Chapter 13
Do Attributes of Management's Explanations of Financial Performance Matter for Analysts? An International Perspective

Walter Aerts and Ann Tarca

Abstract Aerts and Tarca (2010) study attributes of performance explanations in management commentary reports provided by 172 companies from five industries in the USA, Canada, the UK and Australia. They report that, compared to their counterparts in the UK and Australia, companies from the USA and Canada are generally less assertive and less defensive in explicit causal framing of accounting outcomes. They are also more extensive and formal in their explanations, relying more heavily on accounting-technical language in explaining performance outcomes. We investigate whether these differential attributional properties have economic relevance by considering their relationship with analyst forecast dispersion. Using a factor analysis based on firm-level characteristics of explanatory statements for 158 companies included in the above study, we find that defensiveness and extensiveness of performance explanations are negatively associated with analyst forecast dispersion, while assertiveness and formality are not. Our results suggest that analysts benefit from more detailed explanations and that they

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W. Aerts (✉)
Department of Accounting and Finance, Antwerp University, Faculty of Applied Economics, Antwerpen, Belgium
e-mail: walter.aerts@ua.ac.be

A. Tarca
UWA Business School, University of Western Australia, Crawley, WA, Australia
e-mail: Ann.Tarca@uwa.edu.au

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pick up defensive explanations while possibly disregarding more assertive explanations. Not surprisingly, the use of more technical-accounting explanations does not serve to reduce dispersion in forecasts. Our study brings together two strands of literature, being studies of explanatory patterns in narrative reports and studies investigating usefulness of narrative reports for analysts.

13.1 Introduction

The aim of this study is to investigate whether attributes of performance explanations included in companies' management commentary (MC) reports impact on the extent of analyst forecast disagreement. We focus on attributes of performance explanations that tend to differ by institutional context. MC reports[1] are commonly provided by listed companies to give analysts and investors a view of a company's position and performance 'through the eyes of management' (SEC 1987; ASB 2003). Explanations of performance potentially provide insights into events and give a context for greater understanding of the accompanying financial data. However, the content of MC reports is largely discretionary and will reflect management's incentives to portray themselves and the company in a positive light, as highlighted by studies investigating narrative reporting using attribution theory (Aerts 1994, 2001, 2005; Bettman and Weitz 1983; Baginski et al. 2004, 2008; Clatworthy and Jones 2003, 2006; Merkl-Davies and Brennan 2007; Salancik and Meindl 1984; Staw et al. 1983).

Another stream of literature concludes that MC information is an important and useful part of a company's total disclosure package (Jones and Cole 2005; PwC 2007). Research indicates that high-quality information contained in narrative reports can have economic importance for analysts and is associated with lower analyst forecast dispersion (Clarkson et al. 1999; Barron et al. 1999). However, prior studies have not investigated whether attributes of performance explanations affect analyst forecasts. Our study adds to the literature by using a detailed textual analysis of performance explanations and investigating the relevance of various attributes of these explanations for the level of disagreement among analyst when forecasting earnings. Thus our study brings together these two streams of literature and adds to our understanding of the importance of particular characteristics of performance explanations.

Prior studies suggest that the institutional setting for financial reporting affects companies' disclosure practices in MC reports (Frost and Pownell 1994; Beattie and McInnes 2006). Aerts and Tarca (2010) find that expected regulatory and

[1] Management commentary reports include Management Discussion and Analysis (MD&A), Operating and Financial Review (OFR) and similar.

litigation costs embedded in a country's institutional environment influence the nature of attributional statements included by management to explain financial performance in management commentary reports. They report that companies from the USA and Canada are generally less assertive and less defensive in explicit causal framing of performance outcomes compared to their counterparts in the UK and Australia. The North American companies are also more extensive and formal in their explanations, relying more heavily on accounting-technical language. These tendencies are more pronounced in the USA, where the aggregate of private and public enforcement is greatest (La Porta et al. 2006).

We extend the prior studies by investigating whether the differences in attributional framing of performance explanations have economic relevance by considering the relationship between attributional content profiles and analyst forecast dispersion. Specifically, we investigate the data set examined by Aerts and Tarca (2010). Based on their sample of listed companies from five industries and four countries (USA, Canada, United Kingdom and Australia) in 2003, we investigate whether specific profiles in attributional behaviour with regard to performance outcomes can be identified, whether these attributional content profiles differ between countries and whether these differences have economic significance. We carry out a factor analysis on the attributional characteristics investigated by Aerts and Tarca (2010) in order to identify patterns of characteristics which go together (attributional content profiles). We are interested in the extent to which such attributional profiles in performance explanation affect the usefulness of information for analysts.

We propose that when companies' explanatory statements are more informative about performance, there will be less diversity in the opinions of analysts about the entity's position and prospects and therefore less dispersion in their forecasts. Thus we explore the extent to which the characteristics of the performance explanations we observe in companies' MC reports are associated with forecast dispersion. The factor analysis identifies three factors (or attributional profiles) which we label 'assertiveness', 'defensiveness' and 'formality-extensiveness'. The first profile, assertiveness, is dominated by the tendency to ascribe positive outcomes to management actions rather than external events and by avoiding accounting-technical explanations for positive outcomes. Defensiveness (the second profile) mainly captures the tendency to explain negative events as arising more from external causes than management action. The third factor, formality-extensiveness, captures a tendency to use relatively more formal (accounting-technical) explanations to more cognitive effort (relative amount and complexity of explanations).

We find that formality-extensiveness and defensiveness are negatively associated with analyst forecast dispersion, suggesting that cognitive effort invested in explanation (captured in formality-extensiveness) reduces disagreement among analysts. When disaggregating the latter factor into its major components, we find that especially the depth and density elements of explanations are important, while the use of more accounting-technical explanations is not beneficial in reducing disagreement. We find that defensiveness, although potentially self-serving, is

useful in reducing disagreement among analysts. Assertiveness, however, is not associated with dispersion in forecasts.

Our study extends the findings of the previous research by showing that the differential empirical framing patterns, likely associated with differences in expected regulatory and litigations costs in the USA, Canada, UK and Australia, are not inconsequential in that they affect dispersion in analysts' forecasts. Our results add to prior studies that have explored the usefulness for analysts of disclosure in management commentary reports (Barron et al. 1999; Lys and Soo 1995; Lang and Lundholm 1993, 1996; Hope 2003a, b) by identifying specific explanatory characteristics that are associated with forecast dispersion.

The importance of high-quality information in MC has been emphasised by regulators and various initiatives have been undertaken to improve narrative content (SEC 2003, 2004; ASB 2003). Our evidence is relevant to regulators' debates about how to promote useful disclosure in MC reports (IASCF 2005). Not surprisingly, we find greater consensus among analysts when more and more detailed explanations are provided by companies so regulators' initiatives should continue to focus on encouraging more comprehensive explanatory reasoning via whichever mechanisms are considered appropriate. Our findings in relation to specific characteristics of attributional framing, particularly defensiveness, suggest that a country's institutional environment should not be too threatening to inhibit an explicit causal stance by corporate management. Causal explanations, even when explicitly self-serving, may reveal useful information and market participants may not be assisted by discouraging such disclosures.

