Operating Expense P&L Disaggregation:
A Cross-Country Study of Determinants and Consequences

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ABSTRACT: We provide the first global analysis of expense disaggregation choices on the face of the P&L. We examine the determinants and consequences of three expense disaggregation choices: the number of expense line items, how concentrated a firm's expense disclosures are in a few line items, and the proportion of 'other' expenses. Both IFRS reporting and use of a Big N auditor are associated with the disclosure of fewer operating expenses, especially expenses not shown in example accounts. However, IFRS reporting is associated with lower expense concentration and less expenses classified as 'other', consistent with more meaningful disaggregation. These results are robust to using a difference-in-difference design around the first wave of IFRS adoption. Country-level regulatory quality is negatively associated with expense concentration and other expense intensity, consistent with these measures capturing disclosure quality. We further find that expense concentration is positively associated with analyst forecast errors, forecast dispersion, and price impact, consistent with more-concentrated expense disclosures adversely affecting a firm's information environment.

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1. Introduction

The principles of aggregation and disaggregation are one of the central issues in financial reporting (Ijiri, 1971; Demski, 1973; Otley and Dias, 1982; Sunder, 1997; Schipper, 2007; Arya and Glover, 2014; IFRS, 2019a; FASB, 2023). In this study, we examine the determinants and consequences of operating expense disaggregation on the face of the profit and loss (P&L) statement for firms across the world. Mandatory standards and disclosure requirements in most countries, such as IAS 1 *Presentation of Financial Statements* and US GAAP, provide basic principles and frameworks for P&L presentation. However, the standards allow managers considerable discretion over how they disaggregate expenses in the P&L statement, allowing management to decide how many and what operating expense line items to disclose.

We examine three measures of the disaggregation of operating expenses. First, the number of operating expense line items that a firm discloses (hereafter expense *count*). Second, the extent to which the firm's disclosed operating expenses are concentrated by value in a small number of line items, which we measure using a Herfindahl index (hereafter expense *concentration*). Third, the proportion of the firm's operating expenses aggregated into unspecified, 'other' expenses.

These three measures of disaggregation capture different management choices and aspects of operating expense disaggregation. The manager must choose the number of operating expense line items. The manager must allocate likely heterogenous expenses across these line items, and it is possible that companies aggregate into a few line items certain types of expenses that they do not want to reveal for either agency or proprietary cost reasons (intentional obfuscation) or simply lack of effort and skill in allocating expenses (unintentional obfuscation). Thus, a firm could disclose several operating expense line items and hence have a high number of expense line items, but most of these operating expenses might be economically trivial, while the firm's most important operating expenses are aggregated into a single line item. We measure this aggregation choice using concentration. Finally, firms have the option of not categorizing and revealing the nature of an expense and instead aggregating it within an unspecified line item, such as 'Other expenses'.

Each of these disaggregation choices reflect significant recent concerns of standard setters and investors. The count and concentration of expense line items is one of the most significant aggregation

concerns of standard-setters, underpinning the proposed revision of IAS 1, that information can be too summarized to be useful because it combines items that may have different characteristics (IFRS, 2019a, paragraph B5).[1] The reporting by firms of large residual or 'other' expense line items on the face of the P&L, is also a primary concern of investors and IASB as it is allegedly obfuscates the underlying expense (IFRS, 2019b, BC239; IFRS, 2019c).

Given that managers have substantial reporting discretion, operating expense disaggregation choices will be driven by the reporting incentives of managers, constrained by institutional features of the environment in which firms report. A chosen P&L presentation of operating expenses is likely to give rise to a significant commitment to that presentation because it is costly to alter. Therefore, a manager is likely to have an incentive to choose the minimum acceptable level of disclosure, which will be primarily determined by institutional factors. We consider the guidelines and templates in IFRS, and enforcement, proxied by whether the firm uses a Big N auditor, country-level regulatory quality, and whether the firm is US cross-listed. We then consider if some firms may have firm-specific incentives to commit to a disclosure greater than the minimum acceptable level. We use analyst coverage as our main proxy for these incentives. Finally, we examine the consequences of expense disaggregation for capital market outcomes measured using analyst forecast accuracy and dispersion, and market liquidity.

To address these questions empirically, we use 'as presented' financial statement data from S&P Capital IQ to construct the key measures of operating expense disaggregation. This data has not been standardized, unlike the data in Compustat, and thus reflects the actual presentation of the financial statements in the company's annual report as disclosed by firms and observed by users. We construct a large panel of 187,487 firm-year observations across 63 countries over the period 2000-2020.

Our main findings are as follows. The median expense count is 5, which is similar to many institutional templates, such as the example accounts shown in IAS 1 and example accounts produced by audit firms. There is moderate variation in expense count, with an interquartile range of 2, and the 10th and 90th percentiles being 3 and 6, respectively. This moderate variation, along with the median, suggests

[1] In turn the proposed revised IAS1 has new principles on aggregation and disaggregation that "items shall be classified and aggregated on the basis of shared characteristics" (IFRS, 2019a, paragraph 25).

that institutional factors significantly influence expense count. On the other hand, there is a considerable variation in expense concentration, as indicated by a 35% interquartile range.

There is substantial cross-country variation in expense count and concentration. As an indicative example, amongst countries with more than 500 firm-year observations, the countries that report the highest (lower) mean expense count are Italy = 6.1, Portugal = 5.9, and Brazil = 5.7 (UK = 3.0, Saudi Arabia = 3.5, and Mexico = 3.5). Furthermore, there is significant variation in expense concentration with Pakistan (Spain) having some of the highest (lowest) expense concentration amongst countries with more than 500 observations.

We find that IFRS adoption is associated with a lower expense count. This is consistent with the possibility that firms anchor on the P&L disclosure templates provided in IAS 1, and hence provide fewer line items after IFRS adoption than before adoption. In further analysis, we find that firms disclose fewer expenses that are not shown in the IAS 1 template (such as R&D and rent expenses). However, we find that IFRS reporting is associated with lower expense concentration and lower aggregation of expenses into unspecified 'other' expense, consistent with a more useful disaggregation of operating expenses. Therefore, while IFRS reporting is associated with a reduction in expense count, likely because firms anchor on the IFRS example P&L templates, it contributes to a more meaningful disaggregation of the disclosed operating expenses. These results are robust to using a difference-in-difference design around the first wave of IFRS adoption, which is inconsistent with endogeneity driving these results.

Firms that use a Big N auditor disclose significantly fewer expenses when using a function (but a not nature) expense format.[2] This suggests companies may rely on the function format disclosure templates provided by the Big N audit firms, resulting in a lower expense count. Consistent with this, we find that Big N auditor use is negatively associated with disclosure of specific types of expenses that do not typically appear in their templates (e.g. bad debts expense, legals fees, insurance). However, we find that when firms with a Big N auditor report using a nature expense format, their expense disclosures are

[2] Firms have a choice as to whether to classify and present operating expenses based on either the *nature* or the *function* expense format methods (hereafter expense *format*). The function method classifies and presents expenses according to their function, such as cost of sales, the costs of distribution or administrative activities. By contrast, the nature method classifies and presents expenses according to their nature, such as depreciation, purchases of materials, transport costs, employee benefits, and advertising costs. We provide further information on the nature and function expense formats in Section 2.

less concentrated, and they aggregate a smaller proportion of expenses into 'other' expenses. This is consistent with larger audit firms promoting improved expense disclosure practices. A likely reason for auditors being able to improve disaggregation under a nature but not function format is that expense classification is less subjective when disclosed by nature of the expense (e.g. salaries, depreciation) than when disclosed by function (e.g. selling, general and administrative).

In regard to firm-level incentives, we find analyst coverage is negatively associated with expense concentration and other expense intensity, consistent with analysts demanding more meaningful expense disaggregation.

Finally, we replace country fixed effects with country-level regulatory quality. Similar to the results for IFRS reporting, regulatory quality is negatively associated with expense count, expense concentration, other expense intensity and the number of trivial expenses disclosed. These results reinforce the notion that expense concentration and other expense intensity capture aspects of operating expense disclosure quality.

With regards to consequences, we find that expense concentration is positively associated with analyst forecasting errors and dispersion, and negatively associated with market liquidity, consistent with more concentrated operating expense disclosures providing lower quality information to capital markets. We find that aggregation of expenses into an 'Other' line item is detrimental to analyst forecast outputs when firms report expenses in a nature format, but not a function format.[3] We do not find consistent evidence that expense count has a significant effect on a firm's information environment. In sum, the results suggest the primary expense disclosure choice that has informational consequences is expense concentration, possibly because greater expense concentration implies aggregation of dissimilar expenses.

[3] This is likely explained by the fact that firms that use a nature expense format appear to aggregate a significantly greater proportion of expenses into 'Other Expenses' than firms that use a function expense format. Possibly firms that use a function format have greater scope to allocate miscellaneous expenses, perhaps arbitrarily, to functional expenses, such as cost of goods sold or selling, general and administrative expenses. Firms that use a nature format have less scope to allocate miscellaneous expenses to natural expense line items, such as salaries or depreciation, because these expenses are more objective and easily verifiable. Instead, these firms would either report the individual miscellaneous expenses on the face of P&L or aggregate them into an 'Other expenses'. We argue that excessive aggregate of expenses into 'Other expenses' reflects poor quality disclosure, and this mainly affects firms that use a nature format where 'Other expenses' are more important.

Our study makes several contributions. At a very general level we contribute to the voluntary disclosure empirical literature where the disaggregation of operating expenses on the face of the P&L statement has received very little attention. To the best of our knowledge, we are the first study to provide large-sample descriptive evidence of the disaggregation of operating expenses on the P&L for firms across the world.

The most closely related studies to ours are Chen et al. (2015) and Blann and Moon (2023). Chen et al. (2015) introduces a measure of disclosure quality based on the level of disaggregation of accounting data by examining non-missing Compustat line items for US firms. Blann and Moon (2023) examine, for US firms, the disaggregation of the line items for SG&A and COGS in other areas of the company filings such as the MD&A and footnotes. Our study differs from both Chen et al. (2015) and Blann and Moon (2023) because we examine 'as presented' disclosures rather than standardized Compustat data, we examine worldwide firms rather US firms, and we examine three dimensions of expense disaggregation: count, concentration and 'other' intensity. We focus on expense disaggregation on the face of the P&L, whereas Chen et al.'s and Blann and Moon's measures capture disclosures in the notes (or anywhere else where Compustat collects data).[4]

Second, our findings are directly relevant to current standard-setting projects of both the IASB and FASB, which are considering the presentation of the primary financial statements with a focus on disaggregation. The IASB (2023) is currently deliberating the proposals in its Exposure Draft (ED) *General Presentation and Disclosures* (2019) issued in response to investors' concerns about the comparability and transparency of companies' performance reporting in the P&L. The FASB also has a project which will consider how certain expenses should be disaggregated (FASB, 2023).

Taken together, our results provide some support for the current proposals of IASB regarding revisions to IAS 1 (see IFRS, 2023b for a summary). The IASB have decided to strengthen requirements for application of the principle requiring disaggregated information and to provide application guidance because of concerns that dissimilar items are being aggregated together. Our evidence that expense

[4] Other disaggregation studies include those that have examined disaggregation in the context of segment reporting (Botosan and Stanford, 2005), analyst forecasts (Ertimur et al., 2011), and management forecasts (Hirst et al., 2007).

concentration has negative informational consequences supports this proposal. However, our evidence also suggests that the IASB needs to be careful in the design of illustrative P&L templates, because templates and example accounts influence how firms disaggregate operating expenses. For example, we find firms are less likely to disclose R&D expense because it is not in the IAS 1 P&L example templates.

Fourth, this paper contributes to both the large cross-country and IFRS literatures that examine the determinants and consequences of country-level institutions, such as legal origin and IFRS, on financial reporting quality measured using noisy proxies for accrual quality such as earnings management, earnings smoothness, and timely loss recognition (see Barth et al., 2008; De George et al., 2016; Isidro et al., 2020 for overviews). We provide the first global evidence on the impact of country-level institutions such as IFRS on operating expense disaggregation, which, in addition to being a primary financial reporting construct of interest in its own right, has the benefit of being able to be more precisely measured than other disclosure quality measures.

Fifth, we contribute to the audit literature that examines the auditor's role in the production of financial reports. This literature has mainly examined the role of auditing in affecting the quality of accruals or likelihood of restatements. We examine the impact of the auditor on the presentation and disclosure of the P&L.

Finally, we provide the first large-sample descriptive statistics for firms across the world of the expense disaggregation choices on the face of the P&L which should be of interest to educators, regulators, and the business community.

We acknowledge the following limitations. First, our primary goal is to provide large-sample descriptive and exploratory evidence and consequently our evidence is largely association-based and therefore strict causality cannot be inferred. Second, we examine only operating expense disclosures made on the face of the P&L, not disclosures made in the notes to the financial statements.

The remainder of the paper is organized as follows. The next section outlines the institutional setting. Section 3 develops hypotheses. Section 4 describes our data, sample selection and research design. The remaining sections presents our empirical results, sensitivity analyses and conclusion.

2. Institutional Setting

There are two major choices that companies have in presenting their operating expenses on the face of the income statement ('P&L' for short).[5] First, under IFRS standards and European Union directives, firms must decide whether to classify and present operating expenses based on either the *nature* or the *function* of expense format methods (hereafter expense format). The function method classifies and presents expenses according to their function, such as cost of sales, the costs of distribution or administrative activities. In contrast, the nature method classifies and presents expenses according to the nature of resources used, such as depreciation, purchases of materials, transport costs, employee benefits, and advertising costs. Arguably, the expense classification under a nature format is more objective and verifiable than under a function format, because the nature format does not involve as much discretion in the allocation of expenses to different expense line items, which may have implications for management disaggregation choice.

