ ).

However, the results also highlight the

importance of capitalization ( $\alpha_4 = 2.35$ ). This finding suggests that many revenues within companies are upheld in favor of the increase in value of the assets of other companies in the group.

Additionally, tax accruals are relevant ( $\alpha_9 = 1.42$ ), which may confirm that there is integration of the

group's companies; the revenues of individual companies are internal margins eliminated by a consolidation procedure, and related taxes should be suspended.

High provision differences ( $\alpha_0 = -2.29$  and  $\alpha_7 = -2.37$ ) may indicate that these accruals also arise from intragroup risks and charges.

Instead, list and industry are not significant.

The last research question (Q3) delves deeply into the real function of AV; whether subjective adjusting entries correct transaction-based entries only to enable income to comply with the matching principle guideline or whether subjective adjusting entries also adjust transaction-based entries to enable accrued income to lie within desired values. In other words, is there a relationship between the result before adjusting entries (ECE), AE, and the sum of AV?

For each separate and consolidated income statement, I select the rows "Extensive Cash Earning" (ECE) and the sum of "Adjusting Entries Values" (AV).

Thereafter, I correlate ECE, AV, listed/not listed, and separate/consolidated.

Table 9 shows the results of this correlation.

**Table 9.** Correlations Spearman's Rho

	<i>ECE</i>	<i>AV</i>	<i>List</i>	<i>Cons</i>
<i>ECE</i>	-	-.598** (0.0001)	.094** (0.0001)	.172** (0.0001)
<i>AV</i>	-.598** (0.0001)	-	-.138** (0.0001)	-.224** (0.0001)
<i>List</i>	.094** (0.0001)	-.138** (0.0001)	-	0 (1.00)
<i>Cons</i>	.172** (0.0001)	-.224** (0.0001)	0 (1.00)	-

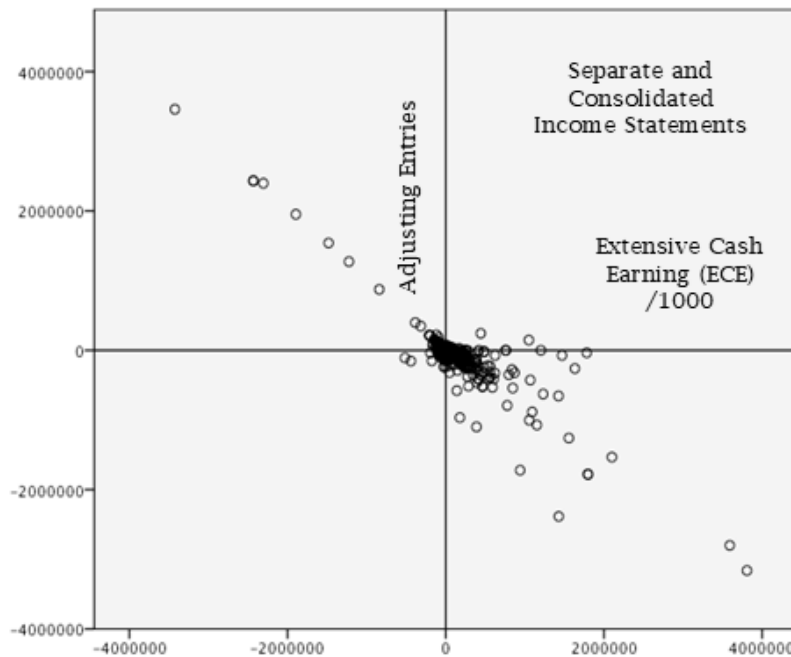
Note: \*\* Correlation is significant at the 0.01 level 2-tailed. N=7,480

We can first observe that ECE and the sum of AV have a robust negative correlation, as assessed by Spearman's Rho, which equals -0.598.

The correlation between ECE, AV, List, and Cons is lower. Each company, listed and non-listed (List), has separate and consolidated income statements (Cons); therefore, the correlation between them is zero.