13.2 Background and Research Predictions

The reporting framework for MC varies between countries, with differences in the level of regulation and oversight applied to management commentary reports (IASCF 2005). For example, in the USA a mandatory MD&A has been required since 1968. The SEC provides detailed regulations about content and it also reviews reports and takes action on those reports considered not in compliance with the law (SEC 2003, 2004). In contrast, in the UK the London Stock Exchange has recommended a voluntary report, based on detailed guidance provided by the national standard setter (ASB 2003).

The IASB discussion paper on management commentary raises the question as to whether these differences matter (IASCF 2005). To date, there is little cross-country comparative research to answer this question. Prior international studies have compared various aspects of the content of narrative reports (Collins et al. 1993; Beattie et al. 2002, 2004). Another strand of research investigates the way in which narrative information is presented using an attribution theory approach. Studies identify a self-serving bias in attributional patterns in explanatory cause and effect statements, where managers define situations and events to the firm's own advantage (Baginski et al. 2000; Bettman and Weitz 1983; Clapham and

Schwenk 1991; Clatworthy and Jones 2003; Salancik and Meindl 1984; Wagner and Gooding 1997).

Cross-country studies comparing disclosure practices in the USA and UK suggest that regulatory setting affects firms' disclosure practices (Frost and Pownell 1994; Beattie and McInnes 2006). In this vein, an extensive literature suggests litigation risk varies between countries, being greatest in the USA (Ball et al. 2000; Baginski et al. 2002; Seetharamana et al. 2002; Hughes and Sankar 2006; Khurana and Raman 2004). Aerts and Tarca (2010) find that expected regulatory and litigation costs embedded in a country's institutional environment influence the nature of the statements used to explain financial performance in MC reports. They report that companies from the USA and Canada are generally less assertive and less defensive in explicit causal framing compared to their counterparts in the UK and Australia. The North American companies are also more extensive and formal in their explanations, relying more heavily on accounting-technical language. These tendencies are more pronounced in the USA, where the aggregate of private and public enforcement is greatest (La Porta et al. 2006).

We extend the prior studies by investigating whether the differences in attributional framing of performance explanations have economic relevance by considering the relationship between attributional content profiles and analyst forecast dispersion. Attribution theory relates to how people explain events by ascribing explanations to causes and empirical antecedents. It focuses on perceived causality: people's ideas about what causes things to happen and why things happen as they do. Attributional statements are narrative statements reflecting a cause-effect or antecedent-consequence relationship.[2]

The MC report typically contains performance explanations of two kinds: 'technical-accounting' explanations and causality-based explanations. Technical-accounting explanations use formal accounting language, with its interrelated concepts and inherent calculative relationships, to frame discussion of accounting outcomes. For example, management may explain a rise in the company's profit margin by relating it to an increase in revenue or a decrease of particular categories of operating expenses. These explanations are based on the internal logic of the financial accounting model. Causality-based explanations on the other hand, refer to statements in which causal connections between performance outcomes and internal or external events, actions or decisions are identified as underlying sources for performance. These underlying sources or facilitating factors may be both intentional (i.e. reflecting management purpose) and unintentional. Causality-based explanations include, for example, performance explanations in terms of the company's strategy and underlying business model and explanations of how industry and general economic forces affect business outcomes. Whereas the latter embody interpretative propositional elements (in terms of reasons and causes) that are not transparent from the financial statements, the former typically reflect

[2] In this article we apply an extensive concept of attributional events and we use the terms 'attributional statements' and 'explanatory statements' interchangeably.

accounting logic relationships as embedded in the financial statements and tend to provide an intermediary type of explanation.

Prior studies show a strong link between greater amounts of disclosure and more accuracy in analyst forecasts (Lang and Lundholm 1996; Hope 2003a). Studies also indicate the importance of narrative explanations in MC in the information set used by analysts. Lang and Lundholm (1996) report that analyst forecasts are less disperse for companies with more informative MD&A disclosures (measured by Financial Analysts ratings). Barron et al. (1999) find that better quality MD&A information (based on SEC rankings) is associated with less forecast dispersion. Extending the research question to an international sample, Ang and Ciccone (2001) conclude that more MC disclosure is linked to lower dispersion in forecasts. Similarly, Hope (2003b) finds that disclosures about companies' accounting policies reduce uncertainty, leading to lower disagreement amongst analysts. More public information increases the precision of common and idiosyncratic information generated by analysts (Byard and Shaw 2006). Nichols and Weiland (2009) argue that narrative information improves the quality of publicly available information. They find lower error and dispersion for forecasts for firms providing more non-financial disclosure in information in press releases. Vanstraelen et al. (2003) focus specifically on non-financial information in annual reports identified as important to analysts (based on the Jenkins Committee report) and find lower dispersion in analyst forecasts for companies providing more disclosure. Bozzolan et al. (2010) extend this study by investigating the effect of attributes of forward-looking non-financial information. They show that verifiable information is more likely to be associated with more accuracy and less disagreement in forecasts.

The importance of high-quality information in MC has been emphasised by regulators. A SEC review in 2001 of Fortune 500 companies' reports observed that companies would often choose to present 'boilerplate' analyses that failed to provide insight into the companies' past performance or business prospects. Nelson and Pritchard (2007) note a tendency to 'cut and paste' disclosures from prior years, thus raising the question of the extent to which insights about company performance are provided by formal, ritualised re-statements of self-evident relationships of revenue and expense items. Brown and Tucker (2011) report declining usefulness of MD&A information for US firms, based on reducing amounts of year-on-year change in MD&A content. Lehavey et al. (2011) point to increasing length and complexity of MD&A reports and conclude that higher forecast dispersion among analysts is associated with companies whose reports are less readable (based on the FOG index). Taken together, these studies suggest that the quality of management commentary matters. In this study, we continue the work of Aerts and Tarca (2010) and investigate whether the characteristics of performance explanations that they identified as being sensitive to institutional context affect analyst forecast behaviour.

13.3 Data and Method

13.3.1 Sample Selection: Aerts and Tarca (2010)

The study by Aerts and Tarca (2010) includes five industry groups (building materials, food processing, pharmaceuticals, biotechnology and retail), chosen to include a variety of industries as prior studies suggest that industry membership influences disclosure (Hooks and Moon 1993; Jones and Cole 2005). Aerts and Tarca (2010) study 173 companies, with 53 (30 %) from the USA, 35 (21 %) from Canada, 47 (27 %) from the UK and 38 (22 %) from Australia. Representation from industry groups is as follows: building materials 26 companies (15 %), food processing 36 (21 %); pharmaceuticals 34 (20 %); biotechnology 40 (23 %) and retail 37 (21 %).

