

# **Essays on Corporate Disclosure of Value Creation**

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# Abstract

Information on a firm's business model helps investors understand an entity's resource requirements, priorities for action, and prospects (FASB, 2001, pp. 14-15; IASB, 2010, p. 12). Disclosures of strategy and business model (SBM) are therefore considered a central element of effective annual report commentary (Guillaume, 2018; IIRC, 2011). By applying natural language processing techniques, I explore what SBM disclosures look like when management are pressed to say something, analyse determinants of cross-sectional variation in SBM reporting properties, and assess whether and how managers respond to regulatory interventions seeking to promote SBM annual report commentary. This dissertation contains three main chapters. Chapter 2 presents a systematic review of the academic literature on non-financial reporting and the emerging literature on SBM reporting. Here, I also introduce my institutional setting. Chapter 3 and Chapter 4 form the empirical sections of this thesis. In Chapter 3, I construct the first large sample corpus of SBM annual report commentary and provide the first systematic analysis of the properties of such disclosures. My topic modelling analysis rejects the hypothesis that such disclosure is merely padding; instead finding themes align with popular strategy frameworks and management tailor the mix of SBM topics to reflect their unique approach to value creation. However, SBM commentary is less specific, less precise about time horizon (short- and long-term), and less balanced (more positive) in tone relative to general management commentary. My findings suggest symbolic compliance and legitimisation characterize the typical annual report discussion of SBM. Further analysis identifies proprietary cost considerations and obfuscation incentives as key determinants of symbolic reporting. In Chapter 4, I seek evidence on how managers respond to regulatory mandates by adapting the properties of disclosure and investigate whether the form of the

mandate matters. Using a differences-in-differences research design, my results suggest a modest incremental response by treatment firms to the introduction of a comply or explain provision to provide disclosure on strategy and business model. In contrast, I find a substantial response to enacting the same requirements in law. My analysis provides clear and consistent evidence that treatment firms incrementally increase the volume of SBM disclosure, improve coverage across a broad range of topics as well as providing commentary with greater focus on the long term. My results point to substantial changes in SBM reporting properties following regulatory mandates, but the form of the mandate does matter. Overall, this dissertation contributes to the accounting literature by examining how firms discuss a central topic to economic decision making in annual reports and how firms respond to different forms of disclosure mandate. Furthermore, the results of my analysis are likely to be of value for regulators and policymakers currently reviewing or considering mandating disclosure requirements. By examining how companies adapt their reporting to different types of regulations, this study provides an empirical basis for recalibrating SBM disclosure mandates, thereby enhancing the information set of capital market participants and promoting stakeholder engagement in a landscape increasingly shaped by non-financial information.

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Finally, I would like to dedicate this work to the memory of those who have joined me on this journey in spirit.

## **Declaration of Authorship**

I, the undersigned, declare that this thesis is original and authentic, and is the result of my own work. This thesis has not been submitted in substantially the same form for the award of a higher degree elsewhere. Except where acknowledged and referenced, all statements and arguments are my own.

I further declare that a version of Chapter 3 of this dissertation has been prepared as a co-authored paper with Dr Mahmoud Gad and Professor Steven Young for a submission to an academic journal. I also declare that Chapter 4 is my solo-authored work but has benefited from guidance and feedback from my supervisors to the reasonable level expected in a doctoral dissertation at a research university in the United Kingdom.

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# Chapter 1 Introduction

Strategy and business model frame value creation at the firm level. Information on a firm's business model helps investors understand the entity's resource requirements, priorities for action, and prospects (US Financial Accounting Standards Board [FASB], 2001, pp. 14-15; International Accounting Standards Board [IASB], 2010, p. 12). Business models articulate the system of inputs, activities and outputs required to create long term value and are framed by an entity's strategic objectives and plans to achieve them. Therefore, reporting on business model and strategy is considered a central element of effective annual report commentary (Guillaume, 2018; IIRC, 2011). KPMG (2016) highlight a growing international trend for such commentary as policymakers including the US FASB (FASB, 2001), IASB (2021), UK Financial Reporting Council (FRC) (2014), and European Commission (EC) (2017) promote disclosure in this area. Reflecting this trend, a recent Securities and Exchange Commission (SEC) concepts release aimed at modernising Regulation S-K disclosure requirements investigates whether to revise Item 101(a)(1) to require registrants to describe their business strategy in the Management Discussion and Analysis (SEC, 2016, p. 60).