Second, firms must decide how to disaggregate their operating expenses within their chosen expense format. In this section, we discuss the primary institutional frameworks and regulations that could directly or indirectly affect operating expense disaggregation across the world.

Current IFRS Requirements

Under IFRS, the classification and level of disaggregation of expenses is governed by IAS 1 *Presentation of Financial Statements*. IAS 1 does not specify specific operating expense line items that must be disclosed but leaves it to the discretion of the manager as to how operating expenses are disaggregated subject to the principle that, "An entity shall present separately items of a dissimilar nature or function unless they are immaterial" (para 29).[6] However, IAS 1 does provide illustrative templates of nature and function expense formats, which we reproduce in Appendix B. Both the function and nature format templates have four expense line items including "Other expenses".[7]

[5] This paper is concerned with the disaggregation of operating expenses. For the purposes of this paper, operating expenses exclude financing-related expenses, such as interest expense, and items such as losses on equity-accounted investments, losses attributable to minority interests, and income tax expense.

[6] IAS 1 includes requirements to disclose specific expenses, but these do not relate to ordinary operating expenses (para 82).

[7] The IAS 1 nature format template shows five line items between 'Other income' and 'Total expenses'. But this includes 'Changes in inventories of finished goods and work in progress'. This line item is only reported by manufacturing firms. It is often reported as a gain, offsetting the 'Raw materials and consumables used', indicating an increase in the balance of finished goods and work in progress, or is combined with it. As a result, it

US GAAP

The basic structure and content of the income statement and related disclosures prepared under US GAAP follow the guidance in SEC Regulation S-X and ASC 225 *Presentation of Financial Statements*, which has remained largely unchanged for generations. Regulation S-X provides little current guidance, and no illustrative template, concerning disaggregation of the income statement. The only mandatory expense categories are cost of sales (COGS) and SG&A if they are material. In contrast to Regulation S-X, IAS 1 contains significantly more in-principle guidance on the structure, classifications, and disaggregation of income statement information (Libby and Brown, 2013).

Europe and EEC/EU Directives

The Fourth EEC Directive 1978/660/EEC sets out the basic accounting rules for member states of the European Union. The Fourth Directive permits the use of either the nature or function expense format. Under the nature format, the directive mandates that four specific expense line items must be presented (if relevant to the company): raw materials consumed, staff costs, depreciation and 'other'. Under the function format, the directive mandates three specific expense line items: cost of sales, distribution costs and administrative costs. Under both format methods, further disaggregation is permitted, but no in-principle guidance is given.

Historical practices outside the USA and Europe including former British colonies

Historical accounting standards and customary practices might influence how firms choose to present and disaggregate their operating expenses on the P&L. As noted, US rules have remained largely unchanged for a considerable period. European practice has been influenced by EU directives, such as the Fourth EEC Directive in 1978, which largely codified existing European reporting norms. It is difficult to find definitive information about historical P&L presentation norms outside Europe and the US before IFRS adoption. However, some sources suggest that British and American reporting practices, such as a preference for the function expense format, have had a substantial influence over accounting practices in many countries (Angus-Leppan, 1997; Simga-Mugan 1995, Rogrigues et al 2012). In many cases, this is

is not a common line item in our dataset (we exclude gains). Therefore, in practice, the IAS 1 nature expense format template includes only four expenses for most firms.

because these countries were formerly part of the British Empire. For example, pre-IFRS Malaysian accounting standards were strongly influenced by UK standards (Teoh and Chuah, 1997).

IAS1 is the only accounting regulation that provides a principle for expense disaggregation on a global basis. However, IAS1 also provides illustrative P&L templates (see Appendix B). It is unclear if the benefits of having expense disaggregation principles are overridden by the costs of providing an illustrative template, which has the potential to become a de facto rule that firms might blindly anchor on.

3. Theory and Predictions

We examine how firms disaggregate their recurring, operating expenses, including how many operating expenses firms present, how concentrated their expenses are in a few line items, and the extent of unspecified, 'other' expenses. Given management has substantial reporting discretion, the P&L disclosure presentation and aggregation choice will be driven by the reporting incentives of managers that optimizes a trade-off between the benefits and costs of aggregation, constrained by institutional features of the environment in which firms report.[8]

An operating expense disclosure choice will likely give rise to a commitment to that disclosure due to the costs of reversal. For example, firms incur large, fixed costs in creating an accounting information system to collect the necessary information and to systematically allocate costs to activities in order to disaggregate expenses in a particular way. In Appendix C, we provide a further discussion of these costs and provide examples from comment letters to IASB Exposure Draft (2019/7) *General Presentation and Disclosures (Primary Financial Statements).* In the comment letters, firms claimed that they would have incurred significant costs in altering their systems to collect the additional expense information proposed by the exposure draft.

Therefore, to minimize future and unknown disclosure costs, from, for example, revelation of proprietary knowledge and agency problems, a manager will have an incentive to choose the minimum

[8] Many empirical studies have provided evidence consistent with the importance of managerial reporting incentives for observed reporting and disclosure practices (e.g., Ball et al., 2000; Fan and Wong, 2002; Leuz et al., 2003; Haw et al., 2004; Burgstahler et al., 2006). Of specific relevance are studies showing that, even when firms are subject to the same accounting standards, reporting practices differ considerably across firms and countries (e.g., Ball et al., 2003; Ball and Shivakumar, 2005; Burgstahler et al., 2006; Lang et al., 2006; Daske et al., 2013).

acceptable level of expense disaggregation on the P&L.[9] We first discuss the institutional factors that are likely to be the primary determinants of the minimum acceptable level of disclosure. We then discuss firm level benefits that may motivate a commitment to disclosure greater than the lower bound.

IFRS reporting

The mandatory and voluntary adoption of IFRS around the world was one of the most significant institutional changes in accounting systems in recent history (e.g. Daske et al., 2008). It is unclear ex ante whether IFRS adoption is associated with changes in operating expense disaggregation. There are three likely possibilities. The first is that IAS 1 has no impact. IAS 1 gives managers substantial discretion in deciding the extent of operating expense disaggregation and therefore it is unclear if requiring firms to use IFRS instead of local GAAP will give rise to any changes. As recognized by many prior studies, adopting new standards is unlikely to change managers' reporting incentives and the new standards may not fit a country's institutional environment (e.g. Ball et al., 2003; Burgstahler et al., 2006). Because countries have a long history of expense presentation then, due to legacy and path-dependence, and other firm reporting incentives, the change to IFRS may not have major effects (Daske et al., 2013).

The second possibility is that adopting IAS 1 could improve the transparency of expense disaggregation, for the same reasons that a large volume of accounting literature has argued (see Barth et al., 2008), such as IAS 1 providing better principles for expense disaggregation than pre-IFRS domestic standards, improvements in enforcement that occurred concomitant with IFRS adoption, or firms improving their accounting information systems as part of IFRS adoption.

Finally, a third possibility is that IAS 1 may lower transparency. IAS 1 provides illustrative templates of P&L presentation for nature and function expense formats, both of which only have four operating expense line items (see Appendix B). If firms have an incentive to commit to the minimum acceptable level of disclosure, they may use the adoption of IFRS as an opportunity to switch to the IAS 1 illustrative

[9] The concept of disaggregation has been examined in the segment reporting setting and thus the reporting incentives and choices associated with segment reporting is related to our research question. This stream of research finds evidence consistent with both *proprietary costs* and *agency problems* influencing the disaggregation decisions of segments (Harris, 1998; Botosan and Stanford 2005; Ettredge et al., 2002; Berger and Hann, 2007; Botosan and Stanford; 2005).

(non-mandatory) template when the number of line items in the template is lower than pre-existing legacy and local institutional requirements.[10]

The mixed predictions for the impact of IFRS on expense disaggregation is consistent with a large volume of research that examines the impact of IFRS adoption. As discussed by Leuz and Wysocki (2016), the evidence on changes in reporting properties (or quality) after IFRS adoption is mixed, with the results exhibiting considerable cross-sectional heterogeneity. The observed economic outcomes around IFRS adoption vary greatly across countries, institutional regimes, and firms. A primary determinant of this variation is enforcement, which we now consider.

Enforcement

We examine the quality of a firm's auditor as a proxy for private enforcement. Similar to IAS 1, the auditor could give rise to three alternate outcomes. The first possibility is that the auditor has no impact if the primary incentive of the auditor is to minimize errors in recognition and measurement rather than presentation.[11] The second possibility is that the auditor could improve the transparency of P&L presentation (e.g. DeFond et al., 2017). The final possibility is that the auditor could give rise to "boilerplate" template reporting that replicates the audit firm's own example accounts. All Big 4 audit firms and some non-Big 4 firms provide an illustrative template of P&L presentation within their example financial reports.[12] As argued by Francis et al. (2014), both the audit firm and the company could have incentives to follow the auditor's template. The firm has an incentive either because it represents a minimum acceptable level of disclosure, or because it represents a choice requiring low effort and skill. The auditor has an incentive to follow the P&L templates in their own example accounts to ensure a cost-

[10] Providing support for this possibility, prior research shows that managers commonly view financial reporting as a compliance exercise (Dichev et al., 2013) and that accounting standards are the main reason for the proliferation of boilerplate text in financial reports (Dyer et al., 2017).

[11] McVay (2006) argues the appropriate categorization of expenses may not be clear-cut to auditors or other outside monitors.

[12] Examples of IFRS illustrative accounts include those published by PwC (https://viewpoint.pwc.com/dt/gx/en/pwc/example_accounts/example_accounts_INT/example_accounts_INT/year_end_illustrativ_INT/Illustrative-IFRS-consolidated-financial-statements.html); KPMG (https://kpmg.com/xx/en/home/services/audit/international-financial-reporting-standards/ifrs-illustrative-financial-statements.html); and BDO (https://www.bdo.global/en-gb/microsites/ifrs/resource-library/model-ifrs-financial-statements)

effective audit of acceptable quality.[13] The implication is that presentation of the firm's P&L will be similar to the auditor's example accounts.

We also examine the impact of country-level regulatory quality as a proxy for public enforcement (Leuz and Wysocki 2016). Several prior studies find that regulatory quality is positively associated with disclosure quality (e.g. Isidro et al., 2020). Finally, we examine the impact of US enforcement regime on firms that cross-list in the US. Prior research argues that cross-listing on US exchanges causes cross-listed firms to voluntarily subject themselves to a more stringent enforcement regime (Doidge et al., 2004; Choi et al., 2009). Bradshaw et al. (2004) and Gordon et al. (2017) argue that cross-listed firms have stronger incentives to make similar reporting choices as US companies, and they show a positive correlation between US GAAP conformity and cross-listing. Therefore, we expect that cross-listed firms will be more likely to use a function format and to report a similar expense count as US firms.

Firm-Level Incentives

Firms may have an incentive to commit to a disclosure level that is greater than the minimum acceptable level given sufficient benefits from transparency. We use analyst coverage as a proxy for firms that have a stronger incentive to provide more transparent reporting (e.g. Daske et al., 2013). Prior research is consistent with analysts acting as an external governance mechanism that can demand more informative disclosure (Healy and Palepu, 2001; Armstrong et al., 2010). Lang and Lundholm (1996) find that analyst coverage is associated with more transparent reporting, and Lang et al. (2004) and Yu (2008) find evidence consistent with a monitoring role of financial analysts in minimizing earnings management. Accordingly, we examine the association between the number of analysts covering the firm (as a proxy for the external reporting environment) and the informativeness of operating expense disaggregation.

Consequences for Users

We examine the consequences of expense disaggregation for disclosure quality and in-turn investor valuation and forecasting, proxied by the association with analyst forecast accuracy and dispersion, and stock liquidity.

[13] Francis et al. (2013) argue that each Big 4 audit firm has its own unique set of internal working rules, such as example accounts, that guide and standardize the auditor's application of accounting standards. This is to ensure an efficient and consistent audit quality across its staff and client base.

Consequences of Expense Count and Concentration

There are theoretical arguments for both benefits and costs of greater disaggregation of operating expenses.

It has been argued that aggregation gives rise to a loss of information and thus greater disaggregation can increase disclosure quality by separating economically dissimilar items (Arya and Glover, 2014; Barth and Schipper, 2008; Chen et al., 2015). In turn, greater disaggregation assists investors in understanding the differential persistence of expenses and identifying expenses with different underlying drivers. For example, the labor and fuel costs of a trucking company are affected by different price changes. Forecasting changes in operating margin would be difficult if these expenses were not separated. Furthermore, auditors require correction of smaller errors in disaggregated numbers, suggesting greater disaggregation may result in greater reliability (Libby and Brown, 2013).

Consistent with greater disaggregation giving rise to benefits, Chen et al. (2015) find, for US firms, that a greater level of disaggregation of the income statement, as measured by non-missing Compustat items, is negatively (positively) associated with analyst forecast dispersion (accuracy), and negatively associated with bid-ask spreads and cost of equity. Hinson et al. (2022) finds that US firms that provide greater revenue disaggregation have higher (lower) analyst sales forecast accuracy (dispersion). In other contexts, such as segment disclosures, there is also evidence that greater disaggregation is associated with a reduction in analyst earnings forecast errors (e.g. Berger and Hann, 2003).