Aerts and Tarca (2010) state that 2003 was selected to capture existing differences in the institutional environment for management commentary reports. At that time, regulators in the USA and Canada required mandatory reports while MC reports in the UK and Australia reflected primarily voluntary recommendations. By 2004 the UK had announced the introduction of mandatory reports (an initiative later withdrawn) (Beattie and McInnes 2006) and Australia introduced requirements for management discussion and analysis as part of reform of company law (CLERP 9). The year 2003 was selected so that reports predated the changes in the institutional environment in the UK and Australia, allowing the authors to explore the impact of differences in the institutional setting for MC reports on performance explanations in the reports, which was the major focus of that paper.

13.3.2 Coding of Attributional Statements

In Aerts and Tarca (2010)'s study, the explanatory statements are coded by identifying attributional statements on performance in the management commentary section of the annual report and then coding the statements according to characteristics of explained effects and explanatory factors. The explained effects are coded according to five characteristics: nature, valence, time orientation, qualification and analytical level of explained content. For each characteristic, different elements are discriminated. The explanatory factors (causes and antecedents) are coded according to six characteristics: explicitness of the antecedent—consequence relationship, direction of influence of the antecedent–consequence relationship, time orientation and qualification of the explanatory factor, nature of the antecedent—consequence relationship and locus of causality. As for explained effects, the characteristics are classified according to different elements. Appendix 1 provides definitions of the attributional content characteristics and Appendix 2 shows the coding dimensions. Examples of coding of attribution statements are provided in Appendix 3.

As the company and not the specific instance of attribution is treated as the unit of analysis, the coding results are aggregated at company level, after meaningful selections on relevant attributional dimensions at the individual attributional statement level. The company-level attributional variables are primarily expressed as frequency measures, although some, if relevant, are additionally transformed into proportional measures, reflecting the relative frequencies of specific attributional characteristics. The proportional measures control for variations in the number of attributional statements per company. They add perspective in the analyses by complementing the frequency measures with intensity measures (Gardner and Martinko 1988; D'Aveni and MacMillan 1990).

Table 13.1 presents the explanatory content descriptive statistics in total and by country for Aerts and Tarca (2010)'s sample of 172 companies. The authors state: "the average number of attributional statements is 33.46, relative to an average of 16.19 explained effects, that is, on average each attributed effect is accompanied by 2.04 explanations. There are more positively evaluated effects than negatively evaluated ones (9.50 positives versus 6.52 negatives). Future events represent, on average, 12.31 % of the explained effects, an average of 1.73 prospective attributions per management commentary. Nearly 61 % of the explained effects relate to company level figures (60.90 %) with the balance relating to outcomes on a lower operational level (business or geographical segments, divisions, legal entities, product lines). The majority of the explained effects are quantitatively expressed (68.11 %) and 31.48 % of the effects relate to revenue outcomes. More than one-third of the explanatory statements can be qualified as intermediary accounts (accounting- and consolidation-technical explanations) (38.37 %) and these are biased towards the framing of negative accounting effects, a tendency referred to as 'informality bias on positives' versus 'formality bias on negatives' (Appendix 1)".

Self-serving tendencies become especially apparent in the causal assertiveness bias (i.e. number of positive outcomes explained with reference to internal causes minus number of positive outcomes explained with reference to external causes). The average value of 4.95 indicates a strong acclaiming bias, while a comparable causal defensiveness bias (i.e. number of negative outcomes explained with reference to external causes minus number of negative outcomes explained with reference to internal causes) does not hold for the full sample.

In this study, we add to the results reported in Aerts and Tarca (2010) by employing principal components factor analysis with varimax orthogonal rotation in order to empirically reduce the number of attributional content variables and identify dominant attributional profiles. The factor analysis inputs include attributional properties which have been theorised as impression management sensitive (Bettman and Weitz 1983; Salancik and Meindl 1984; Aerts 1994, 2001, 2005; Clatworthy and Jones 2003; Fiol 1995; Sutton and Galunic 1996) and which could be related to the usefulness of explanations for analysts. Zero values for some of the denominators of proportional measures used as input for the factor analysis

Table 13.1 Explanatory content descriptives

Explanatory content characteristics	Total $N = 173$	US $N = 53$	CAN $N = 35$	UK $N = 47$	AUS $N = 38$
Amount of explanations	Mean (SD)				
Number of explained effects	16.19 (11.48)	16.64 (7.99)	13.74 (9.12)	22.60 (14.95)	9.89 (8.36)
Number of positive effects	9.50 (7.93)	9.42 (5.86)	6.37 (5.29)	14.02 (10.35)	6.92 (6.55)
Number of negative effects	6.52 (5.22)	7.21 (3.67)	7.14 (5.71)	8.36 (6.46)	2.71 (2.40)
Number of neutral effects	0.17 (0.56)	0.02 (0.50)	0.23 (0.49)	0.21 (0.66)	0.26 (0.55)
Number of prospective effects	1.73 (2.04)	1.72 (2.04)	1.17 (2.43)	1.94 (1.86)	1.50 (1.90)
Number of attributional statements	33.46 (24.23)	39.08 (21.08)	28.14 (21.50)	42.11 (28.128)	19.84 (18.39)
Relative content characteristics (%)					
Company level effects	60.90 (31.41)	67.86 (26.24)	73.99 (26.16)	48.53 (31.86)	54.44 (35.50)
Quantitative effects	68.11 (24.96)	78.90 (16.67)	69.07 (27.64)	66.55 (17.68)	54.09 (32.30)
Positivity of effects	55.95 (22.29)	55.45 (18.15)	48.43 (24.40)	60.14 (17.73)	58.39 (28.72)
Prospectively of effects	12.31 (14.36)	10.94 (13.17)	12.28 (14.76)	11.23 (11.21)	15.60 (18.51)
Revenue effects	31.48 (22.40)	28.38 (16.96)	27.13 (20.97)	33.99 (20.22)	36.73 (30.78)
Causal explanations	61.63 (23.81)	52.72 (19.67)	57.44 (20.76)	66.89 (20.61)	71.42 (30.06)
Explanatory effort					
Number of explanations per effect	2.04 (0.60)	2.33 (0.52)	2.01 (0.67)	1.88 (0.38)	1.88 (0.73)
Number of explanations per positive effect ($N = 167$)	2.13 (0.79)	2.33 (0.60)	1.98 (0.84)	2.01 (0.73)	2.13 (1.01)
Number of explanations per negative effect ($N = 161$)	1.96 (0.67)	2.33 (0.67)	2.01 (0.73)	1.73 (0.50)	1.64 (0.53)
Density of explanations	1.25 (0.73)	1.55 (0.71)	1.10 (0.61)	1.38 (0.75)	0.83 (0.62)
Formal language use					
Use of accounting explanations (%)	38.37 (23.81)	47.28 (19.67)	42.56 (20.76)	33.11 (20.61)	28.58 (30.06)
Informality bias on positives	6.38 (11.19)	2.87 (10.46)	2.00 (6.44)	11.28 (13.06)	9.24 (10.17)
Formality bias on negatives	−1.32 (6.40)	−0.15 (6.73)	−0.69 (6.96)	−3.17 (7.36)	−1.24 (2.90)