Calls for companies to say something about their strategy and business model(s) have intensified in recent years for several reasons. First, understanding how a firm creates value is fundamental to analysing financial information and assessing future prospects (IASB, 2010; Palepu et al., 2013; Verrecchia, 1980). Stakeholders therefore view insights into a firm's strategy and business model (hereinafter SBM) as integral to completing the entity's information mosaic (FRC, 2016; Koch et al., 2013; Kohut and Segars, 1992; Simoni, 2021). Second, SBM commentary contributes to the stewardship role of annual reports by helping shareholders judge the effectiveness of strategic objectives, operational plans, and progress against these objectives and plans (International Federation of Accountants, 2020; Investment

Association, 2017; Kohut and Segars, 1992, pp. 7-8). Third, academics and policymakers are concerned by managements' inability to articulate their approach to creating and preserving value for shareholders and other stakeholders (EC, 2017; House of Commons Treasury Committee, 2009; Kay, 2012). This forms part of a wider debate on the need for company managers and investors to adopt a longer term perspective on decision making (Edmans et al., 2022; EC, 2017; Kraft et al., 2018) and take a broader stakeholder perspective on corporate performance (Caskey and Ozel, 2017; Liu et al., 2021). Regulators and stakeholders are calling for more SBM commentary to shift the focus of management and investors toward long term value creation (CFA Institute, 2006; IASB, 2021; SEC, 2012; Lev and Gu, 2016).

Providing an overview of strategy and business model in the annual report to help contextualize other disclosures is not without cost. First, given other innovations in non-financial reporting such as climate and workforce reporting, there are growing concerns that the annual report is becoming too long and complex (e.g., BIS, 2010b; FRC, 2009). Indeed, recent survey evidence raises the alarm that increasing reporting requirements are restricting the time managers have available to plan and make strategic decisions (Chartered Governance Institute UK & Ireland, 2023). Second, several frictions may prevent firms from providing (meaningful) SBM commentary. Strategy is complex, dynamic and diffuse across the organisation (Falkenberg and Gronhaug, 1989; Menon, 2018; Schneckenberg et al., 2019) making clear and concise discussion of SBM challenging (Bini et al., 2023). Even where managers have meaningful information to disclose about strategy and business model, there are strong incentives to remain silent. For example, publicly documenting firm strategy and business model likely incurs competitive costs (Menon, 2018) leading firms with good strategy to hide favourable information (Bini et al., 2023; Verrecchia, 1983). That firms with good strategy remain silent or disclose platitudes creates a pooling equilibrium where firms with weak strategy have the opportunity to avoid scrutiny by providing low quality SBM

commentary (Dye, 1985). It is therefore not clear whether annual report commentary on SBM matters yields meaningful insights.

Research in the area of annual report commentary on SBM is sparse. Early studies use manual coding techniques applied to small samples to identify strategy-related topics in annual report disclosures, such as firms' competitive environment or growth prospects (Bowman, 1978; Bowman, 1984; Giunta et al., 2014; Osborne et al., 2001; Padia and Yasseen, 2011; Santema and van de Rijt, 2001). Results generally suggest that detailed and helpful annual report insights into firm strategy and value creation are rare. Instead, these summary disclosures concerning the value creation process tend to be generic and bland. A further strand of work explores the capital market implications of the (voluntary) provision of strategy-related updates through channels other than the annual report, such as strategic plans (Baginski et al., 2017; Kotsantonis et al., 2019; Lu and Tucker, 2012). Studies find earnings announcements containing strategic plans are associated with reduced bid-ask spreads and increased market depth. These results confirm that investors find insights regarding specific strategic initiatives useful in reducing information asymmetry.

Large-sample evidence on the properties of annual report descriptions of SBM is scarce (Michalak et al., 2017) due to two complicating factors. First, few jurisdictions have taken the step of mandating SBM disclosure necessary for systematic analysis. One exception is South Africa, where the mandate to report on SBM matters is part of the requirement to provide an integrated report (Barth et al., 2017). Similarly, the European Union (2014) introduced the non-financial reporting directive which requires disclosure of strategy and business models, although EU member states were not required to enforce SBM disclosure requirements before 2018. Second, in jurisdictions that mandate SBM disclosure, commentary is hard to extract on a large sample basis due to the unstructured nature of annual reports and the file format, which tends to be PDF (El-Haj et al., 2020).