Thereafter, to deeply investigate the correlation between ECE and AV, I first illustrate each separate and consolidated income statement using a scatterplot. Figure 1 shows the results.

**Figure 1** Correlation between ECE and AV



To properly estimate this correlation, I construct regression models using least squares for all 7,480 income statements as follows:

$$AV = \beta_0 + \beta_1 ECE + \beta_2 Type + \beta_3 ECE * Type + \beta_4 List + \beta_{5-20} Industry + \varepsilon \quad (8)$$

Table 10 shows the results.

**Table 10.**

	<i>UnSrd Coeff.</i>		<i>Srd Coeff.</i>	<i>t</i>	<i>Sign.</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
(Constant)	-3245.732	1305.36		-2.486	0.013
<i>ECE</i>	-0.58	0.005	-0.703	-117.164	0.000
<i>Type</i>	3502.779	1269.314	0.008	2.76	0.006
<i>ECE*Type</i>	-0.283	0.006	-0.295	-49.452	0.000
<i>List</i>	18326.64	2686.499	0.021	6.822	0.000

Note: Adj R2: .931 F: 5037.360 Sign.: .000 Durbin-Watson: 2.059

The model confirms the negative correlation between ECE and AV (a negative slope coefficient, -0.58 for the separate income statement and -0.86 for the consolidated income statement). On average, the listed companies have a higher positive AV (+18,326).