(continued)

Table 13.1 (continued)

Explanatory content characteristics	Total $N = 173$	US $N = 53$	CAN $N = 35$	UK $N = 47$	AUS $N = 38$
Self-serving content of causal explanations					
Use of enhancements and entitlements (% on total attributions)	24.09 (17.53)	18.81 (13.46)	19.67 (19.78)	27.43 (14.94)	31.40 (20.22)
Use of excuses, justifications and causality denials (% on total attributions)	6.95 (8.57)	6.08 (6.87)	6.67 (7.05)	8.96 (9.35)	5.90 (10.66)
Causal assertiveness bias on positives	4.95 (6.24)	3.92 (5.35)	3.34 (4.10)	8.17 (7.29)	3.89 (6.41)
Causal defensiveness bias on negatives	−0.94 (4.23)	−2.26 (3.72)	−1.43 (4.40)	0.51 (5.31)	−0.42 (2.25)
Inconsistency of explanations					
Formality inconsistency on valence of effects ($N = 158$)	13.15 (11.77)	11.39 (9.46)	9.29 (8.36)	17.64 (14.40)	13.10 (12.07)
Depth inconsistency on valence of effects ($N = 158$)	0.58 (0.66)	0.54 (0.48)	0.61 (0.56)	0.50 (0.72)	0.78 (0.88)

This table provides the mean (standard deviation) for characteristics of performance explanations, in total and for the four countries in the study. The variables are defined in Appendix 1

Table 13.2 Principal components factor analysis—Attributional content profiles

	Factor 1 Assertiveness	Factor 2 Defensiveness	Factor 3 Formality/ Extensiveness	Factor 4 overall Positiveness
Panel A Firm-specific attributional content factors (correlations > 0.35)				
Attributional statement characteristics				
Causal assertiveness bias on positives	0.66		0.38	
Use of enhancements and entitlements	0.76			0.41
Causal defensiveness bias on negatives		0.82		
Use of excuses, justifications and causality denials		0.69		−0.62
Positivity of effects				0.86
Prospectively of effects		−0.37	−0.44	
Revenue effects (%)		0.38		
Divisional effects (%)	0.38	0.62		
Attributional depth			0.64	
Density of explanations			0.82	
Use of accounting explanations	−0.84		0.36	
Informality bias on positives	0.85			
Formality inconsistency on valence of effect	0.61			
Initial eigenvalue	3.86	1.98	1.73	1.03
% of variance explained	29.71 %	15.22 %	13.27 %	7.91 %
Cumulative variance explained	29.71 %	44.93 %	58.20 %	66.11 %
	Mean (Std Dev)			
Panel B Descriptives of attributional content factor scores by country				
AUS ($N = 29$)	0.63 (0.91)	0.03 (1.04)	−0.68 (0.99)	0.31 (1.12)
CAN ($N = 31$)	−0.44 (0.72)	−0.16 (1.01)	−0.15 (0.84)	−0.39 (0.95)
UK ($N = 47$)	0.29 (0.97)	0.38 (1.04)	−0.03 (0.97)	0.15 (1.03)
US ($N = 51$)	−0.36 (0.97)	−0.28 (0.83)	0.50 (0.86)	−0.08 (0.86)

Panel A shows the results of a factor analysis (using Varimax rotated component analysis) based on attributional statements with characteristics sensitive to impression management. The factor analysis provides factors which capture attributional content profiles. Factors are named to reflect the characteristics of attributional statements which dominate in each case. Panel B shows factor scores by country. Data availability for factor analysis reduces the sample size from 172 to 158 companies (consistency/inconsistency variables need at least one positive and one negative explained effect per firm)

reduce the number of observations in the factor analysis and in the analyses using the resulting factors to 158.[3]

Table 13.2 (Panel A) shows the variables resulting from the factor analysis model with the highest cumulative explained variance. The variables 'depth inconsistency on valence of effect' and 'formality bias on negatives', initially selected as input for factor analysis, were rejected as disturbing variables in the factor analysis.[4] As shown in Table 13.2 (Panel A), we identify four factors with eigenvalues greater than 1.0 which cumulatively explain 66 per cent of the overall variance. Using a cut-off of 0.38 for factor identification purposes, we label these factors as follows: Assertiveness (factor one), Defensiveness (factor two), Formality/extensiveness (factor three) and Overall positivity (factor four).

The assertiveness factor (factor one) reflects a content pattern based on the self-serving causal tendency to acclaim and enhance positive outcomes, the intensity of causal search in the framing activity, and the tendency to selectively avoid accounting explanations for the framing of positive accounting outcomes. Factor two represents basic defensive tendencies in attributional commentary, with defensive bolstering of negative outcomes through the use of excuses and justifications and a search for compensatory effects at segmental information levels. The distinction between factors one and two indicates that the assertive and defensive components of the basic self-presentational bias in causal analysis are different empirical phenomena with probably different drivers and consequences.

Factor three loads positively on cognitive effort including attributional depth (number of explanations for each effect explained), overall density of explanations (number of attributions/total disclosure items) and the relative use of formal accounting explanations, and negatively on the relative amount of prospective attributions. Factor four reflects content with primarily positive attributional content, accompanied by high causal assertiveness and low causal defensiveness. Interestingly, neither the main opportunistic assertiveness factor (factor one) nor the main defensiveness factor (factor two) loads significantly on overall positivity of attributional content, indicating the presence of significant impression management efforts in attributional content patterns.[5]

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[3] In addition, in order to study specific properties of attributional content and related attributional profiles, at least one positive and one negative attributional statement had to be present in an MC report.

[4] Interestingly, both the depth inconsistency variable and the formality bias variable did not show up as country-sensitive in the multivariate analysis of individual attributional variables.

[5] The moderate character of the overall positiveness factor has to be interpreted based on the specifics of the content of the coded annual report sections. The coded attributional statements were confined to explanations of effects linked to income statement items (formally stated and audited accounting effects). By purposefully ignoring explanations of company actions and decisions not expressed in profit and loss terminology, managerial discretion in selecting and commenting on facts with positive ramifications is only partially captured in the data set. Given the potential significance of a compensatory leverage effect of explanations of non-accounting positive outcomes (Aerts 2001), it can be expected that overall positivity will be higher if all

Panel B of Table 13.2 shows the mean scores on these attributional content factors by country. On average, Australian companies score high on opportunistic assertiveness and low on formality and cognitive effort. Canadian firms, on average, score low on opportunistic assertiveness, but this seems to be associated with on average higher negativity of attributional content. The UK companies exhibit, on average, both assertive and defensive attributional content, whereas these behaviours are typically avoided by US companies which score high on the properties formality and cognitive effort. Overall, these factor-based international differences are consistent with the country-level analyses of individual attributional content variables as reported in Aerts and Tarca (2010).