Studies examining mandatory SBM commentary in annual reports overcome these frictions by analysing disclosures in the UK setting. Although a material proportion of firms traditionally chose to provide some information on SBM matters voluntarily, the UK Corporate Governance Code was modified in 2010 to include a comply or explain provision requiring firms listed on the London Stock Exchange Main Market to provide information on strategy and business model. The regulatory environment was further updated in 2013 with identical disclosure requirements enacted into company law as part of a broader disclosure mandate, accompanied by non-mandatory best practice guidance on SBM reporting from the Financial Reporting Council. A small set of papers utilise this setting to examine the capital market effects of mandatory SBM disclosure requirements (e.g., Athanasakou et al., 2022; Wang et al., 2023). Results suggest that the UK disclosure mandates increased in disclosure volume (Athanasakou et al., 2022) and reporting quality<sup>1</sup> (Wang et al., 2023), leading to reduction in capital market uncertainty.

While yielding insights implying that capital market participants find mandatory SBM disclosures useful, capital market tests do not paint a full picture. It is challenging to empirically test the quality of SBM discourse through capital market tests given its contextual nature and its contribution to firms' information mosaic (Koch et al., 2013). This is for three reasons. First, SBM discourse forms part of the broader annual report narrative but disentangling the capital market effect of an individual component of the entire annual report is empirically challenging. Second, that the value of SBM disclosure is to provide context means there is naturally a lack of a material price sensitive component to such commentary. Third, it is hard to isolate effects for an individual component of the mosaic. Therefore, capital market tests may estimate the value of SBM commentary. Achieving a more complete understanding of the informativeness of SBM commentary therefore necessitates analysis of disclosure properties. However, prior

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<sup>1</sup> As defined by proprietary data provided by PWC.



literature lack systematic evidence on what SBM disclosures look like when managers are pressed to say something and how firms respond to disclosure mandates, despite calls for detailed information on the properties of SBM annual report discourse (Beattie and Smith, 2013; Wang et al., 2023).

My research answers these calls by leveraging recent advances in natural language processing to contribute the first large scale, systematic analysis of the properties of SBM disclosures and changes therein in response to regulatory interventions. In addition to reviewing the emergent SBM literature and institutional settings, my thesis comprises two complementary empirical studies. My first study analyses the content and properties of SBM disclosures to determine whether managers provide meaningful SBM insights or whether these disclosures are characterized by bland, boilerplate commentary. My second study evaluates whether and how the content and nature of SBM reporting responds to disclosure mandates. In both empirical chapters, consistent with the default assumption with much of the prior literature on corporate reporting (Michelon et al., 2022), my assumption is that the users of SBM reporting are financial stakeholders, chiefly equity investors. Therefore, I assume SBM commentary serves the purpose of helping with interpreting, contextualising and assessing the financial performance of firms. This assumption is also in line with regulators and policymakers currently designing or reviewing SBM disclosure mandates and best practice guidance (FRC, 2014b; IASB, 2021).

In Chapter 3, I construct the first large scale corpus of SBM discourse in the literature to investigate whether and how managers provide meaningful insights on SBM matters when pressed to explain how they create and maintain value. I develop and test three perspectives on SBM reporting from prior literature. First, I examine whether proprietary costs (Bini et al., 2023; Menon, 2018; Verrecchia, 1983) and problems articulating SBM concisely (Beattie and Smith, 2013; Falkenberg and Gronhaug, 1989; Menon, 2018; Schneckenberg et al., 2019) are

so pervasive that SBM annual report disclosure contains only generic and boilerplate content that provides little or no insights on firms' value creation processes. I refer to this perspective on SBM disclosure as the padding hypothesis. I test this perspective by identifying the degree of alignment with the themes that theory predicts to be present in meaningful SBM commentary. My empirical approach involves extracting topics by constructing a Latent Dirichlet Allocation (LDA) topic model from my SBM corpus. In constructing the model, I follow pre-processing steps and make research design choices in line with best practice in computational linguistics, including manually constructing a stemming algorithm and stop word list specific to SBM commentary. Results from my analysis reject the padding hypothesis. Instead, I find that: themes prominent in the SBM corpus align with popular strategy frameworks; these themes are salient to the SBM corpus when compared to a reference corpus; and management tailor the mix of SBM topics to reflect their firms' distinctive approach to value creation.