However, it has also been argued that there are costs to disclosure quality of greater disaggregation (or alternatively expressed aggregation gives rise to benefits). First, aggregation rules themselves can convey information and thus improve decision making by allowing the preparer, with their inside knowledge, to aggregate similar individual accounts into a single line item, thus ensuring that users will treat those items as similar (Sunder, 1997; Arya and Glover, 2014). Second, because aggregation errors can offset and thus cancel each other, a coarser level of aggregation can be preferred to a finer level (Arya and Glover, 2014). Third, data aggregation is required to minimize information processing costs and cognitive overload for users which may harm decision quality (Butterworth, 1972; Barth and Schipper,

2008; Blankespoor et al., 2020; Hinson et al., 2022).[14] Finally, greater disaggregation might impede comparability (Hinson et al., 2022, Song, 2021).

4. Method

Operating Expense Presentation Variables

We examine three aspects of how a company disaggregates its operating expenses on its P&L.

Our first measure of disaggregation is the number of recurring *operating* expenses a firm discloses (expense count, abbreviated as *Expcount*). To construct this variable, we begin with the number of line items from the 'as presented' P&L that our data source, Capital IQ, categorizes as 'Expenses'. We then exclude any positive figures, which indicates revenues or gains.[15] Capital IQ's expense category excludes income tax expense, gain/loss from discontinued operations, and the effects of changes in accounting standards. We view these exclusions as appropriate because income tax expense is not an operating expense, while discontinued operations and the effects of changes in accounting standards reflect one-time, unusual items, not the company's normal disaggregation of operating expenses.

We further exclude financial expenses line items; expenses related to equity-accounted investments or non-controlling interests; and one-time expenses, such as expenses described by the company as unusual or extraordinary, that do not reflect the company's disaggregation of its recurring operating expenses. Because firms can describe their expenses in a wide variety of ways, some degree of measurement error due to expense misclassification (for example operating as financial) is possible. However, as we discuss in the robustness tests, our results are largely unaffected by not excluding any expense line items. We winsorize *Expcount* at twenty operating expense line items, which affects only 0.02% of the sample firm-years.[16]

[14]There is some evidence, in contexts other than the income statement, that a greater volume of reported information can increase reporting complexity giving rise to lower forecast accuracy (Hoitash and Hoitash 2018; Hoitash et al., 2017). For example, Hoitash and Hoitash (2018) find evidence that a greater number of accounting items (XBRL tags) reported in 10-K filings is associated with greater complexity and poorer financial reporting quality. Holzman et al. (2021) find evidence consistent with greater disaggregation of reasonably similar earning components impeding price formation.

[15] S&P's expenses category sometimes includes items that fluctuate between gains and losses in different reporting periods. For example, 'Net gain (loss) on disposal of assets' is sometimes included in expenses, because it could be a gain or loss depending on the circumstances.

[16] The results are not sensitive to winsorizing *Expcount* at ten operating expense line items instead, which affects 1.1% of observations.

A limitation of *Expcount* as a measure of disaggregation is that it may not fully reflect the extent to which a company's disaggregation of its operating expenses provides a relevant and meaningful understanding of a company's operations. For example, a company might report an operating expense line item described as 'Selling, General and Administrative' and aggregate 90% of expenses by value in this single line item, but then disclose several minor operating expenses. This would result in a large *Expcount*, but it might not be useful for investors, because 90% of the company's operating expenses by value are not disaggregated.

To construct a more meaningful measure of the disaggregation of operating expenses, we calculate a concentration ratio (*Expcon*), using a similar method to a Herfindahl index, based on the magnitude of each ongoing operating expense line item relative to total recurring operating expenses. Specifically, *Expcon* is calculated as follows:

$$Expcon = \sum_{x} \left(\frac{ValueExpense_x}{\sum_{x} ValueExpense_x} \right)^2$$

Where *ValueExpense* represents the magnitude of operating expense *x*. *Expcon* ranges from 0 (least concentrated) to 1 (most concentrated). A firm that discloses most of its operating expenses (by value) in a small number of line items will have a high *Expcon* score, indicating less substantive disaggregation. This metric will capture both unintentional obfuscation due to, for example, poor systems, and intentional obfuscation due to classification shifting and proprietary costs.[17] The correlation between *Expcon* and *Expcount* is moderate at -41.6% (untabulated). This suggests the two measures partially capture a similar aspect of expense disaggregation but are distinct concepts. In our analysis of the consequences of expense disaggregation choices, we include both measures as independent variables to capture the effect of each variable after controlling for the other. However, the consequences results are generally unaffected by including each of *Expcount* or *Expcon* without controlling for the other variable (untabulated). This highlights that the two measures capture different aspects of expense disaggregation.

[17] *Expcon* will also capture the company's direct vs. indirect expense structure to some extent. For example, a firm that operates on a cost leadership strategy involving a low gross profit margin and low overhead expenses will naturally have a large COGS expense relative to total operating expenses. However, in robustness tests, we calculate *Expcon* using only overhead/indirect expenses and find similar results

Many firms report a line item such as 'Other expenses' on their P&L, usually to aggregate small expenses that are not otherwise allocated to a disclosed expense line item. A major concern of investors and the IASB is the reporting by firms of large residual or 'other' balances as an expense line item on the face of the P&L (IFRS 2019b, BC239; IFRS 2019c). Thus, the reporting of a large 'other' expense line item can be considered a measure of poor disclosure quality because it obfuscates the underlying expenses. To capture this form of expense disclosure, we calculate *Other Intensity* as the ratio of the value of the firm's total 'Other' or 'Miscellaneous' expenses to its total recurring operating expenses.[18]

Under IAS 1 and EU Directives, firms must present their operating expenses using either a nature or function expense format. In the analysis, we control for the firm's expense format and conduct sub-sample analysis of firms based on their expense format. To develop a tractable approach to classifying operating expense formats, we focus on two important operating expenses that should be reported on a company's P&L if the company use a nature format: employee benefits expense; and depreciation and/or amortization (D&A) expense. We assume that if a company reports both of these line items on the face of its P&L, the company uses a nature expense format. The reasons for focusing on these two line items are as follows. First, virtually all industrial companies will incur expenses related to employee benefits and D&A. Thus, if a company chooses to use a nature expense format, these expenses will appear on its P&L. Second, both IFRS rules (IAS 1) and the Fourth EU Directive specify that these are the minimum operating expense line items required in a nature format, and they are not expense line items that should appear under a function format. Under a function format, employee benefits and D&A expense are instead allocated to functional categories, such as 'Cost of Goods Sold' or 'Selling, General and Administrative Expense'.[19] The IAS 1 example templates for the nature and function expense format in Appendix B illustrate this distinction.

[18] Specifically, 'Other' expenses are line items beginning with 'Other', 'Miscellaneous', or 'Sundry' that do not relate to financing activities (e.g. 'Other financial costs') or extraordinary items.

[19] We do not use the disclosure of COGS to distinguish between nature and function expense formats. In most cases, firms that disclose operating expenses in function (nature) format will disclose COGS (will not disclose COGS). However, a significant minority of firms deviate from this general rule. For example, many retail firms that use a nature format report a COGS line item, representing the narrow purchase cost of inventory (without any addition for direct costs, such as direct labor costs). Similarly, many firms that use a function format do not report COGS, such as many airlines.

We use keywords to identify employee benefits and D&A expense line items (see Appendix A for details). As noted, we classify a firm as using a nature expense format if it reported both expenses on its P&L. A firm is classified as using a function expense format if it reported neither expense on its P&L. However, some firms that apply IFRS standards report in a format that mixes aspects of the two approaches, either because of confusion over the IAS 1 rules, a lack of enforcement, or because pre-IFRS rules in that country permitted a mixed presentation format. In addition, firms are often permitted to report expenses in a mixed format in countries that have not adopted IFRS standards, such as the United States. A firm is classified as using a mixed expense format if it reported one of employee benefits or D&A expenses, but not both, of these expenses on its P&L.[20] We define a set of three dummy variables (*Nature*, *Function*, *Mixed*) which are equal to one for firms that report operating expenses in each presentation format, and zero otherwise.

Data Sources and Sample

This paper uses 'as presented' financial statement data from S&P Capital IQ to construct the key measures of operating expense disaggregation. Capital IQ's 'as presented' financials represent the actual financial statements reported by a company. These financial statements are not standardized or aggregated by Capital IQ, unlike the financial information in Compustat. They therefore closely reflect the financial statements that investors observe in the company's annual report. We use S&P Compustat North America and Compustat Global to obtain standardized accounting and stock market data, and we use I/B/E/S for data on analyst coverage and forecasts.

We begin the sample construction with the combined Compustat North America and Compustat Global universe over the period 2000-2020. We limit the sample to Compustat fiscal years 2000-2020 because 'as presented' data is not widely available on a global basis in Capital IQ before 2000. We remove financial and real estate firms (GICS Sectors 40 and 60), because their operating expenses are different from industrial firms.[21] We also remove firms incorporated in Japan and South Korea, because 'as presented' Capital IQ financial data is not widely available for these countries.

[20] Mixed expense format firms generally report expenses in a function format, but report D&A expense as a separate line item, rather than reporting a separate employee benefits expense.
[21] We also require the company to have a GICS industry code available so we can identify whether the firm is an industrial or financial firm. This results in the loss of very few firms.

We focus on larger companies to keep the data collection tractable. We retain the largest 7,500 global companies by quarterly average market capitalization rank each quarter, in a process similar to constructing a market index.[22] This results in an initial list of 23,613 companies that appeared for at least one quarter in the largest 7,500 companies in the Compustat universe (excluding financial firms, and Japanese and South Korean firms) during 2000-2020. We then attempt to obtain 'as presented' financials for these companies from Capital IQ. If 'as presented' financials are available for a company, they are obtained for every year where they are available, not just for the period where the company was in the largest 7,500 companies. Out of the 23,613 companies, 17,678 companies (75%) have 'as presented' financials available in Capital IQ.

The initial sample consists of 237,389 firm-years. We drop firm-years with missing data for year-end market capitalisation (required to calculate firm size) or missing accounting data needed to calculate the control variables, and firms with non-positive book value of equity, total assets, or total revenue. Finally, we drop companies from any country with fewer than 150 firm-year observations available to ensure country-level statistics are not unduly influenced by a small number of companies. These data requirements reduce the sample to 187,487 firm-year observations for 16,096 companies incorporated in 63 countries/territories.

One limitation of the Capital IQ data is that Capital IQ preserves only the most recently reported 'as presented' financial statements. For example, where a firm restates its P&L in comparative financial statements in subsequent annual reports, the Capital IQ data reflects the P&L disclosures in the restated P&L. This is not ideal but is an unavoidable limitation of the data. We do not believe that this causes any systematic bias in the results given the stability of firms' P&L presentation choices, which we document in the results section.

As a check on the accuracy of the Capital IQ data and our variable construction, we hand-collected the originally reported P&L statements from 2015 annual reports for a random sample of 5 companies from 28 sample countries, resulting in a sample of 140 firms. Our hand-classification of firms' expense format disagreed with our automated classification using Capital IQ data for only 7

[22] Specifically, we rank the remaining global industrial companies by market capitalization in US dollars at the end of each month. We then take the quarterly average of the monthly market capitalization ranks to eliminate companies that are erroneously shown in Compustat as having a large market capitalization for one month.

firms, implying a 95% accuracy rate.[23] The correlation between our hand-calculation of *Expcount* and our automated calculation using Capital IQ is 91.9% (untabulated). The correlation for *Expcon* is 95.7% (untabulated). The main cause of differences between our hand-collected variables and our variables calculated using Capital IQ data is that we collected the originally reported P&L whereas Capital IQ collects a restated P&L data where a restatement subsequently occurred. Other differences were caused by limitations of the keyword searches we used to remove financial and non-recurring expenses. We did not observe any errors in the Capital IQ data. In sum, the data and variable construction appear to be reasonably accurate.

Determinants of Operating Expense Presentation

We examine the role of institutional and enforcement factors, and firm-level incentives in explaining expense disaggregation choices. With regards to institutional and enforcement factors, we examine IFRS reporting, Big N auditor use, regulatory quality, and US cross-listing.

We use a dummy variable (*IFRS*) equal to one (zero) where a company reports under IFRS standards (national standards) to capture the effects of IFRS standards on operating expense disaggregation. We use a dummy variable (*BigN*) equal to one where a company's annual report was audited by a Big Four/Five auditor, and zero otherwise. We measure country-level regulatory quality using the World Governance Indicators (Kaufmann and Kraay, 2023). We measure US cross-listing using a dummy variable equal to one where the firm had an American Depository Receipt (ADR) outstanding during the reporting period, and zero otherwise (e.g. Lang and Stice-Lawrence, 2015). Appendix A provides further details of how these and all other variables are constructed.

In addition to regulatory quality, past research finds that many country-level variables, such as legal origin, are associated with financial reporting outcomes. Isidro et al. (2020) use factor analysis to derive four country-level factors that summarize a multitude of possible country-level factors, many of which

[23] Where a company only provides a non-English language annual report, Capital IQ appears to translate it. We used Google Translate to translate P&L line items for our hand-check. We do not compare the names of the expenses between our hand collection and Capital IQ, so any differences in translation do not affect the hand-check. However, the translations provided by Capital IQ appear to be very accurate and take account of the context (a P&L statement) suggesting they were likely translated by bilingual experts.

are highly correlated. In robustness tests, we use the Isidro et al. factors as a parsimonious measure of country-level variables associated with reporting quality, in place of regulatory quality.