Regarding (1),  
 $AE = ECE + AV$

for separate (s) income statement

$$AV_s = -3246 - 0.58 * ECE_s$$

and

$$AE_s = -3246 + 0.42 * ECE_s$$

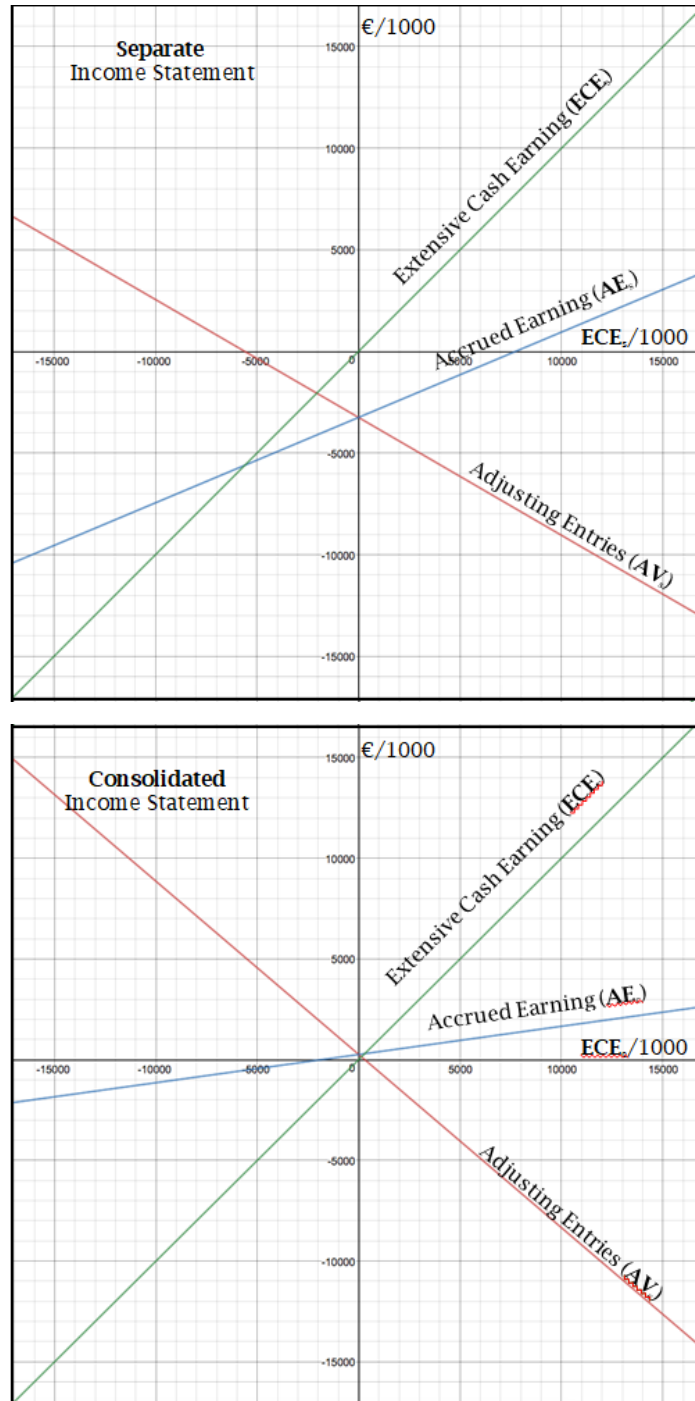
for consolidated (c) income statement

$$AV_c = 257 - 0.86 * ECE_c$$

and

$$AE_c = 257 + 0.14 * ECE_c$$

Figure 2. displays the estimated model for separate and consolidated income statements



ECE is on the x-axis, and ECE, AE, and AV are on the y-axis.

Of course, the ECE line passes through the origin and bisects the first and third quadrants. The AV line has a negative slope; therefore, the AE line is less sloped than the ECE line.

I can also illustrate the strong negative correlation between AV and AE.

Consequently, lower AE appear to have higher AV, which, since the income accrued component is less reliable than the extensive cash component, implies that lower accrued earnings are also less reliable.

Conversely, higher AE appear to be more reliable and have prudential values, implying lower

or negative adjusting earning values (thus, a "dampening principle").

This effect is higher (very strong) for the consolidated income statement. However, we must consider that under Italian law, only separate financial statements are relevant to taxes and the distribution of dividends; the consolidated financial statement merely has a communicative purpose.

Using the estimated model, Table 11 shows a stylized example of the dumping effect of the AV and the ECE. When there is a positive or higher ECE, the adjusting entries absorb earnings. However, in lower or negative ECE income statements, the adjusting entries release less negative or positive earnings, similar to a damper.

**Table 11. The dumping effect of the AV and the ECE: a stylized example**

SEPARATE (S)			CONSOLIDATED (C)		
ECE	ADJ	AE	ECE	ADJ	AE
10.000	-9.046	954	10.000	-8.343	1.657
8.000	-7.886	114	8.000	-6.623	1.377
6.000	-6.726	-726	6.000	-4.903	1.097
4.000	-5.566	-1.566	4.000	-3.183	817
2.000	-4.406	-2.406	2.000	-1.463	537
-	-3.246	-3.246	-	257	257
-2.000	-2.086	-4.086	-2.000	1.977	-23
-4.000	-926	-4.926	-4.000	3.697	-303
-6.000	234	-5.766	-6.000	5.417	-583
-8.000	1.394	-6.606	-8.000	7.137	-863
-10.000	2.554	-7.446	-10.000	8.857	-1.143

## 6. CONCLUSIONS

To properly detect the role of AEM in AE, this paper directly isolates the subjective component of accruals attributable to internal estimates in the income statement.

This direct method is theoretically more accurate in isolating and measuring AEM from REM with respect to those presented in previous studies that in the accruals, also included external transactions that were characterized by high reliability. Furthermore, this model has a higher degree of adaptation to the empirical data.

However, even if we are aware that this is a transversal study, and it has the limits of cross-sectional analyzes, the model shows that accrual anomaly is recognizable in the AV, since this value is negatively correlated with ECE.

On an AE basis, less profitable firms appear to have higher accruals and consequently, they also have more subjective incomes. In contrast, more profitable firms have lower accruals and consequently, they also have more reliable incomes.

In other words, with a positive or higher ECE, adjusting entries appear to absorb earnings; in contrast, adjusting entries release earnings in lower or negative ECE income statements, similar to a damper.

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