Having rejected the padding hypothesis, I next seek to distinguish between gold-standard reporting and symbolic reporting perspectives on SBM commentary, both of which are consistent with my initial topic-based evidence. The gold-standard reporting perspective predicts that SBM discourse provides transparent insights into the value creation process. The symbolic reporting perspective recognizes that proprietary costs and other barriers to disclosure may prevent fully informative disclosure as predicted by the gold-standard approach, but are not so pervasive that no informative disclosure is made. Rather, managers can opt to balance competing disclosure pressures by following a legitimation strategy, wherein the lexicon of established strategy frameworks is used to give (some) informative insights and the impression of authentic disclosure but which nevertheless falls short of providing fully transparent firm-specific insights (Christensen et al., 2021).

My approach to disentangling between these two competing perspectives is to assess alignment with the properties of effective SBM disclosure highlighted in best practice guidance (FRC, 2014b; IIRC, 2013). Consistent with my assumption that investors are the primary users of SBM commentary, the best practice guidance documents I draw on were developed with investors in mind. For example, the guidelines developed by the Financial Reporting Council were shaped through a series of consultations with users and preparers (Financial Reporting Council, 2013b). Following the consultation process, the Financial Reporting Council (2014a) released a feedback statement outlining the responses to the exposure draft. They find that “[a] minority of respondents, from civil society groups, felt that the guidance was too focused on the needs of shareholders” (p. 9). Therefore, respondents view the best practice guidance as catering to the needs of investors. Further, the Financial Reporting Council (2014a) provide evidence that respondents generally supportive of the communication principles; while some comment letters sought clarification or additional principles, no respondents seemingly rebut the communication principles. Stakeholder feedback suggests the best practice guidelines largely capture the quality of disclosures from the users’ point of view.

In my empirical analysis, I investigate the degree of entity-specific information, forward-looking orientation, time horizon references, and balance in SBM commentary relative to a corpus of general annual report commentary. I operationalise best practice properties by using empirical measures developed and validated by prior literature (Bozanic et al., 2018; Brochet et al., 2015; Garcia et al., 2023; Hope et al., 2016), after applying adjustments necessary for application to UK annual reports. Rather than reflecting entirely informative disclosure as demanded by users, my evidence fails to rule out symbolic reporting. I find that, contrary to best practice guidance, SBM commentary is *less* specific, *less* precise about time horizon (short- and long-term), and *less* balanced (more positive) relative to general management

commentary. I conclude that symbolic compliance and legitimisation characterize the typical annual report discussion of SBM.

In further analysis, I explore several alternative (but not necessarily mutually exclusive) reasons why managers elect to report symbolically when discussing their strategy for creating and maintaining shareholder value. The first reason is that proprietary costs may constrain the amount of detail managers are willing to provide for fear of revealing valuable private information that would harm their firm's competitive advantage (Bini et al., 2023; Li et al., 2013; Verrecchia, 1983). The second reason is to camouflage poor or ill-defined strategy and confound shareholder monitoring when performance is weak and management competence is under the spotlight. I find the demand for symbolism is increasing in proprietary costs, consistent with concern over compromising the entity's competitive advantage acting as a constraint on the amount of SBM insight that management are willing to provide. I also find that firms with incentives to confound shareholder monitoring limit the detail and informativeness of SBM commentary when discussing current or past events. However, they provide clearer and more informative SBM commentary when discussing the future. The evidence is inline with management seeking to obfuscate weak performance realizations while providing credible analysis of future performance expectations.

Chapter 3 contributes to the extant literature in several ways. First, I contribute to the emerging literature on SBM disclosure. A handful of small sample studies analyse annual report commentary on value creation and suggest that detailed insights on strategy and business model are rare (Bowman, 1978; Bowman, 1984; Santema et al., 2005; Santema and van de Rijt, 2001). Large-sample evidence on annual report descriptions of SBM is scarce (Michalak et al., 2017; Vaara and Fritsch, 2022), despite SBM disclosures forming a key part of firms' information mosaic and policymakers placing the issue at the centre of the narrative reporting model (IASB, 2021). I build the first representative corpus of annual report SBM commentary and provide

the first systematic analysis of the properties of these disclosures. Through this textual analysis of SBM commentary, I offer a new perspective on such commentary by exploring the themes of communication and benchmarking disclosures against hallmarks of best practice reporting as defined by policymakers and stakeholders. This speaks to the contextual nature of SBM reporting and its contribution to firms' information mosaic (Beattie and Smith, 2013) While the SBM themes presented are consistent with theory and tailored to the reporting entity, the quality of analysis typically falls short of the standard desired by regulators and required by investors to make informed decisions. My analysis pinpoints areas where reporting remains inadequate and reveals that key elements of SBM commentary are symbolic in nature.