With regards to firm-level incentives, we follow Daske et al (2013) and use analyst coverage as a proxy for external firm monitoring and firm-characteristics themselves. We measure analyst coverage (*Coverage*) as the number of analysts that contributed to the first analyst consensus for the firm after the firm's earnings announcement. Firm-level controls include the natural log of the firm's market capitalization in US dollars at the end of the firm's financial year (*Size*); property, plant and equipment to total assets (*Tangibility*); short- and long-term debt to total assets (*Leverage*); income before extraordinary items to total assets (*ROA*); volatility of the firm's *ROA* over the three-year period ending in the current year (*VolROA*); one-year sales growth (*Growth*); and the natural log of the ratio of market capitalization to book value of equity (*M/B*).

We include year, industry, and, where possible, country fixed effects in our main results to control for omitted year-level, industry-level or country-level factors. In all regressions, standard errors are clustered at the firm-level.

Consequences of Operating Expense Presentation

We consider two types of consequences of operating expense disaggregation for a firm's information environment. First, we consider the effects on the accuracy (*ForeError*) and dispersion (*Dispersion*) of sell-side analyst consensus forecasts. Second, we consider the effects on market liquidity, measured using the yearly mean of daily price impact (*Price Impact*). We measure price impact following the method in Amihud (2002), using Compustat price data. We include additional controls for the mean daily share turnover and the mean volatility of daily returns in regressions where price impact is the dependent variable, because these are important determinants of liquidity. We expect firms with better expense disclosure quality to have more accurate and less dispersed analyst forecasts, and greater market liquidity (lower price impact).

Descriptive Statistics

Table 1 Panel A reports pooled descriptive statistics for the three expense disaggregation measures and the presentation format measures for the full sample. The function expense format is the most popular presentation format, being used by a majority (62.2%) of firms. The remaining firms are approximately

equally likely to use a nature (19.2%) or mixed expense format (18.6%). Firms disclose a mean (median) of 4.59 (5) operating expenses (*Expcount*). The median *Expcount* of 5 is close to the number of operating expenses shown in many institutional templates (for example, IAS 1 shows four expenses in its templates – see Appendix B and footnote 7). *Expcount* shows some variation, but it is not large, with an interquartile range of just 2, and the 10th and 90th percentiles being 3 and 6 respectively. The level of the median, and the moderate variation, is evidence that relatively fixed institutional forces play a significant role in determining *Expcount*. *Expcon*, which measures expense concentration, shows a wider variation, with an interquartile range of 35%. The difference in the magnitude of the variation between *Expcount* and *Expcon* is consistent with *Expcount* being primary determined by institutional factors and *Expcon* being determined by both institutional factors and firm-level incentives. *Other Intensity* is highly skewed with the median firm reporting no 'other' expenses and a significant part of the sample reporting substantial 'other' expenses.

Table 1 Panel B shows descriptive statistics for *Expcount*, *Expcon*, and *Other Intensity* for firms that report in each of the three expense formats. The statistics suggest that a firm's choice of expense format affects its operating expense disaggregation. For example, mean *Expcount* is largest for firms that use a nature format, and these firms also show the greatest variability in *Expcount* with an interquartile range of 3. *Expcon* is greater for firms that use a function format than a nature format. *Other Intensity* is greater for firms that use a nature format than a function format and is very large for a significant minority of firms that report in a nature format. The 75th percentile is 20.2% implying 25% of firms, that report by nature, classify at least 20.2% of their expenses as 'Other'. As part of our analysis of determinants, we explore and discuss reasons for the variation in expense disaggregation across expense formats.

Table 1 Panel C reports the frequency of expense format use for major geographical regions. The nature expense format is notably popular in Mainland Europe (excluding Eastern Europe), India, and Australia and New Zealand. The mixed expense format shows the greatest popular in the USA and Canada, likely because the US has not adopted IFRS and Canada did not adopt IFRS until 2011, and US GAAP does not prohibit a mixed format. The function format is the most popular expense format in most regions.

Table 1 Panel D reports descriptive statistics for *Expcount* for major geographical regions. There is moderate variation between regions and between individual countries. In regard to regions, UK and Irish firms report the fewest mean expense line items (3.03), while Chinese companies report the most mean line items (5.33). UK and Irish firms might report few line items because of the historical British practice of reporting no disaggregation of operating expenses on the face of the P&L. In untabulated results, Italian (UK) firms report the most (least) mean number of expense line items 6.08 (2.96). Firms from regions where the nature expense format is more popular tend to report more expenses than firms from regions where the other formats are popular, although there are exceptions, such as China. Within most regions, there is the same moderate amount of variation across companies in *Expcount* as reflected in an interquartile range of 1 or 2. The exception is Australia and New Zealand which has highest variation in *Expcount* with an interquartile range of 4.

Table 1 Panel E reports descriptive statistics for *Expcon* for major geographical regions. Expense disclosures are less concentrated in Mainland Europe (except Eastern Europe), India, Australia and New Zealand, and the United States and Canada. They are more concentrated in Eastern Europe, the UK and Ireland, and all Asian regions excluding India. There is a general tendency for nations where the nature expense format is more common to provide less concentrated operating expense disclosures, although an exception is the US and Canada where the nature format is relatively uncommon. All regions show significant variation in *Expcon* as measured by the interquartile range, with Australia and New Zealand having the greatest variation, and India and China the least.

Finally, Table 1 Panel F reports statistics for *Other Intensity* by major geographical region. In general, firms report a large (small) proportion of other expenses in regions where the nature (function) expense format is popular, such as India, Mainland Europe, and Australia and New Zealand.

5. Results

Determinants of Operating Expense Disaggregation

Table 2 presents the results of a multivariate analysis of the determinants of our three measures of operating expense disaggregation. We control for *Expcount* when *Expcon* and *Other Intensity* are the dependent variables, because *Expcount* is likely to be mechanically related to both variables. We control for *Expcon* when *Other Intensity* is the dependent variable to measure the incremental impact of the

independent variables on *Other Intensity* beyond their indirect effect via *Expcon*. Panel A pools all firms. Panel B (C) then separately considers firms that report using a nature (function) expense format. We first discuss the results in Panel A for all firms and note exceptions for firms that use a nature (Panel B) or function (Pabel C) format.

Firms that report using IFRS standards (*IFRS*) disclose on average 0.373 fewer operating expenses than firms applying other standards (results for *Expcount*). However, they report operating expenses in a less-concentrated fashion (results for *Expcon*), consistent with a more meaningful disaggregation of expenses. They also report a smaller proportion of 'Other' expenses (results for *Other Intensity*). The results are similar for firms that report in a nature (Panel B) or function (Panel C) format, except that IFRS reporting has no effect on *Other Intensity* for firms that use a function format. In untabulated analysis, we find that IFRS reporting is associated with more-concentrated expense disclosures when not controlling for *Expcount*. IFRS reporting is therefore associated with the disclosure of fewer operating expense line items, but a more meaningful disaggregation of operating expenses.

Using a Big N auditor (*BigN*) is associated with disclosing fewer operating expenses, but the coefficient is only significant at the 10% level for all firms (Panel A) and is not significant when partitioning the sample into nature and function expense format firms (Panels B and C). A Big N audit is negatively associated with *Other Intensity*. This is consistent with the view that aggregation of expenses into 'Other' expenses results in poorer-quality disclosures. A Big N audit is negatively associated with *Expcon* for firms use a nature expense format but is not significant for firms that use a function format.

We find no evidence that a US cross-listing (*ADR*) affects operating expense disaggregation. In untabulated analysis, we firm that cross-listed firms are more likely to use a function expense format, which is common in the US, perhaps to cater to US reporting norms, but cross-listing does not otherwise significantly affect expense disaggregation.

Turning to firm-level incentives, analyst coverage (*Coverage*) is associated with disclosing significantly more operating expenses for all firms (Panel A), but this is driven by firms that use a nature expense format (Panel B). *Coverage* is negatively associated with *Expcon*, consistent with analysts demanding more meaningful disaggregation of operating expenses. It is also negatively associated with

Other Intensity for all firms (Panel A), consistent with analysts discouraging firms from reporting excessive 'Other' expenses, although this result holds only for firms that use a function format (Panel C).

Turning to the variable that control for expense format in Panel A, firms that use a nature expense format report (*Nature*) report, on average, 2.5 more operating expenses than firms that use a function format. They report expenses in a less-concentrated fashion (lower *Expcon*) but report a greater proportion of 'Other' expenses (higher *Other Intensity*). The results for firms that report in a mixed format (*Mixed*) are intermediate between nature and function format expenses. For example, they report 1.4 more operating expenses than function format firms.

Further Analysis of impact of IFRS and Big N on Expense Count

To further understand the effects IFRS reporting and Big N audit use, we conduct analysis of categories of expense line items in Table 2 Column 4 and Table 3. In Table 2 Column 4, we examine the determinants of the number of trivial operating expenses disclosed by firms (*Trivial Count*). We define trivial expenses as expenses less than 1% of total operating expenses.[24] Reporting using IFRS standards is associated with the disclosure of 0.590 fewer trivial line items on average. This result helps to explain why IFRS is associated with disclosing fewer expenses (*Expcount*), but with more meaningful disaggregation (*Expcon*) – firms disclose fewer trivial expenses under IFRS. Using a Big N auditor does not significantly affect the disclosure of trivial line items.

IFRS provides example P&L templates (see Appendix B), and the Big N audit firms provide similar templates in the form of 'example accounts'. To examine the effects of templates, we consider the effect of IFRS reporting and Big N auditor use on the likelihood that firms disclose specific types of expenses that are in and *not* in example P&L templates. Firms influenced by the IFRS templates, might omit expenses such as R&D and bad debts expense, as well as unique, small expenses, that do not appear in the IAS 1 templates. The results are tabulated in Table 3. In regard to expenses *not* in example templates, IFRS reporting and Big N auditor are negatively associated with the likelihood that a firm discloses expenses related to auditing/accounting/legal services; insurance (Big N only); bad or doubtful debts; rent or leases (IFRS only); inventory write-downs (IFRS only); taxes other than income tax; and R&D (IFRS

[24] We obtain similar results defining trivial expenses as expenses <2% of total expenses. We winsorize trivial expense count at 15 expenses, which affects only 0.02% of observations.

only). On the other hand, firms disclose significantly more SG&A-related and COGS-related line items under IFRS reporting or with a Big N auditor, suggesting greater disclosure of types of expenses in templates, although the effect sizes are modest.[25]

The reduction in the number of expenses, and the changes in types of expenses disclosed under IFRS reporting, are consistent with firms anchoring on the disclosure templates provided in IAS 1. Both the nature and function templates in IAS 1 include only four operating expenses (see Appendix B and discussion at footnote 7). It is therefore possible firms move their *Expcount* towards four expenses under IFRS standards. To explore this result further, we replace *Expcount* in Column 1 Table 2 with the absolute difference between the firm's expense count and four. In untabulated results, we find a significant negative effect of IFRS reporting on the deviation of a firm's expense count from the IFRS template number of four for all firms, and for both nature and function expense format firms. This is consistent with firms converging on the IFRS P&L template after IFRS adoption.

Big N auditor use is associated with similar, but weaker, effects as IFRS reporting on the deviation of a firm's expense count from the Big N templates. This is possibly consistent with firms anchoring on the disclosure templates provided by the Big N audit firms and hence disclosing fewer expenses, especially expenses that might not appear on the Big N auditor's template.

Difference-in-Difference Analysis

The analysis in Table 2 captures the effects of the staggered adoption of IFRS with country fixed effects controlling for whether the firm ultimately adopts IFRS (whether the firm is in the 'treatment' group), because IFRS adoption is almost entirely a country-level decision. We test the robustness of the IFRS effect by using a difference-in-difference design around the initial wave of IFRS adoption in 2005. We use a tighter window of 2000-2010 for this analysis. This approach largely avoids any issues with a staggered difference-in-difference design and limits the possibility that other events or trends drive the results. However, this approach is less robust than the staggered adoption analysis to the possibility that events contemporaneous with the first wave of IFRS adoption drive the results.

[25] The SG&A and COGS results hold for all firms and also for firms that report expenses in a function format where these line items are typical.

Table 4 shows the results of replicating the analysis in Table 2 using this design. The dummy variable *IFRSAdopter* is equal to one (zero) if the firm adopted IFRS (did not adopt IFRS) during the first wave of IFRS adoption around 2005. *Post* is a dummy variable equal to one (zero) after (before) 2005. *IFRSAdopter* × *PostIFRS* is the difference-in-difference variable. It captures the effect of IFRS adoption on firms that adopted IFRS during the first wave of IFRS adoption incremental to any contemporaneous changes that affected all firms. We report the results including industry and year fixed effects. Country fixed effects cannot be included, because the treatment variable, *IFRSAdopter*, is perfectly colinear with country fixed effects.

The results for the variable *IFRSAdopter* show that, prior to adoption, firms that adopted IFRS during the first wave disclosed fewer operating expenses, but more trivial expenses, and disclosed expenses in a more-concentrated fashion with more expenses aggregated within 'Other expenses'. The results for *IFRSAdopter* × *PostIFRS* are consistent with the results in Table 2. Firms that adopted IFRS decreased the number of operating expenses they disclosed, but this included a reduction in the number of trivial expenses disclosed. They provided a more meaningful disaggregation of expenses (lower *Expcon*) and decreased the proportion of expenses disclosed in 'Other expenses'.[26] In sum, the results in Table 2 and 4 are consistent with IFRS adoption being associated with higher-quality operating expense disclosure.