13.3.3 Data Analysis

As a company's voluntary disclosure strategy may affect MC disclosure, analyst following and analyst forecasts simultaneously, we considered whether endogeneity exists in these relationships using the Hausman test (the positive outcomes of these tests are reported in the results section of this paper). To control for endogeneity in our analyses, we use two- and three-stage least squares regression models to investigate the relationships of attributional profile factors, analyst following and analyst forecast dispersion.

First, we estimate the relation between attributional profile factors and their determinants with the following model:

$$\text{Attributional profile factor score} = f\,(\text{20 F filing, Change in leverage, Change in profitability, Negative earnings per share, Foreign revenue \%, Number of segments, Market-to-Book ratio, Capital intensity, Corporate governance composite, Analyst following, Size, Industry dummies, Country dummies})_{it} \quad (13.1)$$

The model includes variables identified in prior research as affecting disclosure in annual reports. Thus, company size, change in profitability, change in leverage, growth, diversification, capital intensity, analyst following, filing status, corporate governance, industry sector and country can affect the demand and supply of attributional statements on accounting outcomes. Larger size is commonly associated with more disclosure, possibly because bigger companies have lower information production costs and lower costs of competitive disadvantage associated with their disclosures (Lang and Lundholm 1993). More disclosure is associated with more equity investors, more foreign revenue and more foreign stock exchange listings (Archambault and Archambault 2003). More disclosure in

(Footnote 5 continued)
company-level attributional statements (accounting and non-accounting effects) are selected as the unit of analysis.

MD&A reports is associated with greater analyst following (Clarkson et al. 1999). Other variables drive the need for explanations, such as level and change in profitability and leverage, growth and diversification (Aerts 2001; Clatworthy and Jones 2006). We include proxies to control for level and change in profitability (change in return on equity and a negative EPS dummy), growth (market-to-book ratio), company diversification (number of segments), capital intensity (fixed assets/total assets) and return variability (variation coefficient of ROE over the previous five years).

Corporate governance structure also tends to affect voluntary disclosure, as better governed companies provide higher quality disclosures to distinguish themselves from other firms. Studies show a relationship between disclosure and some corporate governance mechanisms (Forker 1992; Eng and Mak 2003; Cheng and Courtnay 2006). Beekes and Brown (2006) demonstrate that governance quality is related to informativeness of disclosure. We proxy for corporate governance structure using a composite measure (score out of three, where one is added if board chair is a non-executive director, the majority of the board are independent directors and the company uses a committee structure, i.e. audit, nomination and remuneration committees). Finally, industry membership has been shown to influence disclosure (McKinnon and Dalimunthe 1993; Malone et al. 1993; Meek et al. 1995) reflecting specific features of particular industries which lead to distinctive disclosure patterns.[6]

In a second step we control for endogeneity between attributional reporting and analyst following. We use a 2SLS approach for the above regression with analyst following estimated according to the following model. (We exclude variables for company size in the attributional factor regression due to multicollinearity):

$$\text{Analyst following}_{it} = f\,(\text{20 F filing, Market-to-book ratio, Return variability, Company size, Industry, Country})_{it} \tag{13.2}$$

We expect that a 20 F filing by non-US companies will influence the demand for analysts' services. Lang et al. (2003) find that companies cross-listed on US exchanges have greater analyst following. A US listing is likely to stimulate

[6] The impact of industry membership on attributional content was explored further by rotating the country dummy variables within OLS models (untabulated). Considering significant differences of 5 % or more, we find that there is generally a lack of difference between industries, although some specific differences are observed. For assertiveness (factor one), Pharmaceuticals are more assertive than other industry groups, which are not different from each other. For defensiveness (factor two) Food producers are more defensive than Retail. For formality/defensiveness (factor three) Pharmaceuticals and Biotech companies score significantly lower than Food producers. For overall positiveness (factor four), Retail companies score significantly higher than Pharmaceuticals and Food producers. Considering the few differences by industry, the main conclusions to be drawn are that industry membership does not seem to have a large impact on attributional framing. However, we do observe that Pharmaceutical companies are more assertive in attributional framing, possibly reflecting the nature of their assets (a relatively high proportion of intangible assets).

activity by analysts in the foreign country, adding to the domestic supply of analysts' services. In addition, since foreign investors are likely to experience greater information asymmetry than domestic investors, they create greater demand for analysts' research. From the supply side, analysts may be more inclined to follow cross-listed companies because they are more likely to attract a larger investor base. Prior research on analyst following in the US shows that company size is positively related to analyst following. Bhushan (1989) argues that company size affects both the aggregate demand and the aggregate supply for analysts' services. Moreover, analyst coverage is reported as related to Tobin's Q (Lang et al. 2003). The demand for analyst services may be greater for firms with relatively more intangible assets because the informativeness of their financial reports is lower (Amir et al. 2003; Barth et al. 2001). Since the market-to-book ratio is often used as a proxy for the level of intangibles, we expect a positive relation between this ratio and analyst following. Prior research documents a relation between earnings volatility and analyst coverage (Bhushan 1989; Lang et al. 2003), suggesting that demand for analysts' services is greater for companies with higher financial risk. Therefore, we expect a positive relationship between return variability and analyst coverage. Industries are not likely to equally attract financial analysts. Hence, dummy variables are used to control for industry effects. Additionally, Chang et al. (2000) provide evidence that country-level institutional variables affect the availability of analyst forecasts so we introduce country dummies to control for the country effect.

In the third step, we look at the association of attributional reporting profiles and analyst forecast dispersion. We extend the second model into 3SLS regression mode, as previous research suggests that the properties of analyst forecasts, the level of analyst following of a company and the extent and quality of a company's disclosure practices are to a significant extent simultaneously determined (Alford and Berger 1999; Hope 2003a). These simultaneous relationships imply considerable information dynamics at the company level whereby the level and quality of the analyst services and the disclosure position of a company influence each other.

We define analyst forecast dispersion as the standard deviation in analyst forecasts divided by the absolute mean forecast. To control for endogeneity, the three-stage least squares model shown below is used. In the 3SLS regressions, data constraints (at least two analysts need to follow a company and forecasts are available) restrict the number of observations to 116 firms.

$$\text{Analyst forecast dispersion}_{it} = f(\text{Analyst following, Earnings surprise, Return variability, Negative earnings per share, Use of US GAAP accounting standards, Attributional reporting score})_{it} \tag{13.3}$$

$$\text{Attributional profile factor score}_{it} = f\,(\text{20 F filing, Corporate governance composite, Change in leverage, Change in profitability, Foreign revenue, Number of segments, Capital investment intensity, Company size, Market-to-book ratio, Industry, Country})_{it} \tag{13.4}$$

$$\text{Analyst following}_{it} = f\,(\text{20 F filing, Market-to-book, Return variability, Company size, Industry, Country})_{it} \tag{13.5}$$

In addition to the attributional profile measures, several other variables are introduced as possible determinants of analyst forecast dispersion.