Second, I extend work on symbolic reporting. Research reveals that managers report symbolically on various annual report themes to establish legitimacy (e.g., Bothello et al., 2023; Cho et al., 2015). I develop and test two non-mutually exclusive explanations for symbolic SBM reporting and find that symbolism is increasing in proprietary costs and weak earnings performance. Results show that the desire to avoid disclosing information beneficial to competitors and an attempt to obfuscate poor performance explain why the quality of SBM disclosures often falls short of the standard users seek.

In Chapter 4, I contribute to the SBM literature by examining how the properties of SBM disclosures change in response to mandatory disclosure requirements. I leverage the novel reporting requirements in the UK to document how LSE Main Market firms respond in terms of disclosure volume and lexical features to different forms of mandate. Relative to a voluntary reporting regime, I analyse how Main Market firms respond to the introduction of a (quasi-mandatory) comply or explain provision in 2010. I then investigate how Main Market firms adapt the properties of SBM commentary in 2013 after the same disclosure requirements are enacted into law with further support in the form of non-mandatory best practice guidance. In both cases, I benchmark the response of Main Market firms against firms listed on the LSE

Alternative Investment Market which were firms not subject to the same disclosure requirements. Analysing how firms respond to different forms of the same disclosure requirement is an important given the evolving regulatory environment (IASB, 2021; SEC, 2016; 2019; 2020). Specifically, the form that the regulatory disclosure mandate takes may have an incremental impact on reporting outcomes beyond what the mandate requires management to disclose. While current debates in the non-financial disclosure literature encourage research to go beyond viewing disclosure regulation as a binary voluntary-mandatory choice (Christensen et al., 2021), there is a lack of systematic evidence comparing disclosure decisions across regulatory formats (Ho, 2017).

To examine how the properties of SBM disclosure change following the 2010 and 2013 regulatory interventions, I construct measures of volume, topic content, presentation format, and effectiveness as defined by best practice guidance. My results suggest that firms respond modestly to the introduction of the 2010 comply or explain provision (relative to public UK firms not subject to the regulation). I find no consistent evidence of a response in terms of volume or best practice properties, although my analysis suggests disclosure becomes more concentrated in separate, clearly defined sections. In contrast, I find a substantial response to enacting the same requirements in law in 2013. My analysis provides clear and consistent evidence that Main Market firms incrementally increase the volume of SBM disclosure, improve coverage across a broad range of SBM themes, and provide greater focus on the long term.

In further analysis, I investigate cross-sectional variation in the response to disclosure mandates among the group of treated Main Market firms. The motivation for this analysis is that the benefits and costs of disclosure vary across firms, with prior research documenting substantial heterogeneity in SBM disclosures in voluntary regimes where some firms voluntarily disclose insights into SBM matters while others remain silent (Padia and Yasseen,

2011; Santema and van de Rijt, 2001). Recent accounting theory shines a light on the impact of firms' pre-mandate disclosure policy on their response to disclosure mandates (Versano, 2021). For example, firms providing substantive disclosure prior to a mandate may be concerned that disclosures may become swamped by poor-quality disclosures made by reluctant firms. In response, previously enthusiastic firms may look to differentiate themselves by going beyond minimum disclosure requirements (Arena et al., 2021). On the other hand, if firms that previously remained silent begin to provide meaningful SBM disclosures then enthusiastic disclosers may benefit from spillovers, either from enhanced investor confidence and liquidity spillovers (Bushee and Leuz, 2005) or by investors having deeper understanding of market dynamics (Admati and Pfleiderer, 2000). This implies a substitutive effect where enthusiastic reporters respond by *reducing* disclosure levels (Breuer et al., 2022). For these reasons, the impact of pre-mandate SBM disclosure policy on how firms respond to regulatory intervention is ultimately an empirical question.