Effect of Regulatory Quality

In Table 5, we repeat the analysis in Table 2, replacing country fixed effects with country-level regulatory quality from the World Governance Indicators.[27] Note that country fixed effects cannot be included simultaneously with regulatory quality because regulatory quality shows almost no variation over time within a country. Regulatory quality is negatively associated with *Expcon* and *Other Intensity*, consistent with more meaningful expense disaggregation and less aggregation of expenses into 'Other expenses'. This is consistent with the argument that lower *Expcon* and *Other Intensity* reflects better financial reporting. Surprisingly, better regulatory quality is associated with disclosing fewer operating expenses. This is partly explained by disclosing fewer trivial expenses (*Trivial Count*). In sum, the results

[26] These results are not driven by firms changing expense format on IFRS adoption. For example, the results for *IFRSAdoper* × *PostIFRS* are qualitatively the same for firms that reported expenses in a nature format in every period (untabulated).

[27] The results are generally similar using the Isidro et al. (2020) summary factors instead of regulatory quality (untabulated), but we lose substantially fewer observations using regulatory quality.

for regulatory quality are similar to IFRS reporting – firms disclose fewer operating expenses under strong regulation, but with a more meaningful disaggregation.

In untabulated analysis, we include the interaction between *IFRS* and *Regulatory Quality* in the analysis in Table 5. The coefficient on this interaction is positive in each case. This is consistent with a substitutive relationship between *IFRS* reporting and *Regulatory Quality*. For example, *IFRS* adoption has less effect on *Expcon* where a country's regulatory quality is high, and hence disclosure quality is already good.

Consequences of Expense Disaggregation Choices

Table 6 Panel A considers the consequences of operating expense disaggregation choices for analyst forecast errors. We show pooled results for all firms, and separate results for firms that report using a nature or function expense format. All regressions include the full set of fixed effects (year, industry, and country). We take the quintile rank of *Other Intensity* because of the extreme skewness of this variable.[28]

Expcon is positively associated with analyst forecast errors for the full sample (Column 1) and for both firms that report expenses in a nature (Column 2) and function (Column 3) format. This is consistent with greater expense concentration providing less useful information to analysts. The effect of *Expcon* on forecast errors is significant at only the 10% two-tailed level for firms that use a nature expense format, and in untabulated analysis, we find that the effect of *Expcon* on forecast errors is significantly stronger for function format firms than nature format firms. Furthermore, *Expcon* shows more variability for function format firms (see Table 1 Panel B). Firms that use a function expense format might have more scope for aggregating dissimilar expenses together into functional expense categories, such as 'Selling, General and Administrative', than firms that report expenses based on their nature, which might explain why *Expcon* is more important for firms that use a function format.

Other Intensity is positively associated with analyst forecast errors, and this result is driven by firms that use a nature expense format, which is the opposite of the pattern of results for *Expcon*. The effect of *Other Intensity* on forecast errors is significantly greater for nature format firms than function format firms (untabulated). *Other Intensity* is also greater on average for firms that use a nature expense format

[28] The median of *Other Intensity* is zero, while its mean is 3.75% (see Table 1 Panel A).

and shows more variability than for other expense formats (see Table 1 Panel B). Firms that report in a nature format appear to use 'Other expenses' more heavily and hence there might be more scope for these firms to aggregate excessive expenses into this line item, which might explain why *Other Intensity* is more important for these firms.

There is no association between *Expcount* and analyst forecast errors for firms that report using a nature format. However (perhaps surprisingly) *Expcount* is positively associated with analyst forecast errors for firms that report expenses in a function format. This difference between formats is possibly because the number of functions a firm discloses partially captures the complexity of a company's operations, similar, for example, to a firm having more segments, thus giving rise to greater forecast errors. Interestingly, firms disclosing in a mixed expense format, which is not formally permitted by IFRS or the Fourth EU Directive, are associated with larger forecast errors. This might be because the mixed format provides confusing expense disclosures, because expenses are not allocated purely by nature or function.

Table 6 Panel B shows the results of the same analysis to Panel A for analyst forecast dispersion.[29] The results for the expense disaggregation measures are similar to the results for analyst forecast errors in Panel A.[30]

In untabulated analysis, we find that the interaction term *Expcon* × *Size* is significantly positively associated with both *ForeError* and *Dispersion*. This suggests that higher expense concentration is more problematic for a firm's information environment as the firm becomes larger. This might be because larger firms are more complex, and hence less meaningful disaggregation of expenses creates greater information asymmetry problems. We also find that the interaction term *Expcon* × *VolROA* is positively and significantly associated with both *ForeError* and *Dispersion*. This suggests that more concentrated

[29] We do not find a significant effect of IFRS standards on analyst forecast errors or dispersion in Table 6. However, in untabulated analysis, we conduct a difference-in-difference regression around the first wave of IFRS adoption, similar to Table 4. In that analysis, we find that IFRS adoption is negatively associated with analyst forecast errors and dispersion. This is consistent with IFRS adoption having a different effect in different adopting jurisdictions (Christensen et al., 2013).

[30] Consistent with the results for analysts forecast errors, *Expcount* has a stronger positive associated with analyst forecast dispersion for firms that report in a function rather than a nature format, consistent with the possibility that functions proxy for complexity.

expense disclosures are more problematic when the difficulty of forecasting a firm's profits is greater, again consistent with greater information asymmetry from poor-quality disclosure.

Table 7 shows the results of testing the effect of operating expense disaggregation choices on price impact, a measure of liquidity. We limit the analysis to firm-years where the firm had at least 200 non-zero trading days for the year (e.g. Brennan et al., 2013), because the Amihud price impact measure is sensitive to including days with thin trading.[31] For the full sample in Column 1, the coefficient on *Expcon* is positive and significant, consistent with more concentrated expense disclosures having greater price impact, implying less market liquidity. This is consistent with the results in Table 6 and implies high *Expcon* adversely affects a firm's information environment. *Expcount* is not significantly associated with price impact for the full sample. Reporting expenses in a *Nature* or *Mixed* format is associated with greater price impact compared to reporting expenses in a function format.

Expcon is positively associated with price impact for firms that report in a function expense format (Column 3), but we find no significant effect for firms that report in a nature format (Column 2). This pattern of results is similar to Table 6, where the effect of *Expcon* on analyst forecast output is weaker for nature format firms. We find that expense count is negatively associated with price impact for firms that report in a nature format, but the effect is weak in significance, and we do not find a significant association between *Expcount* and price impact for firms that use a function format. *Other Intensity* does not have a significant relationship with price impact.

In untabulated analysis, we repeat the analysis in Table 7 for US firms using daily average bid-ask spreads from CRSP (available for US firms only) as an alternative measure of liquidity. *Expcon* is positively and significantly associated with bid-ask spreads for all US firms, and for US firms that use a function format, consistent with the results in Table 7. We do not find a significant association for US firms that report in a nature format, but few US firms use a nature format which limits the power of the regression. Reporting in a mixed format is positively associated with bid-ask spreads for US firms, similar to the results in Table 7.

[31] The results for *Expcon* become stronger if the sample is further limited to firms with at least 240 non-zero trading days. We use a 200 trading day minimum to retain more of the sample.

Taken together, the results in Tables 6 and 7 suggest that more concentrated operating expense disclosures (higher *Expcon*) negatively affect a firm's information environment in terms of both poorer-quality analysts forecast outputs and less market liquidity, especially for firms that use a function expense format. Similarly, aggregating more expenses into 'Other expenses' (higher *Other Intensity*) negatively affects analyst forecast outputs. Disclosing more expenses (higher *Expcount*) is associated with greater analyst forecast errors and dispersion, but only for firms that report in a function format and thus this may be due to *Expcount* partially capturing the effect of firm complexity.

6. Cross-Country Variation

It is well-documented that the results of cross-country accounting studies exhibit considerable cross-sectional heterogeneity with the observed outcomes varying greatly across countries, institutional regimes, and firms (Leuz and Wysocki, 2016). In this section, we examine if and how the results vary across major regions.

Results for Mainland Europe (excluding Eastern Europe)

In untabulated analysis, we consider how the results might vary in the Mainland Europe (excluding Eastern Europe) region, because this region shows substantial variation in expense format.

The determinants results (Table 2) are similar to the main results with two exceptions. First, *BigN* is positively associated with *Expcount* for Mainland European firms, which is driven by firms that use a nature expense format, unlike the main results where we find no significant relationship. A possible explanation for why auditors are more likely to increase expense count for firms that use a nature format, is that expense classification under nature is both lower cost for the company and more objective for the auditor. A possible reason for this finding in Mainland Europe rather than other countries is auditors have more expertise with the nature format in Europe because of its prevalence in that region (see Table 1 Panel C). Second, the effect of *IFRS* on *Expcount* is not significant for Mainland European firms that use a function expense format, likely due to the small sample size.

The consequences results are more sensitive to limiting the analysis to Mainland Europe. The results for analyst forecast accuracy and dispersion are qualitatively similar to the main results. The effect of *Expcon* on price impact is not robust to using only Mainland European firms. However, this appears to

be due to the popularity of the nature expense format in Mainland Europe. In the main results with the full sample (Table 7) there was no evidence of a negative price impact of *Expcon* for firms that report in a nature format, which is common in Mainland Europe (see Table 1 Panel C).

Results for US Firms

In untabulated analysis, we consider how the results might vary after limiting the sample to US firms because of their economic significance and because they show significant variation in operating expense disaggregation. For US firms, the results for the consequences of *Expcon* and *Expcount* for analysts forecast accuracy and dispersion and price impact are similar to the main results. We cannot examine the effect of IFRS adoption or a US cross-listing using a sample of only US firms. However, similar to the results in Table 2, we find that analyst coverage is negatively associated with *Expcon* for all US firms, which is driven by firms that report in a function format. Similarly, analyst coverage is positively associated with *Expcount*, which is driven by firms that report in a function format.

Results excluding US/Chinese firms

US and Chinese firms are the largest country groups in the sample. It is therefore possible that US or Chinese firms unduly influence the main results. In untabulated analysis, the main results are largely unaffected by excluding US firms or excluding Chinese firms. However, we find a negative effect of a US cross-listing (*ADR*) on *Expcon* in Table 2 when US firms are excluded, consist with non-US firms improving expense disaggregation when exposed to US investors and regulators. By definition, US firms cannot have a US cross-listing, which might explain the lack of results for *ADR* when US firms are included in the sample.

7. Robustness Tests and Additional Analysis

Not filtering financial and unusual line items

The main results measure *Expcount*, *Expcon*, and *Other Intensity* after removing financial and unusual items to isolate recurring, operating expenses. This introduces some measurement error, because it is difficult to remove these items with complete accuracy, given the wide variety of different names that firms use to describe their expenses. In untabulated analysis, we consider the sensitivity of the results to not removing these items. The main results are largely unaffected by not filtering out financial and

unusual expenses, although the significance of some results weakens, likely because *Expcount* and *Expcon* become less precise measures of operating expense disaggregation when they include items unrelated to the firm's recurring operating expenses. However, we believe that it is descriptively more useful to remove these line items when focusing on the determinants and consequences of a firm's recurring operating expenses.

Alternative measures of expense concentration

One concern with the measure of expense concentration used in the main results is that it might be capturing the firm's direct vs. indirect cost structure. For example, a firm with a low gross profit margin will have a large COGS expense in proportion to its total operating expenses. To rule out this possibility, we recalculate *Expcon* using only the firm's overhead expenses.[32] This measure isolates the extent to which indirect or overhead costs are meaningfully disaggregated. The results for *Expcon* are qualitatively similar when using this measure, except that the positive association between *Expcon* and analyst forecast dispersion is not significant for the full sample (untabulated).

In the main results, expense concentration is measured using a Herfindahl index. A less precise, but simpler approach to measuring expense concentration is to measure the ratio of the sum of the magnitude of the *x* largest operating expenses to the sum of all operating expenses. We set *x* equal to two for the purposes of creating this alternative measure, because the 10th percentile of *Expcount* is two. If a company discloses four expenses, for example, and the largest two expenses aggregate 90% of the company's operating expenses, then this measure would be equal to 90%. The relevant results are qualitatively similar using this alternative measure of expense concentration (untabulated).

Endogeneity

This is primarily an association study. We do not make strong causal claims. However, we briefly consider the possibility that endogeneity caused by a correlated omitted variable might affect the results.

The results for IFRS adoption are robust to difference-in-difference analysis around the first wave of IFRS adoption as shown in Table 4, which is inconsistent with a correlated omitted variable driving the effects of IFRS. We are unable to control for firm fixed effects when testing the consequences of

[32] Specifically, we exclude COGS line items and line items related to the use of raw materials and the change in the balance of inventory (line items similar to COGS in a nature expense format).

expense presentation choices (Tables 6 and 7), because these choices are highly stable over time, i.e. there is very little variation within a firm over time. A similar problem is described by Chen et al. (2015) in a related setting. Instead, we conduct impact threshold for a confounding variable (ITCV) analysis to provide some assurance that a correlated omitted variable is not driving our results (Frank, 2000; Larcker and Rusticus, 2010). With regards to analyst forecast accuracy and dispersion, the impact of an omitted variable would have to be greater than all control variables to invalidate the *Expcon* results (untabulated).[33] The results are not as strong for liquidity. The impact of an omitted variable would have to be stronger than the impact of some important control variables, such as firm size, but weaker than the impact of analyst coverage and average trading volume, to invalidate the *Expcon* results (untabulated). We conclude that a correlated omitted variable is unlikely to be driving the consequences results with respect to *Expcon*, although we are more certain about the analyst forecast results than price impact.