Analyst following. Prior studies (Imhoff and Lobo 1992; Marquardt and Wiedman 1998) argue that analyst following functions as a proxy for a company's information that is publicly available. More specifically, Roulstone (2003) provides results that are consistent with analysts reducing information asymmetry by providing public information to market participants, while no support is found for analyst following functioning as a proxy for privately held information. If analyst information is quickly disseminated to large numbers of market participants, then high analyst following represents a 'good' information environment for uninformed and partially informed market participants.

This argument would imply that analyst reports are indeed substitutes and not just complements of corporate disclosures. The substitutory role of analyst following is also consistent with empirical results showing that the impact of corporate disclosures on the cost of capital and on the properties of analyst forecasts decreases with the number of analysts following the company (Botosan 1997; Richardson and Welker 2001; Hope 2003a). Given the evidence of analyst following as a proxy for public information instead of privately held information, we use analyst following as the most efficient proxy for overall company disclosure quality. Moreover, controlling for other disclosure outlets would inflate the number of endogenous variables within our system which would be difficult to control efficiently. Hence, a firm's analyst following is used as a proxy for overall company disclosure quality and the extent of a firm's communication with financial analysts (Leuz 2003). Analyst forecast performance is likely to improve, as more information about a company is processed and disclosed by analysts (Alford and Berger 1999). A negative association between analyst following and forecast dispersion is expected.

Earnings surprise and *Return variability*. Variability in earnings and in historical accounting returns increases the difficulty of forecasting. So, a positive association is expected between the level of earnings change and forecast dispersion. The same reasoning applies for return variability that measures the inherent uncertainty in predicting earnings. A negative relationship is expected between return variability and analyst forecast dispersion.

Negative earnings. We expect that forecasting earnings is more difficult for companies that experience losses. We use an indicative variable for negative

earnings and anticipate a positive relationship between this binary variable and forecast dispersion (Hope 2003a, b).

Use of US GAAP. As high-quality standards, the use of US GAAP should be negatively associated with analyst forecast dispersion.

13.4 Results

13.4.1 Regression Results

Table 13.3 reports results for the 2SLS regression models showing the relationship of a company's score on the four attributional profile factors and their determinants. Results from the assertiveness model indicate that attributional assertiveness is significantly higher in Australia and in the UK than in the USA (the omitted country dummy). There is no significant difference in attributional assertiveness between US and Canadian firms. Consistent with the country impact, a Form 20-F filing decreases self-promotional tendencies. A higher quality corporate governance structure also tempers assertive tendencies. The number of segments is positively associated with attributional assertiveness, possibly because more segments create more room for opportunistic attributional framing. Finally, attributional assertiveness is higher in the pharmaceutical industry (with retail as the omitted industry category).

The defensiveness model highlights significantly higher defensiveness in Australia, Canada and the UK relative to the USA. Greater analyst following is associated with more defensiveness while a Form 20-F filing is associated with non-US firms explaining accounting outcomes less defensively. Consistent with previous research (Aerts 2001, 2005), defensiveness is responsive to level and change of profitability, while assertive attributional tendencies are not. Moreover, the effect of number of segments on attributional defensiveness suggests that the existence of more segments promotes opportunistic attributional search.

The formality/extensiveness model evidences more depth and density of explanations in the USA compared to the other three countries. Growth firms (as proxied by the market-to-book ratio) exhibit less formality of explanations and attributional extensiveness, suggesting that such firms prefer a more descriptive approach in their management commentary or probably more explanations with regard to non-accounting outcomes. Increased analyst following has the opposite effect, bringing firms to adopt a more formal and extensive attributional attitude. The fourth attributional profile factor (overall positiveness) appears to capture mainly industry differences, which we discuss further in robustness tests.

Table 13.3 2SLS regressions—Explanatory factors for attributional content profiles

$N = 158$	Assertiveness	Defensiveness	Formality/ extensiveness	Overall positiveness
Constant	−0.427	***−1.711	0.220	0.656
Listing 20F	**−0.592	***−0.755	0.104	−0.068
Change in leverage	−0.028	0.013	−0.030	**0.059
Change in profitability	0.093	***−0.193	*0.136	−0.010
Negative EPS	0.018	***−0.720	−0.092	***−0.717
Industry building materials	−0.007	**0.490	0.124	*−0.468
Industry pharmaceuticals	***0.695	0.260	*−0.433	***−0.795
Industry biotechnology	0.264	*0.539	−0.254	−0.329
Industry food producers	0.250	***0.581	0.299	***−0.627
Foreign revenue %	0.196	0.333	0.008	−0.023
Number of segments	**0.125	**0.137	0.056	−0.001
Market to book	−0.014	−0.001	***−0.059	0.032
Capital intensity	−0.032	*0.104	−0.044	−0.088
Corporate governance composite	**−0.260	0.161	−0.002	−0.082
Analyst following	0.014	***0.047	***0.050	−0.004
Australia	***1.361	*0.415	***−1.019	0.314
United Kingdom	***0.881	***0.538	***−0.816	0.315
Canada	0.095	**0.526	**−0.468	0.036
Adj. R-Square	0.229	0.318	0.266	0.156

Results for 2SLS regression equations examining the association between attributional content profiles and company attributes. The USA is omitted country dummy variable and retail is the omitted industry dummy variable. Listing 20F = 1 if the company has a US listing requiring a Form 20-F reconciliation, 0 otherwise. Change in leverage = (total debt/total equity 2003—2002)/total debt/total equity 2002. Change in profitability = (net profit after tax 2003—2002)/net profit after tax 2002. Negative EPS = 1 if company reports a negative EPS. Foreign revenue = proportion of foreign revenue to total revenue. Market to book = market value of equity at financial year end/book value of equity. Capital intensity = non-current assets/total assets. Corporate governance composite = score out of three, where 1 is added if board chair is a non-executive director, the majority of the board are independent directors and the company uses a committee structure (audit, nomination and remuneration committee). Analyst = number of analysts following a firm

*$p < 0.10$, ** $p < 0.05$, ***$p < 0.01$ (two-tailed tests)

13.4.2 Attributional Content Profiles and Analyst Forecast Dispersion

Since we posit that a firm's voluntary disclosure strategy may affect MC disclosure, analyst following and analyst forecasts simultaneously, we consider whether endogeneity exists between these relations using the Hausman test. Consequently, we reject the null hypothesis of no endogeneity with respect to attributional content profiles reflecting defensiveness and formality/extensiveness and analyst forecast dispersion. Furthermore, the Hausman test confirms endogeneity between analyst

Table 13.4 3SLS regressions—Relationship of attributional content profiles/characteristics and analyst forecast dispersion