To answer this question, I restrict my sample to firms listed on the Main Market and partition firms on pre-intervention disclosures. I apply two complementary approaches. My first approach uses the inclusion of a separate SBM section as an unambiguous partition to identify firms providing clear SBM commentary. My second approach recognises that SBM commentary may be distributed across annual report sections. I therefore partition firms using a composite SBM disclosure score (e.g., Grewal et al., 2019; Ioannou and Serafeim, 2019) using principal components analysis of variables capturing the presence of a separate SBM section and the volume of SBM disclosure in non-SBM sections. I then empirically measure the incremental response to disclosure regulations by Reluctant firms over and above Enthusiastic firms. For the 2010 comply or explain provision for SBM commentary, I find that firms providing little substantive disclosure prior to the regulatory intervention display a more pronounced increase in strategy and business model reporting in response to the 2010 comply

or explain mandate. However, the incremental increase is statistically and economically modest. Further, I find little improvement in the detail and substance of SBM discourse for this group. Results therefore suggest that baseline disclosure improved in terms of presentation but not in quantity or quality. In contrast, I find the enactment of disclosure requirements into law in 2013 leads to substantial improvement in the disclosures of firms that previously elected to provide less commentary. Relative improvements in presentation, topic coverage and volume are consistent with the mandate improving the baseline transparency level. Meanwhile, firms already providing substantive disclosure before 2013 further enhance SBM commentary, consistent with such firms seeking to preserve their differential disclosure status (Arena et al., 2021; Versano, 2021). Collectively, my results suggest that while regulatory intervention promotes SBM disclosure, the specific form of the disclosure mandate is an important factor influencing how firms respond.

My analysis in Chapter 4 makes several contributions to the extant literature. First, concurrent working papers provide large-scale empirical analysis of capital market implications of SBM annual report disclosure mandates (Athanasakou et al., 2022; Simoni et al., 2022; Wang et al., 2023). I complement these studies by applying textual analysis techniques to provide a new perspective which sheds light on the reporting themes and qualitative characteristics predicted by regulators to influence disclosures usefulness. My approach therefore allows me to empirically test the impact of reporting mandates on the substance and clarity of disclosure. Further, this is important as it reflects the contextual nature of SBM discourse and its contribution to firms' information mosaic (Beattie and Smith, 2013; Koch et al., 2013; Wang et al., 2023). My approach also overcomes concerns SBM discourse forms part of the broader annual report narrative meaning it is empirically difficult to disentangle the capital market effect of SBM commentary from other components of the annual report. Despite substantial proprietary and other costs, my results contribute evidence



consistent with disclosure mandates successfully prompting firms to adapt disclosure in terms of volume, presentation, topic coverage and time horizon.

The analysis in Chapter 4 also contributes to the non-financial disclosure literature. Recent work advocates expanding how we view regulation of non-financial information beyond a binary (voluntary versus mandatory) choice to also consider the form of the regulation (e.g., Christensen et al., 2021; Leuz, 2010). Evidence analyzing firm-level disclosure decisions over time in response to different forms of regulatory intervention is rare (Ho, 2017). I complement this literature by leveraging the novel setting of mandates by UK regulators requiring disclosure of SBM commentary. My novel institutional setting facilitates direct comparison of firm responses to different forms of regulatory mandate, holding the disclosure requirements constant. My analysis shows a response to the comply or explain provision for presentation and some qualitative characteristics, but a substantially stronger response to legal requirements in the area of SBM commentary.

As well as contributing to the academic literature, the analysis in Chapters 3 and 4 also provide relevant insights for practitioners and policymakers. Regulators and policymakers, such as the SEC and FRC, are undertaking projects to understand whether to implement or adapt reporting rules around strategy and business model. Practical questions regulators are seeking to address include how strategy and business model are described and communicated in annual reports, how the business model is used as a central link between other disclosures in the annual report and highlight current gold standard reporting practice. I have presented insights from both Chapter 3 and Chapter 4 to the FRC Reporting Lab and was consequently invited to join and contribute to roundtable discussions with investors, preparers, and other stakeholders on the topic of business model-focused reporting. Further, my work and the resources constructed to support this dissertation will feed into a new research project funded

by the FRC that seeks to assess the quality of business model reporting over the period of 2018 to 2022.

I organise the remainder of my thesis as follows. In Chapter 2, I review the non-financial disclosure and SBM literatures, as well as introduce the UK as an institutional setting. Chapter 3 presents my corpus analysis investigating whether and how managers provide meaningful insights on SBM matters when pressed to explain how they create and maintain value. Chapter 4 analyses how SBM reporting properties change in response to a disclosure mandate and whether the form of the mandate matters. Chapter 5 presents the conclusion.