It is possible to control for firm fixed effects in the determinants analysis (Table 2), although many determinants we consider are relatively fixed over time, which limits the power of a firm fixed effects regression. The results for the variables of interest are largely similar when replacing industry and country fixed effects with firm fixed effects (untabulated).

Effects of COGS disclosure

As noted, this paper does not use the disclosure of COGS to measure a firm's expense format choice. Nevertheless, firms that disclose expenses in a function (nature) format are more (less) likely to disclose COGS. However, in untabulated analysis, we find that the results for the variables of interest are largely unaffected after controlling for whether the firm disclosed COGS or not.

8. Conclusion

This paper examines the determinants and consequences of P&L operating expense disaggregation for a large global sample of firms. We find that IFRS adoption is associated with a lower expense count consistent with firms anchoring on the IAS 1 P&L templates. In support of this, we find that firms reduce disclosure of expenses not shown in the IAS 1 template (such as R&D and rent expenses). However, we

[33] We compare the impact of an omitted variable to the impact of the control variables following Larcker and Rusticus (2010).

find that IFRS reporting is associated with lower expense concentration, and less aggregation of expenses into unspecified, 'other' expenses. These findings are consistent with IFRS adoption improving the quality of operating expense disaggregation. We find similar results using a difference-in-difference design around the first wave of IFRS adoption, suggesting that the results are unlikely to be endogenous.

We find that firms that use a Big N auditor disclose significantly fewer expenses when using a function (but not nature) expense format consistent with companies anchoring on the function format disclosure templates provided by the Big N audit firms. Consistent with this, we find that Big N auditor use is negatively associated with disclosure of specific types of expenses that do not appear in their templates (e.g. bad debts expense, legals fees, insurance). Furthermore, we find that when firms with a Big N auditor report use a nature expense format, their expense disclosures are less concentrated, and they aggregate a smaller proportion of expenses into 'other expenses'. This is consistent with larger audit firms promoting improved operating expenses disclosure practices.

We find country-level regulatory quality has a similar association with our expense disaggregation measures as IFRS adoption – it is negatively associated with expense count, expense concentration, other intensity, and trivial count. This is consistent with the argument that high-quality operating expense presentation consists of a meaningful disaggregation of operating expenses (lower expense concentration), less aggregation of expenses into 'other' expenses, and a less disclosure of trivial expenses.

In terms of consequences, we find largely consistent evidence that more-concentrated expense disclosures are associated with a poor-quality information environment, including less accurate and more dispersed analyst forecasts and lower market liquidity. These results are consistent with more-concentrated operating expense disclosures (i.e. less meaningfully disaggregated disclosures) providing less useful information for users and hence leading to greater information asymmetry.

This paper provides the first large scale empirical examination of operating expense disaggregation on the face of the P&L. Our work contributes to several literatures, including the cross-country determinants of financial reporting practices, the impact IFRS adoption, and voluntary disclosure decisions. The results are likely to be informative to preparers, standard-setters, and regulators as they decide how to present the P&L.

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Appendix A

Detailed Variable Definitions

Variable	Definition
Nature	A dummy variable equal to one (zero) if the firm reports its operating expenses in a nature expense format (another expense format). A firm reports in a nature format if it reports at least one expense line item related to employee benefits and at least one expense line item related to depreciation and/or amortization. We use the following keywords to identify expense line items related to employee benefits: 'Salary', 'Wage', 'Staff', 'Compensation', 'Employee', 'Personnel', 'Payroll', 'Pay Roll', 'Labor' and 'Labour' (and plural forms of these keywords). We use the following keywords to identify expense line items related to depreciation and/or amortization: 'Depreciation', 'Amortization', 'Amortisation'.
Function	A dummy variable equal to one (zero) if the firm reports its operating expense in a function expense format (another expense format). A firm reports in a function format if it reports no line expense items related to employee benefits or depreciation and/or amortization.
Mixed	A dummy variable equal to one (zero) if the firm reports its operating expense in a mixed expense format (another expense format). A firm reports in a mixed format if it reports at least one expense line item related to employee benefits or depreciation and/or amortization, but not both.
Expcount	The number of recurring, operating expenses reported by a firm on the face of its P&L. We begin with the 'as reported' income statement from Capital IQ. We filter out any gains or revenues. Capital IQ excludes losses from discontinued operations, income tax expense, and losses from changes in accounting policies by construction. We further exclude line items described by Capital IQ as 'Minority Interest (Before Tax)', 'Currency Translation Gain(Loss)', and 'Ciq Balancing Calc.-expenses'. Capital IQ uses a standardized descriptions for these items, so keywords are unnecessary. We further exclude the following categories of expenses/losses by excluding any line item that includes at least one of the listed keywords. Financial expenses. Keywords: Interest; Financial; Finance; Financing; Bank; Borrowing Impairments. Keywords: Impairment, Write-down, Write Down, Loss on Valuation Losses related to equity-accounted investments. Keywords: Associate, Affiliate, Equity Account, Equity Method, Joint Venture, Jointly Controlled Loss on disposal of assets. Keywords: Gain on Disposal, Loss on Disposal, Gain/loss on Disposal, and variations such as Gains on Disposal Extraordinary items. Keywords: Extraordinary, Exceptional, Unusual, Special, Abnormal, Non-Recurring

	Loss on debt extinguishment. Keywords: Debt Extinguishment, Debt Retirement, and variations such as Extinguishment of Debt Restructuring charges. Keywords: Restructuring, Reorganization, Reorganisation Merger and acquisition related charges. Keywords: Merger, Acquisition Fair value losses. Keywords: Change in Fair Value, and variations such Changes in Fair Value Investment-related losses. Keywords: Investment, Marketable Securities, Derivative
Expcon	The concentration ratio of operating expenses. We calculate concentration using an approach similar to a Herfindahl-Hirschman Index: $$Expcon_{i,t} = \sum_{x} \left(\frac{ValueExpense_{x}}{\sum_{x} ValueExpense_{x}} \right)^{2}$$ Where *ValueExpense* is the magnitude of an expense. We exclude the same categories of non-recurring or non-operating expenses given in the description of *Expcount*.
Other Intensity	The ratio of total other expenses to total recurring operating expenses. Expenses are classified as other expenses where the first word in the expense name is 'Other', 'Miscellaneous', or 'Sundry', and where the expense name does include the words: 'Financial', 'Finance', 'Interest', 'Non-operating', 'Taxes', 'Administrative', 'Extraordinary' or 'Extra-ordinary'. Total operating expenses excludes the same categories of non-recurring or non-operating expenses given in the description of *Expcount*.
Trivial Count	The number of recurring, operating expenses (defined as in *Expcount*) where the value of the expense is less than 1% of the total value of expenses for the firm-year.
Country-Level Institutional Variables	
IFRS	A dummy variable equal to one if the company's accounts were prepared under International Financial Reporting Standards and zero otherwise. We use Compustat variable ACCTSTD to code this variable.
BigN	A dummy variable equal to one if the company was audited by a Big Four or Big Five auditor, and zero otherwise, using Compustat variable AU.
ADR	A dummy variable equal to one if the company had an American Depository Receipt on issue at any time during its financial year, and zero otherwise. We use the variable ADRRC from the Compustat North America price dataset to code this variable.
Regulatory Quality	Regulatory quality from the World Governance Indicators (Kaufmann and Kraay, 2023).
Firm-Level Variables	

Coverage	The square root of the number of analysts that provided at an EPS forecast at the first I/B/E/S consensus date after the company's earnings announcement, calculated using I/B/E/S variable NUMEST. *Coverage* is set equal to zero where there is no I/B/E/S data available for the firm-year.
Size	The natural log of the firm's market capitalization in US dollars at the end of the financial year. Market capitalization is price multiplied by shares outstanding, using Compustat price data. For US and Canadian firms, if shares outstanding and/or price is missing, we use CSHO × PRCC_F from the Compustat fundamentals file.
Tangibility	The ratio of property, plant, and equipment net of accumulated depreciation to total assets, calculated using Compustat variables PPENT and AT.
Leverage	The ratio of short- and long-term debt to total assets, calculated using Compustat variables DLC, DLTT and AT.
ROA	The ratio of income before extraordinary items to total assets, calculated using Compustat variables IB and AT.
VolROA	The volatility of *ROA* over the prior three years.
Growth	One-year percentage change in total revenue, calculated using Compustat variable REVT.
MB	The natural log of market-to-book value of equity. Market value of equity is calculated similar to *Size*. Book value of equity is Compustat variable CEQ.
Consequences	
ForeError	The natural log of the absolute difference between the analyst consensus one-year-ahead forecast of the company's EPS and the actual EPS, scaled by the company's share price (from I/B/E/S) at the beginning of the year. We use the first analyst I/B/E/S consensus figures after the firm's annual earnings announcement. The forecast horizon is therefore approximately one year.
Dispersion	The natural log of the standard deviation of analyst EPS forecasts scaled by the company's share price at the beginning of the year. We use the first analyst I/B/E/S consensus figures after the firm's annual earnings announcement.
Price Impact	Mean daily price impact over a 12 month period starting 3 months after the firm's financial year end. Price impact is calculated following the method in Amihud (2002). Price data is from Compustat.
Volume	Mean daily share turnover (volume/shares outstanding) over a 12 month period starting 3 months after the firm financial year end. Volume and shares outstanding data is from Compustat.
VolRet	Mean daily share turnover over a 12 month period starting 3 months after the firm financial year end

Appendix B

IAS 1 Income Statement Presentation Examples

IAS1 example of a classification using the nature expense format:

Revenue		X
Other income		X
Changes in inventories of finished goods and work in progress	X	
Raw materials and consumables used	X	
Employee benefits expense	X	
Depreciation and amortisation expense	X	
Other expenses	X	
Total expenses		(X)
Profit before tax		X

IAS1 example of a classification using the function expense format:

Revenue	X
Cost of sales	(X)
Gross profit	X
Other income	X
Distribution costs	(X)
Administrative expenses	(X)
Other expenses	(X)
Profit before tax	X

Appendix C

Industry Evidence on Costs of Information Systems to Disaggregate Operating Expenses

A significant determinant of chosen P&L presentation could be the costs of preparation. There is evidence from industry, based on field work conducted by the IASB that it is costly for some firms to design and establish accounting information systems to classify and disaggregate expenses according to a specific method (IFRS, 2023a, paragraphs 15 and 20). This implies that firms would need to make significant changes to their accounting systems to change methods such as switching between the nature and function expense format or changing the number and category of line items. There are several underlying drivers of these costs. First, firms may classify operating expenses using a particular method such as a function format because this is how they run their business and monitor performance internally and it would be costly for them to maintain dual systems of reporting operating expenses (IFRS, 2023a, paragraph 15). Second, consolidated statements are based on unconsolidated statements and thus the classification method chosen in the unconsolidated statements may be difficult to reverse and determine the classification in the consolidated (IFRS, 2023a, paragraph 20; Kvaal & Nobes, 2010). Third, classifications may be changed or lost because of intercompany transactions, for example, when the output of one group entity is the input of another group entity (IFRS, 2023a, paragraph 20). Below as some representative quotes from industry reflecting these costs.

Comment Letter responses to Exposure Draft ED/2019/7 General Presentation and Disclosures (available at IFRS - Exposure Draft and comment letters: General Presentation and Disclosures (Primary Financial Statements)

BMW Group, September 30, 2022

"A further break-down of expenses by nature on consolidated level including the determination of the change in inventories of finished goods and work in progress is not currently available in our group with multi-stage production and distribution activities. Even in the large transformation project BMW Group has been running for its ERP system introducing a global template, the data structure and concepts for posting entries do not support the presentation of expenses on Group level by nature. This is because the

requirement to implement a complete reconciliation of operating expenses by nature does not have any benefit from a management approach."

Volkswagen Group, August 14, 2020

"We do not agree with the requirement to provide an additional analysis using the nature of expense method in the notes, as this would not only require an expensive renewal of our group consolidation system, but would also require very expensive and time consuming redesigns to the underlying accounting systems at several of our companies. To our experience, a simultaneous presentation by nature and function of expenses in a faithful way, is not possible without undue costs and effort unless you have both information in your profit and loss, already"

GlaxoSmithKline, July 24, 2020

"For those entities such as GSK that currently report operating expenses by function, the new requirement also to report all expenses by nature is a significant additional burden. For GSK, this would require a major system change project that is estimated to take a year and could cost up to £2 million. We do not believe that sufficient benefit would be obtained from these additional disclosures to outweigh this cost. GSK operates a single ERP system that covers the vast majority of the Group's operating entities. Many multinational groups operate multiple systems or versions of systems and we would expect similar costs to have to be incurred to amend each individual system or versions"

Group100, September 23, 2020

"Further, we have some very significant concerns around the cost to implement such a reporting requirement for a number of businesses whose accounting systems and consolidations structures have been designed specifically to gather, hold and analyse data on a functional basis".