	Sign	Assertiveness	Defensiveness[a]	Formality/ extensiveness
Panel A Attributional content profile				
Constant		**0.163	***0.228	**0.130
Analyst following	–	−0.001	−0.001	0.002
Change in earnings per share	+	**0.001	**0.001	**0.001
Return variability	+	*0.011	**0.015	*0.010
Negative earnings per share	+	***0.173		*0.098
US GAAP	–	*−0.069	*−0.085	0.024
Attributional content profile	–	−0.018	**−0.067	***−0.138
R-square		0.168	0.166	0.070
R-square of attributional profile regression[b]		0.375	0.560	0.382
R-square of analyst following regression[b]		0.475	0.475	0.475
N		116	116	116
	Sign	Attributional Depth	Attributional Density	Use of accounting explanations
Panel B Attributional content characteristics of formality/extensiveness				
Constant		**0.554	***0.595	**0.353
Analyst following	–	−0.006	0.004	−0.002
Change in earnings per share	+	*0.001	0.001	0.001
Return variability	+	*0.009	*0.011	*0.009
Negative earnings per share	+	***0.229	*0.121	***0.282
US GAAP	–	−0.031	−0.009	*−0.123
Attributional content characteristic	–	*−0.178	***−0.349	−0.231
R-square		0.102	0.085	0.182
R-square of attributional profile regression[b]		0.341	0.264	0.305
R-square of analyst following regression[b]		0.475	0.482	0.482
N		116	116	116

Results for 3SLS regression equations examining the association between attributional content profiles (Panel A) and individual attributional content characteristics (Panel B) and company attributes. Assertiveness, defensiveness and formality/extensiveness are attributional content profiles, derived from the factor analysis presented in Table 13.3. Attributional depth, attributional density and use of accounting explanations are individual attributional content characteristics which are the key elements of the factor formality/extensiveness (Table 13.3). Attributional depth is the number of explanations per effect statement, attributional density is the number of attribution statements relative to total disclosure, and use of accounting explanations refers to the proportion of explanations based on technical-accounting language (rather than causal explanations). Analyst following = number of analysts following a firm. Change in EPS = ABS(EPS 2003—2002)/EPS 2002). Return variability is the variation coefficient of ROE over the five years preceding 2003. Negative EPS = 1 if company reports a negative EPS

*$p < 0.10$, ** $p < 0.05$, ***$p < 0.01$ (one-tailed if sign predicted, otherwise two-tailed tests)

[a] Negative EPS is not integrated in the Defensiveness regression due to multicollinearity

[b] Attributional profile regression and analyst following regressions are not presented

following and analyst forecast dispersion ($p < 0.059$).[7] Hence, it is important to control for firms' incentives to use specific attributional reporting profiles in order to assess the value relevance of attributional reporting on analyst forecast dispersion, which is done using 3SLS regressions shown in the previous section.

Results of 3SLS models (Table 13.4 Panel A) show a significant association between attributional defensiveness ($p < 0.05$) and attributional formality/extensiveness ($p < 0.01$) and dispersion of analyst forecasts, thus providing support for the economic relevance of the attributional content profiles. The attributional assertiveness factor, however, does not significantly affect analyst dispersion. The results for formality/extensiveness show that there is less disagreement among analysts for companies providing greater density of explanations (i.e. more explanations of performance relative to total narrative content) and more depth of explanations (i.e. more explanations for each effect). The results are consistent with studies that suggest more MC content and higher quality content is associated with lower dispersion in analyst forecasts (Lang and Lundholm 1996; Barron et al. 1999). Control variables in the models in Panel A are largely as expected. Analyst forecast dispersion is positively associated with a company making a loss (not tested in the defensiveness model), larger changes in earnings per share (earnings surprise) and higher variability of returns. As noted previously, companies using US GAAP exhibit less dispersion in analyst forecasts.

We provide further analysis of the major components of the formality/extensiveness factor in Table 13.4, Panel B. Results suggest that it is essentially the extensiveness of attributional reasoning (attributional depth and attributional density) that drives the relevance of the Formality/Extensiveness factor in relation to analyst forecast dispersion. The practice of providing relatively more explanations and more detailed explanations is associated with less forecast dispersion but using relatively more accounting explanations is not. We do not find that analysts prefer one type of explanation over the other. In this sense our results contrast with that of Bozzolan et al. (2009). In our setting, the more verifiable explanations (accounting-technical) are not associated with lower dispersion.

13.4.3 Robustness Tests

We investigate the possible impact of country differences in the models. We control for country in the analyst forecast dispersion regression by introducing country dummies instead of the control for US GAAP (results not tabulated). We

[7] In 3SLS regressions, all dependent variables are explicitly endogenous to the system and as such are treated as correlated with the disturbances in the system's equations. All exogenous variables are used as instruments. In the case that regressions and error terms are not related, i.e. absence of endogeneity, 3SLS will produce the same estimates as OLS. Therefore, if any of the endogeneously specified variables are in fact exogeneous, the 3SLS is still appropriate (Judge et al. 1988, p. 655).

find that both attributional defensiveness and attributional formality/extensiveness are significant at the 1 % level, whereas attributional assertiveness remains not significant. The finding is consistent with our earlier results that attributional optimism seems to be discounted by analysts, while defensiveness and depth and density of explanations are useful in reducing disagreement among analysts.

13.5 Conclusion

Following Aerts and Tarca (2010)'s finding that specific characteristics of explanations of performance outcomes in management commentary reports differ significantly between countries, we investigate whether specific profiles in attributional behaviour with regard to performance outcomes can be identified, whether these attributional content profiles differ between countries and whether these differences have economic significance. We find that more extensiveness in attributional framing of performance outcomes (which means providing relatively more performance explanations and more in-depth explanation of specific outcomes) is associated with less analyst forecast dispersion. More defensiveness in performance explanations is also associated with less dispersion. Interestingly, we find that forecast dispersion is unaffected by more assertiveness in attributional framing, a trait more likely to be observed in UK and Australian reports. Nor is dispersion affected by more intense use of technical-accounting explanations, favoured by US and, to a lesser extent, Canadian firms.

Our study brings together and extends two streams of literature. Our findings about the importance for analysts of the depth and density of both causal and accounting-technical explanations are consistent with prior studies highlighting the role of quality narrative information (Barron et al. 1999; Lys and Soo 1995; Lang and Lundholm 1993, 1996; Hope 2003a, b). The different associative effect of causal defensiveness versus causal assertiveness is consistent with previous organizational research findings, indicating that specific occurrences of defensive impression management are more effective than assertive verbal behaviours in shaping evaluative perceptions of an external audience (Suchman 1995; Kim et al. 2006; Wood and Mitchell 1981; Barton and Mercer 2005; Elsbach 2003), while such direct evidence is absent for acclaiming verbal tactics. Future research could usefully explore the attributes of a broader category of explanations, as we have only considered performance explanations. This approach could also lead to further investigation of analysts' responses to management's compensatory and reputational incentives underlying the explanations in MC reports.