# **Chapter 2 Institutional Setting and Literature Review**

## **2.1. Institutional setting**

### **2.1.1. UK**

International interest in strategy and business model (SBM) commentary from policymakers and interest groups is long-standing. For example, reflecting concerns about the relevance of traditional reporting, AICPA (1994) suggest a comprehensive framework for business reporting. The framework includes information on the reporting entity's objectives and strategies, the scope and description of its business and properties, and the impact of the industry in which it operates. In the UK, firms have traditionally had discretion to disclose information on SBM matters via a variety of channels including their annual report. In addition, from 2006 onwards the Companies Act 2006 required firms to report details of critical success factors in the Business Review section of the annual report. The Accounting Standards Board (2006) also published guidance promoting best practice in narrative reporting that calls for information on "objectives and strategies, along with a description of the business and its external environment". The International Accounting Standards Board [IASB] (2010) published similar guidance on management commentary that encourages firms to explain their objectives and strategies for achieving those objectives.

Nevertheless, UK policymakers raised concerns that financial reports were failing to provide users with the information they require to scrutinise management decisions and evaluate corporate health, particularly in the area of value creation (House of Commons Treasury Committee, 2009). In response, the UK Corporate Governance Code was modified in

2010 to include a comply or explain provision<sup>2</sup> for London Stock Exchange (LSE) with a Primary Listing to provide information on strategic objectives and business model in their annual report (Financial Reporting Council [FRC], 2010, para. C.1.2). The provision did not extend to firms without a Primary Listing such as those listed on the Alternative Investment Market (AIM).

The UK government also initiated a consultation process in 2010 to examine how UK narrative reporting was working in practice (BIS, 2010a). One of the key questions posed by the consultation was whether disclosures provide sufficient information on firms' strategy and principal risks and uncertainties to enable their members to facilitate effective stewardship (BIS, 2010a, para. 3). BIS subsequently published an impact assessment on narrative reporting (BIS, 2010b) that identified several concerns including increasingly lengthy and complex annual reports, a propensity to provide boilerplate commentary, and a lack of comparability. The report recommended that firms should produce a high-level strategic report to ensure disclosure of relevant information in a focused and concise way.

BIS (2011) published findings and suggestions arising from the consultation process. Consistent with the impact assessment proposal, the key recommendation involved replacing the Business Review section of the annual report with a mandatory Strategic Report. The purpose of the Strategic Report would be to "set out and sign off the strategy, direction and challenges facing the company, evidenced by high-level financial and remuneration information" and to provide "a clear line of sight from the strategy, business model and risks of the company to the financial results and the resulting rewards for the company's directors" (BIS, 2011, para. 1.4). The government began working with the FRC and industry representatives to begin drafting the requirements of the Strategic Report (BIS, 2012). A key

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<sup>2</sup> The modification to the corporate governance code uses a comply or explain approach meaning that compliance is not mandatory. Rather, under UK securities listing requirements, management have the option to comply with provisions in the CGC or explain in the annual report why they fail to do so.

aim was to ensure the Strategic Report allows firms to present an integrated story in their own words, starting with their business model and strategy, covering their performance and looking towards their future. This approach to corporate reporting is consistent with recommendations in the Kay Review of short-termism in UK equity markets, which advocates for corporate reporting to focus on forward-looking strategy and provide information that supports shareholders' understanding of company strategy and likely long-term creation of value (Kay, 2012, p. 58).

Following a draft published on 11 June 2013, requirements for the Strategic Report were published in full on 9 August 2013, effective for financial periods ending on or after 1 October 2013. The regulation requires LSE Main Market firms to provide information on several elements related to strategy including a description of their strategy and business model, the main trends and factors likely to affect the future development, performance and position of their business, and information about environment, social and governance (ESG) matters (BIS, 2013, para. 4 to 8). The Strategic Report must contain a review of the business, principal risks and uncertainties, and analysis of performance using key performance indicators. Therefore, the provision of a Strategic Report confers a broader definition of matters relevant to strategy in comparison to the UK Corporate Governance Code amendments introduced in 2010. As before, firms listed on the AIM are not subject to the same requirements.