Table 1

Descriptive Statistics for Operating Expense Format and Disaggregation

Panel A: Pooled Global Sample

	N	Mean	P10	P25	P50	P75	P90
%Nature	187,487	19.19%					
%Function	187,487	62.21%					
%Mixed	187,487	18.60%					
Expcount	187,487	4.59	3	3	5	5	6
Expcon	187,487	57.92%	29.88%	40.02%	57.68%	75.09%	86.49%
Other Intensity	187,487	3.75%	0.00%	0.00%	0.00%	1.33%	13.42%

Panel B: Statistics by Expense Format

	N	Mean	P10	P25	P50	P75	P90
Expcount							
Nature format	35,982	5.80	4	4	5	7	9
Function format	116,627	4.13	2	3	4	5	6
Mixed format	34,878	4.89	3	4	5	6	7
Expcon							
Nature format	35,982	41.44%	24.11%	30.27%	37.82%	49.81%	64.08%
Function format	116,627	65.14%	38.34%	51.19%	66.62%	79.71%	88.98%
Mixed format	34,878	50.79%	25.96%	33.42%	47.79%	65.58%	82.27%
Other Intensity							
Nature format	35,982	13.07%	0.00%	1.01%	9.43%	20.22%	31.53%
Function format	116,627	1.28%	0.00%	0.00%	0.00%	0.19%	2.05%
Mixed format	34,878	2.38%	0.00%	0.00%	0.00%	0.25%	3.40%

Panel C: Frequency of Expense Format Use by Geographical Region

Region	N	Nature	Function	Mixed
Europe				
Mainland Europe, except Eastern Europe	28,394	58.09%	32.94%	8.97%
Eastern Europe	2,425	12.95%	78.14%	8.91%
United Kingdom and Ireland	8,837	6.31%	74.06%	19.62%
Asia				
Middle East	6,773	5.77%	76.33%	17.89%
India	7,839	86.12%	1.01%	12.87%
China (Mainland)	33,497	0.54%	99.38%	0.09%
Remainder of Asia	24,080	8.72%	85.04%	6.25%
Oceania				
Australia and New Zealand	5,908	45.24%	40.22%	14.54%
Americas				
Latin America	6,240	9.78%	69.18%	21.04%
United States and Canada	49,862	9.08%	45.84%	45.08%

Panel D: Number of Operating Expense Line Items (*Expcount*) by Geographical Region

Region	N	Mean	P10	P25	P50	P75	P90
Europe							
Mainland Europe, except Eastern Europe	28,394	4.82	3	4	4	5	7
Eastern Europe	2,425	4.39	2	4	4	5	7
United Kingdom and Ireland	8,837	3.03	1	2	3	4	5
Asia							
Middle East	6,773	4.18	3	3	4	5	6
India	7,839	5.12	3	4	5	6	7
China (Mainland)	33,497	5.33	5	5	5	6	6
Remainder of Asia	24,080	4.40	3	3	4	5	6
Oceania							
Australia and New Zealand	5,908	5.44	2	3	5	7	9
Americas							
Latin America	6,240	4.76	3	3	4	5	7
United States and Canada	49,862	4.35	2	3	4	5	7

Panel E: Operating Expense Concentration (*Expcon*) by Geographical Region

Region	N	Mean	P10	P25	P50	P75	P90
Europe							
Mainland Europe, except Eastern Europe	28,394	48.53%	29.00%	34.45%	44.61%	60.60%	74.66%
Eastern Europe	2,425	64.92%	32.98%	47.22%	66.83%	83.03%	99.66%
United Kingdom and Ireland	8,837	65.09%	37.27%	49.91%	61.72%	83.22%	100.00%
Asia							
Middle East	6,773	65.48%	34.03%	50.71%	69.17%	82.23%	89.84%
India	7,839	46.50%	26.46%	32.70%	42.93%	55.97%	72.95%
China (Mainland)	33,497	67.71%	42.85%	56.54%	70.17%	80.30%	88.04%
Remainder of Asia	24,080	67.42%	36.98%	53.39%	71.34%	83.30%	90.61%
Oceania							
Australia and New Zealand	5,908	52.01%	24.14%	32.03%	45.69%	69.74%	92.77%
Americas							
Latin America	6,240	60.88%	36.15%	49.41%	62.16%	74.56%	82.82%
United States and Canada	49,862	50.94%	26.02%	34.09%	49.52%	65.65%	79.92%

Panel F: Other Expense Intensity (*Other Intensity*) by Geographical Region

Region	N	Mean	P10	P25	P50	P75	P90
Europe							
Mainland Europe, except Eastern Europe	28,394	9.34%	0.00%	0.16%	2.63%	15.32%	26.78%
Eastern Europe	2,425	3.87%	0.00%	0.23%	1.22%	3.51%	9.69%
United Kingdom and Ireland	8,837	3.65%	0.00%	0.00%	0.00%	0.00%	7.67%
Asia							
Middle East	6,773	2.27%	0.00%	0.00%	0.00%	1.35%	5.56%
India	7,839	15.66%	0.00%	0.00%	13.25%	24.53%	37.05%
China (Mainland)	33,497	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%
Remainder of Asia	24,080	3.02%	0.00%	0.00%	0.06%	1.41%	7.82%
Oceania							
Australia and New Zealand	5,908	7.09%	0.00%	0.00%	1.84%	7.49%	17.74%
Americas							
Latin America	6,240	2.88%	0.00%	0.00%	0.37%	2.20%	6.75%
United States and Canada	49,862	1.22%	0.00%	0.00%	0.00%	0.09%	1.18%

This table presents descriptive statistics for our expense disaggregation variables. The sample consists of firms in the Compustat Globa/North American universe of significant firm size (as described in the text) with 'as presented' financials available in Capital IQ over 2000-2020, excluding firms in the financial and real estate sectors and firms incorporated in Japan or Korea (due to data constraints). Panel A presents statistics for the pooled sample. Panel B presents statistics by expense format. Panels C-F present statistics by major geographical regions. *Nature*, *Function*, and *Mixed* are dummy variables equal to one where the firm reported its expenses in a nature expense format, a function expense format, or a mixture of the two formats, respectively. *Expcount* is the number of recurring operating expense line items that a firm reported on its P&L. *Expcon* is a concentration ratio based on the relative

magnitude of the expenses reported by a firm, which measures the extent of meaningful expense disaggregation. *Other Intensity* is the ratio of other expenses to total operating expenses. Full definitions of all variables are given in Appendix A.

Table 2

Determinants of Operating Expense Disaggregation

Panel A: All Firms

	Expcount	*Expcon*	*Other Intensity*	*Trivial Count*
IFRS	-0.373	-0.011	-0.003	-0.590
	(14.88)***	(4.56)***	(2.52)**	(25.28)***
BigN	-0.043	0.002	-0.003	-0.011
	(1.71)*	(0.59)	(2.57)**	(0.56)
ADR	0.070	-0.006	-0.003	-0.048
	(1.04)	(1.02)	(0.89)	(1.15)
Coverage	0.022	-0.004	-0.001	0.002
	(2.58)***	(4.76)***	(2.76)***	(0.35)
Nature	2.506	-0.106	0.094	0.694
	(43.73)***	(23.00)***	(28.73)***	(19.19)***
Mixed	1.363	-0.040	0.018	0.525
	(41.39)***	(11.27)***	(9.96)***	(21.96)***
Size	0.029	0.009	0.001	0.059
	(3.57)***	(10.19)***	(1.61)	(9.33)***
Tangibility	0.154	-0.058	0.002	-0.453
	(2.58)***	(9.11)***	(0.69)	(9.80)***
Leverage	-0.004	0.077	0.009	-0.492
	(0.08)	(13.42)***	(3.00)***	(11.13)***
ROA	-0.474	0.061	-0.018	-0.001
	(5.58)***	(6.54)***	(4.25)***	(0.02)
VolROA	0.165	-0.031	0.020	-0.580
	(1.08)	(1.93)*	(2.77)***	(5.82)***
Growth	0.017	0.010	-0.003	0.045
	(1.75)*	(9.44)***	(5.46)***	(5.45)***
M/B	-0.029	-0.011	-0.001	-0.074
	(3.19)***	(11.90)***	(1.42)	(10.94)***
Expcount		-0.044	-0.009	
		(48.83)***	(18.05)***	
Expcon			-0.084	
			(20.86)***	
Constant	3.785	0.769	0.105	1.684
	(77.72)***	(124.48)***	(26.04)***	(44.18)***
Fixed Effects		Year, Industry, Country		
N	187,487	187,487	187,487	187,487
R^2	0.36	0.51	0.30	0.27

Panel B: Nature Format Firms

	Expcount	*Expcon*	*Other Intensity*	*Trivial Count*
IFRS	-0.441	-0.018	-0.010	-0.472
	(7.26)***	(4.47)***	(3.01)***	(9.94)***
BigN	-0.032	-0.011	-0.009	0.000
	(0.53)	(2.53)**	(2.48)**	(0.01)
ADR	-0.066	-0.010	0.001	-0.171
	(0.38)	(1.03)	(0.08)	(1.61)
Coverage	0.045	-0.003	0.000	0.035
	(1.98)**	(1.95)*	(0.35)	(2.16)**
Controls	Yes	Yes	Yes	Yes
Fixed Effects		Year, Industry, Country		
N	35,982	35,982	35,982	35,982
R^2	0.30	0.34	0.31	0.20

Panel C: Function Format Firms

	Expcount	*Expcon*	*Other Intensity*	*Trivial Count*
IFRS	-0.340	-0.014	0.000	-0.639
	(14.25)***	(4.70)***	(0.01)	(24.06)***
BigN	-0.025	0.004	-0.003	-0.002
	(1.12)	(1.39)	(3.37)***	(0.07)
ADR	-0.006	-0.010	0.004	-0.040
	(0.11)	(1.56)	(1.30)	(0.89)
Coverage	-0.009	-0.006	-0.002	-0.016
	(1.28)	(5.16)***	(4.67)***	(2.10)**
Controls	Yes	Yes	Yes	Yes
Fixed Effects		Year, Industry, Country		
N	116,627	116,627	116,627	116,627
R^2	0.50	0.44	0.07	0.38

This table presents the results of OLS regressions of the determinants of the number of operating expenses that a firm discloses on its P&L (*Expcount*), expense concentration (*Expcon*), the ratio of other expenses to total operating expenses (*Other Intensity*), and the number of very small expenses (<1% of total operating expenses by value) disclosed by a firm (*Trivial Count*). *Expcon* is a concentration ratio based on the relative magnitude of the expenses reported by a firm, which measures the extent of meaningful expense disaggregation. Panel A shows the results for all firms. Panels B and C show the results for firms that report their operating expenses in a nature and function expense format respectively. *IFRS* is a dummy variable equal to one (zero) if the firm reports using IFRS (non-IFRS standards). *BigN* is a dummy variable equal to one (zero) if the firm uses a Big N (non-Big N) auditor. *ADR* is a dummy variable equal to one (zero) if the firm is cross-listed in the US (not cross-listed in the US). *Coverage* is the square root of analyst coverage. Full definitions of all variables are given in Appendix A. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

Table 3

Determinants of Firms' Disclosing Specific Expenses on the P&L

	Non-Template (IFRS and Big N) Expenses					
	Accounting/ Auditing/Legal	Insurance	Bad Debts	Rent	Inventory	Tax (Non-Income Tax)
IFRS	-0.003	-0.002	-0.004	-0.010	-0.018	-0.046
	(2.89)***	(1.45)	(2.65)***	(3.14)***	(10.97)***	(8.42)***
BigN	-0.003	-0.003	-0.003	-0.001	-0.001	-0.024
	(2.26)**	(2.26)**	(1.98)**	(0.35)	(0.39)	(5.68)***
ADR	0.008	0.006	0.005	0.016	0.001	-0.030
	(2.52)**	(2.00)**	(2.16)**	(2.15)**	(0.32)	(3.26)***
Nature	0.018	0.031	0.011	0.163	0.020	0.121
	(6.14)***	(8.48)***	(4.71)***	(19.60)***	(8.29)***	(17.11)***
Mixed	0.012	0.004	0.010	0.043	0.006	0.065
	(6.58)***	(2.52)**	(4.42)***	(9.07)***	(3.80)***	(13.65)***
Other Controls	Yes					
Fixed Effects	Year, Industry, Country					
N	187,487	187,487	187,487	187,487	187,487	187,487
R^2	0.04	0.08	0.03	0.19	0.08	0.74

	Non-Template (IFRS and Big N) Expenses		Template Expenses	
	R&D	Repairs/Maintenance	SG&A	COGS
IFRS	-0.073	0.002	0.045	0.030
	(14.69)***	(0.48)	(5.10)***	(3.77)***
BigN	0.007	0.007	0.020	0.020
	(1.41)	(2.34)**	(2.09)**	(2.67)***
ADR	0.059	-0.001	0.025	0.009
	(5.00)***	(0.09)	(1.05)	(0.55)
Nature	-0.184	0.081	-0.915	-0.520
	(20.11)***	(12.11)***	(45.59)***	(43.09)***
Mixed	-0.038	0.054	-0.216	-0.189
	(5.01)***	(13.06)***	(16.33)***	(17.05)***
Other Controls	Yes			
Fixed Effects	Year, Industry, Country			
N	187,487	187,487	187,487	187,487
R^2	0.45	0.19	0.54	0.45