Appendix 1

Aerts and Tarca (2010) Explanation of Terms: Attributional Content Characteristics

Attributional statement	Antecedent—consequence statement. One or more sentences (or part thereof) in which an outcome or effect (relating to firm's financial performance, i.e. revenue, expense or net income/earnings/profits item) is linked to one or more antecedents for that outcome, e.g. Sales increased due to strong consumer demand and an increase in retail outlets
Explained effects	
Company/division	The statement relates to the companies as a whole and/or to a division within the company, e.g. Sales for the company decreased in the current year (company). However, there was strong performance of the Orange division, following restructuring carried out last year (division)
Valence of effect/Positivity	A positive effect is favourable for the company (e.g. revenue increasing, expense decreasing). A negative effect is not favourable (e.g. expenses have increased, without a commensurate increase in revenue)
Prospectivity	The statement relates to a future event or period, e.g. Sales are expected to increase in the following year due to improved economic conditions including lower interest rates
Explanatory effort	
Depth of explanations	Number of explanations for each statement of effect (may be one or more), e.g. Sales increased due to strong consumer demand and an increase in retail outlets (one effect, two antecedents)
Density of explanations	Number of a firm's attribution statements relative to number of items of disclosure about results of operations in MD&A, OFR or equivalent
Formal language use	
Technical-accounting versus causal explanation	Technical-accounting explanations are based on technical-accounting language and are of an intermediary nature (e.g. Profit increased because margins improved). Causal explanations refer to other types of explanation (e.g. Sales revenue increased due to stronger demand and a more buoyant economy)
Formality (informality) bias	Greater (lesser) use of technical-accounting explanations relative to causal explanations
Informality bias on positives	(Relative) tendency to explain positive effects more in explicitly causal terms than in accounting-technical language
Formality bias on negatives	(Relative) tendency to explain negative effects more in accounting-technical language than in explicitly causal terms
Self-serving content	
Causal assertive self-serving bias	(Relative) tendency to explain positive effects more from internal than external antecedents
Causal defensive self-serving bias	(Relative) tendency to explain negative effects more from external than internal antecedents
Enhancement	The framing of a positive outcome relative to negative external factors, e.g. The company achieved strong revenue growth in the Orange division, despite an industry-wide decline in demand for goods produced
Entitlement	Positive effects causally attributed to internal factors (e.g. management decision) rather than external factors (e.g. industry or economy wide factors)

(continued)

(continued)

Excuse	Negative effects causally attributed to external factors (e.g. industry or economy wide factors) rather than internal factors (e.g. management decision), e.g. Sales declined in the period, largely due to poor demand reflecting an unexpected downturn in the economic cycle
Justification	Teleological explanations of negative effects, e.g. R&D expenses increased in order to accelerate the introduction of new high-quality products
Causality denial	Implicit denial of responsibility for a negative effect by referring to internal proactive or remedial factors, e.g. Despite increased efforts of sales staff, sales declined in the period
Inconsistency of explanations	
Formality inconsistency on valence of effects	Relative use of accounting-technical explanations for positive versus negative effects
Depth inconsistency on valence of effects	Number of explanations per effect for positive versus negative effects

Appendix 2

Aerts and Tarca (2010) Coding dimensions of attribution statements

An attribution statement: One or more sentences (or part thereof) in which an outcome or effect (relating to a firm's financial performance, i.e. revenue, expense or net income/earnings/profit item) is linked to one or more antecedents for that outcome. Each attribution statement was coded on dimensions A01–A05 for the outcome/effect phrase and B10–B15 for each antecedent phrase.

A. Outcome/effect	B. Antecedent
A01 Nature of the effect	B10 Explicitness of the antecedent-consequence relationship
Revenue	1. Explicit
1. Expenses	2. Implicit
2. Income/earnings/profit	3. Decomposition (effect = sales, cause = sales)
A02 Valence of the effect	B11 Direction of antecedent-consequence relationship
1. Positive (e.g. increase sales, decrease expenses)	1. Same direction
2. Negative (e.g. decrease sales, increase expenses)	2. Opposite direction
3. Unchanged/flat	B12 Time orientation of antecedent
A03 Time orientation of the effect	1. Past (effect concerns event of preceding fiscal year)
1. Past (effect concerns event of preceding fiscal year)	2. Present (year under review)
2. Present (year under review)	3. Future
3. Future	B13 Antecedent is expressed in quantitative or qualitative terms

(continued)

(continued)

A. Outcome/effect	B. Antecedent
A04 Effect is expressed in quantitative or qualitative terms	1. Quantitative
1. Quantitative	2. Qualitative
2. Qualitative	B14 Nature of explanation
A05 Level of the explained effect	1. Causal explanation
1. Division/product/geographic segment	2. Accounting-technical explanation
2. Company as a whole	B15 Locus of causality of antecedent
	1. Internal cause, explicit reference to management board
	2. Internal cause, explicit reference to segment division in the company
	3. Internal cause with explicit reference to personnel
	4. Other internal causes
	5. External cause; cause is on sector or industry level
	6. External cause; cause is on general economic level
	7. Other external causes

Appendix 3

Aerts and Tarca (2010) Examples of attribution statements

1. Antecedent-consequence relationship: an expense outcome is linked to two explanations, one coded as technical-accounting and the other as causal:

The cost of merchandise sold decreased in 2003 compared to 2002 [*effect*] reflecting lower spending on goods and services due to lower sales [*antecedent* (*a*) *technical-accounting*] as well as favourable procurement conditions [*antecedent* (*b*) *causal*].

Sears Canada Inc. 2003 Annual Report p. 28 (*Canada Retail*)

2. Explicit explanations: characterised by a causal conjunction or connecting phrase (e.g. because of, as a result of) and the verb in the sentence can refer to an explicit explanation (e.g. lead to, result in). For example, consider the following positive outcome with an internal cause which uses 'through' as the causal conjunction:

Foreign exchange losses decreased in the year [*effect*] through better management of the consolidated entity affairs [*antecedent—causal*].

Peptech 2003 Annual Report p. 18 (*Australia Biotech*)

3. Implicit explanation: when cause and effect are not explicitly related. These implicit explanations are only taken into account when cause and effect can be reasonably linked to each other. In the following causal explanations (an excuse and an entitlement) cause and effect are linked by the words 'as a result of':

The company's hog production operations were negatively impacted in 2003 as a result of the sharp rise in the Canadian dollar [antecedent—causal] which immediately reduced producer revenues [effect].

Maple Leaf Foods, *2003 p. 29* (*Canadian Food producer*).

We are continuing to realise gains in our primary margin [effect] as a result of actions to increase overseas production and consolidate our supply base [antecedent—causal].

Marks and Spencer, *2003 p. 3* (*UK Retail*)

4. Time orientation: as shown below in a prospective causal statement:

The outsourcing of the liquid sorbitol production at Atlas Point was completed this year [antecedent—causal]. These changes are expected to yield a profit improvement next year [effect].

Associated British Foods, *2003*, *p. 20* (*UK Food producer*).

5. Technical-accounting attributions: explanations of accounting effects in financial accounting language:

During fiscal 2003 … lower depreciation expense [antecedent: internal—technical-accounting] contributed to improvement in gross profit and margin [effect].

Other income increased to $3,350,000 in 2003 from $2,285,000 in 2002 [effect] primarily as a result of $932,000 improvement in equity in net earning of affiliates [antecedent: internal—technical-accounting].

Florida Rock Industries Inc., *2003 pp. 8–9* (*US Building Materials*)

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