This table shows the results of estimating the likelihood that a firm discloses a specific type of expense on its P&L. Except for the columns 'SG&A' and 'COGS', the dependent variable is a dummy variable equal to one if the firm disclosed at least one expense line item related to the specific type of expense on its P&L, and zero otherwise. 'Accounting/Auditing/Legal' is an expense related to accounting, auditing or legal work (keywords: 'Audit', 'Legal', 'Accounting'). 'Insurance' is an expense related to insurance (keyword: 'Insurance'). 'Bad Debts' is an expense related to accounts receivable (keywords: 'Bad Debt', 'Doubtful Debts', 'Provision for Doubtful', 'Doubtful Accounts', 'Bad Trade Debt'). 'Rent' is an expense related to renting or leasing (keywords: 'Rent', 'Occupancy', 'Lease'). 'Inventory' is an expense related to inventory (keywords: 'Inventory'). 'Tax (Non-Income Tax)' is a tax-related expense, except for income tax (keywords: 'Tax', 'Surcharge', 'Duty', 'Duties'). 'R&D' means a research and/or development expense (keywords: 'Research', 'Development', 'R&D'). 'Repairs/Maintenance' means a repairs and/or maintenance expense (keywords: 'Repair', 'Maintenance'). The dependent variable in the column 'SG&A' ('COGS') is the number of expenses related to general overhead expenses (cost of sales) disclosed by the firm. These variables are winsorized at three line items. Keywords for SG&A: 'General', 'Administrative', 'Administration', 'Distribution', 'Selling', 'Marketing', 'Advertising', 'Advertizing' (to capture misspelling of advertising). Keywords for COGS: 'Cost of Sale', 'Cost of Revenue', 'Cost of Turnover', 'Cost of Good', 'Cost of Service', 'Cost of Finished Good', 'Cost of Product', 'Cost of Gas Sold', 'Direct Costs', 'Cost of Other Goods Sold'. Standard errors are clustered at the firm level. Full definitions of all explanatory variables are given in Appendix A.***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

Table 4
Results for the First Wave of IFRS Adoption

	Expcount	*Expcon*	*Other Intensity*	*Trivial Count*
IFRSAdopter	-0.111	0.021	0.030	0.222
	(2.20)**	(5.07)***	(11.60)***	(5.38)***
PostIFRS	0.212	0.027	0.003	0.569
	(3.17)***	(4.72)***	(0.91)	(10.64)***
IFRSAdoper × PostIFRS	-0.484	-0.047	-0.009	-0.730
	(10.33)***	(14.03)***	(3.35)***	(17.39)***
Nature	2.258	-0.158	0.095	0.442
	(44.10)***	(37.33)***	(30.19)***	(11.72)***
Mixed	0.994	-0.079	0.014	0.188
	(28.17)***	(21.11)***	(6.45)***	(6.25)***
BigN	-0.258	-0.026	-0.001	-0.173
	(8.77)***	(9.02)***	(0.91)	(6.58)***
ADR	0.086	0.011	0.004	-0.066
	(0.96)	(1.61)	(1.03)	(1.05)
Coverage	-0.067	-0.013	-0.003	-0.110
	(5.00)***	(10.44)***	(4.69)***	(9.45)***
Size	0.055	0.007	0.000	0.093
	(4.82)***	(6.31)***	(0.07)	(9.36)***
Tangibility	0.420	-0.032	0.002	-0.218
	(5.14)***	(3.96)***	(0.49)	(3.25)***
Leverage	0.271	0.070	0.008	-0.216
	(3.22)***	(9.07)***	(1.97)**	(3.07)***
ROA	-0.620	0.096	-0.009	-0.098
	(5.64)***	(8.53)***	(1.68)*	(1.28)
VolROA	-0.681	-0.148	0.003	-1.830
	(3.62)***	(7.43)***	(0.27)	(13.38)***
Growth	0.045	0.017	-0.003	0.029
	(2.74)***	(10.69)***	(3.51)***	(2.12)**
MB	-0.024	-0.008	0.001	-0.078
	(1.98)**	(6.16)***	(2.13)**	(7.74)***
Expcount		-0.035	-0.007	
		(36.40)***	(11.93)***	
Expcon			-0.060	
			(9.76)***	
Constant	3.653	0.760	0.077	1.208
	(46.15)***	(90.38)***	(14.17)***	(18.77)***
Fixed Effects		Year, Industry		
N	78,158	78,158	78,158	78,158
R^2	0.25	0.45	0.22	0.07

This table presents the results of difference-in-difference analysis that tests the effects of IFRS adoption on the paper's expense disaggregation variables around the first wave of IFRS adoption (2000-2010). *IFRSAdopter* is a dummy variable equal to one (zero) if the firm adopted IFRS during the first wave of IFRS adoption and zero otherwise. *PostIFRS* is a dummy variable equal to one (zero) in the firm-years after IFRS adoption. *IFRSAdopter × PostIFRS* is the variable of interest. The dependent variables are described in the earlier table captions. Full definitions of all variables are given in Appendix A. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

Table 5

Effect of Regulatory Quality on Expense Disaggregation

	Expcount	*Expcon*	*Other Intensity*	*Trivial Count*
Regulatory Quality	-0.405	-0.041	-0.006	-0.327
	(20.21)***	(20.80)***	(6.53)***	(20.89)***
Nature	1.959	-0.164	0.115	0.287
	(47.86)***	(45.73)***	(41.40)***	(9.45)***
Mixed	0.996	-0.083	0.016	0.142
	(30.18)***	(23.88)***	(9.01)***	(5.53)***
IFRS	-0.447	0.014	0.014	-0.490
	(17.96)***	(5.68)***	(12.21)***	(25.36)***
BigN	-0.173	-0.005	-0.003	-0.111
	(6.46)***	(1.72)*	(2.44)**	(4.93)***
ADR	0.054	-0.001	0.006	-0.002
	(0.77)	(0.09)	(1.80)*	(0.03)
Coverage	-0.053	-0.011	-0.002	-0.075
	(5.67)***	(11.36)***	(3.73)***	(9.68)***
Size	0.068	0.009	-0.000	0.099
	(7.71)***	(9.99)***	(0.13)	(13.45)***
Tangibility	0.174	-0.042	0.004	-0.420
	(2.67)***	(6.43)***	(1.25)	(8.24)***
Leverage	-0.107	0.059	0.008	-0.571
	(1.73)*	(9.75)***	(2.62)***	(11.17)***
ROA	-0.801	0.064	-0.014	-0.385
	(8.48)***	(6.61)***	(3.20)***	(6.14)***
VolROA	-0.383	-0.098	0.002	-1.684
	(2.26)**	(5.85)***	(0.20)	(14.83)***
Growth	0.072	0.013	-0.003	0.074
	(6.71)***	(11.22)***	(5.22)***	(7.99)***
M/B	-0.062	-0.011	0.002	-0.103
	(6.41)***	(11.50)***	(3.71)***	(13.41)***
Expcount		-0.037	-0.010	
		(44.32)***	(21.38)***	
Expcon			-0.077	
			(19.01)***	
Constant	4.377	0.796	0.104	2.114
	(84.71)***	(122.03)***	(24.31)***	(48.62)***
Fixed Effects		Year, Industry		
N	181,866	181,866	181,866	181,866
R^2	0.25	0.46	0.26	0.13

This tables presents the results of similar analysis to Table 2 replacing country fixed effects with the country-level regulatory quality score from the World Governance Indicators (*Regulatory Quality*). A small number of observations are lost because regulatory quality scores are missing for certain jurisdictions described in the text. The dependent variables are described in the earlier table captions. Full definitions of all variables are given in Appendix A. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

Table 6

Effect of Operating Expense Disaggregation on Analyst Research Outputs

Panel A: Analyst EPS Forecast Errors

	Dependent Variable: *ForeError*		
	Full Sample	Nature Format	Function Format
Expcon	0.524	0.190	0.521
	(11.46)***	(1.74)*	(8.84)***
Expcount	0.031	0.003	0.065
	(6.69)***	(0.48)	(7.22)***
Other Intensity Rank	0.010	0.028	0.001
	(2.24)**	(2.50)**	(0.20)
Nature	0.032		
	(1.20)		
Mixed	0.043		
	(2.12)**		
IFRS	0.004	0.016	-0.004
	(0.20)	(0.45)	(0.14)
BigN	-0.035	-0.026	-0.040
	(1.98)**	(0.80)	(1.75)*
ADR	0.007	-0.050	-0.059
	(0.22)	(0.80)	(1.52)
Coverage	-0.180	-0.170	-0.155
	(24.22)***	(11.25)***	(15.78)***
Size	-0.050	-0.069	-0.038
	(8.01)***	(5.00)***	(4.43)***
Tangibility	0.196	0.003	0.315
	(4.92)***	(0.04)	(5.98)***
Leverage	0.862	1.144	0.807
	(21.81)***	(13.26)***	(15.92)***
ROA	-2.767	-3.496	-2.396
	(40.37)***	(22.93)***	(27.25)***
VolROA	2.769	1.759	3.375
	(22.54)***	(6.58)***	(21.57)***
Growth	-0.091	-0.085	-0.103
	(7.95)***	(3.09)***	(6.84)***
M/B	-0.046	-0.046	-0.135
	(6.05)***	(2.82)***	(10.40)***
Constant	-4.234	-3.687	-4.495
	(78.22)***	(29.34)***	(57.97)***
Fixed Effects		Year, Industry, Country	
N	119,441	24,687	69,147
R^2	0.25	0.28	0.24

Panel B: Analyst EPS Forecast Dispersion

	Dependent Variable: *Dispersion*		
	Full Sample	Nature Format	Function Format
Expcon	0.457	0.205	0.562
	(11.19)***	(2.16)**	(10.26)***
Expcount	0.034	0.011	0.062
	(8.48)***	(2.01)**	(7.53)***
Other Intensity Rank	0.009	0.027	0.003
	(2.27)**	(2.72)***	(0.62)
Nature	0.013		
	(0.56)		
Mixed	0.042		
	(2.24)**		
IFRS	0.012	0.008	0.031
	(0.70)	(0.29)	(1.24)
BigN	-0.031	-0.042	-0.017
	(1.96)*	(1.67)*	(0.78)
ADR	0.081	-0.059	0.079
	(3.35)***	(1.28)	(2.52)**
Coverage	-0.023	-0.027	-0.005
	(3.25)***	(2.08)**	(0.54)
Size	-0.070	-0.059	-0.058
	(11.78)***	(4.94)***	(6.87)***
Tangibility	0.281	0.047	0.293
	(7.65)***	(0.70)	(6.09)***
Leverage	0.736	1.110	0.637
	(20.21)***	(15.26)***	(13.30)***
ROA	-3.212	-3.472	-2.924
	(50.57)***	(26.02)***	(34.78)***
VolROA	3.089	2.059	3.619
	(25.49)***	(8.14)***	(22.53)***
Growth	-0.090	-0.098	-0.083
	(8.73)***	(4.47)***	(6.05)***
M/B	-0.015	-0.037	-0.092
	(2.13)**	(2.63)***	(7.52)***
Constant	-5.179	-4.794	-5.443
	(102.39)***	(44.76)***	(72.15)***
Fixed Effects	Year, Industry, Country		
N	103,341	21,963	57,622
R^2	0.43	0.44	0.42

This table presents the results of OLS regressions of the consequences of operating expense disaggregation choices for analyst forecast accuracy (Panel A) and dispersion (Panel B). *ForeError* is the log of the absolute difference between the consensus one-year analyst EPS forecast and the actual result, scaled by the share price at the beginning of the year. *Dispersion* is the log of the standard deviation of one-year analyst forecasts of EPS, scaled by the share price at the beginning of the year. Results are shown for the full sample and for firms that report in their operating expenses in a nature or function expense format. The expense disaggregation variables are described in the earlier table captions. Full definitions of all variables are given in Appendix A. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

Table 7

Effect of Operating Expense Disaggregation on Market Liquidity

	Dependent Variable: *Price Impact*		
	Full Sample	Nature Format	Function Format
Volume	-1.255	-1.229	-1.227
	(149.56)***	(78.09)***	(120.62)***
VolRet	57.005	59.166	52.476
	(96.47)***	(41.56)***	(67.01)***
Expcon	0.249	0.049	0.180
	(5.86)***	(0.48)	(3.34)***
Expcount	-0.003	-0.012	0.002
	(0.68)	(1.77)*	(0.25)
Other Intensity Rank	0.004	0.003	0.001
	(0.99)	(0.29)	(0.15)
Nature	0.122		
	(4.53)***		
Mixed	0.091		
	(4.60)***		
IFRS	0.030	0.026	0.047
	(1.40)	(0.72)	(1.63)
BigN	-0.065	-0.079	-0.077
	(3.60)***	(2.72)***	(3.36)***
ADR	-0.414	-0.241	-0.446
	(12.74)***	(4.61)***	(10.51)***
Coverage	-0.270	-0.268	-0.280
	(36.10)***	(18.55)***	(27.45)***
Size	-0.731	-0.805	-0.708
	(83.07)***	(51.08)***	(52.24)***
Tangibility	0.271	0.243	0.301
	(7.28)***	(2.93)***	(6.49)***
Leverage	-0.358	0.054	-0.452
	(9.44)***	(0.57)	(9.65)***
ROA	-1.853	-2.270	-1.673
	(27.60)***	(13.02)***	(19.94)***
VolROA	-1.994	-2.567	-1.412
	(16.73)***	(9.41)***	(9.36)***
Growth	-0.195	-0.254	-0.178
	(21.55)***	(11.75)***	(15.52)***
M/B	0.613	0.655	0.469
	(61.20)***	(31.80)***	(25.70)***
Constant	-9.388	-8.429	-9.390
	(109.77)***	(46.19)***	(83.16)***
Fixed Effects		Year, Industry, Country	
N	149,522	28,036	91,814
R^2	0.88	0.90	0.88

This table presents the results of OLS regressions of the consequences of operating expense disaggregation choices for stock liquidity, which is measured using the Amihud (2002) price impact measure (*Price Impact*). Results are shown for the full sample and for firms that report their operating expenses in a nature or function expense format. The expense disaggregation variables are described in the earlier table captions. Full definitions of all variables are given in Appendix A. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).