Firms seeking to apply (and go beyond) the minimum requirements on SBM reporting can draw on best practice guidance developed and shared by various bodies. For example, the FRC at the request of BIS prepared non-mandatory best-practice guidance on preparing a Strategic Report (FRC, 2014b).<sup>3</sup> The guidance emphasises the importance of providing

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<sup>3</sup> In 2016, the UK government published regulations to implement the EU Directive 2014/95/EU, also known as the non-Financial Reporting Directive (see next section for details). While the content is similar to the pre-existing disclosure requirements in the Strategic Report, the FRC (2017; 2018b) published amended guidance on the strategic report to help firms implement the Directive. In 2022, the FRC (2022) updated guidance to incorporate climate-related financial risks and opportunities in line with the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations.

cohesive commentary on the following three broad areas: strategic management (strategy, objectives, and business model), business environment (trends, factors, risks, uncertainties, and ESG matters), and business performance (performance, position, KPIs, and diversity). The guidance also encourages firms to ensure their Strategic Report is fair, balanced, and understandable, as well as being entity-specific, forward-looking, and comprehensive. Following concerns raised by stakeholders that business model reporting is challenging, the FRC (2016; 2018a) published guidance specifically about business model reporting.

Following a consultation process beginning with a discussion paper in 2011, the International Integrated Reporting Council (IIRC) released their integrated reporting framework which UK firms could voluntarily adopt (IIRC, 2013). The framework requires that management discuss eight fundamental elements: organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of presentation. The IIRC (2013) provides guidance on disclosures firms should make in each of these areas. For example, discussions of the business model require descriptions of key inputs, business activities, outputs, and outcomes. In terms of strategy, the framework prescribes discussion of (short-, medium- and long-term) strategic objectives, the strategy in place to achieve them, the resource allocation plan to implement the strategy, and how progress against objectives is measured. In this way, the framework provides detailed guidance that firms may voluntarily adopt in their Strategic Report disclosures.

The strategic reporting landscape in the UK continues to evolve. The FRC announced a new project in 2019 exploring disclosure of business models, strategy and long-term reporting (2019). The project seeks to consider the information needs of users and how companies might best communicate long-term strategy and business models. A report on the findings from the project is expected imminently.

### **2.1.2. Other settings**

Few jurisdictions outside the UK have taken the step of mandating the provision of SBM commentary. One exception is in the European Union (EU), which in 2014 followed a similar path to the regulatory developments in the UK (EU, 2014). EU Directive 2014/95 on non-financial reporting requires firms meeting certain criteria to disclose a non-financial statement. The purpose of the requirement is to ensure greater transparency and in turn make companies more resilient and perform better (European Commission (EC), 2017). Among other matters, firms should provide a description of business model, the policies pursued to reach (and outcomes from) those matters, and principal risks in operations. In addition, firms should include KPIs relevant to the business. EU members states were required to enforce the directive by 2018. The EC (2017) issued guidance to help management meet the new reporting requirement. In recognition that providing information of this nature may be costly, EC (2017) advises that management should consider providing commercially-sensitive information in “broader terms” that still conveys useful information (p. 8). The document also provides guidance on business model reporting and principal risks in operations.

Integrated reporting has been the norm over recent decades in South Africa; recommendations from the King Committee in 1993 were mandated to promote high standards of corporate governance and included the recommendation that companies should report on social and environment issues (West, 2006). Because of concerns that traditional reporting failed to meet the information needs of stakeholders, the third version of the King Committee’s Code recommends firms provide an integrated report with emphasis placed on strategy, governance and sustainability (de Villiers et al., 2014). As the King Committee’s Code is a requirement for listing on the Johannesburg Stock Exchange (JSE), firms were required to issue an integrated report for periods ending on or after 1 March 2010 (Barth et al., 2017). To aid firms in providing integrated reporting, the Integrated Reporting Committee of South Africa

(IRC) was established to develop high-quality guidelines, which were released in January 2011. The guidelines encourage firms to provide concise commentary on business model and value creation, as well as information about the entity's operating context and its strategy, objectives, and competences to achieve those objectives (IRC, 2011). From March 2014, the IRC endorses the IIRC framework and ceased issuing further guidance (de Villiers et al., 2014).

Moving to the US, from 2016 the Securities and Exchange Commission (SEC) has been exploring modernising business and financial disclosure requirements in Regulation S-K. Item 101(a) of Regulation S-K required a description of the general development of the business of the registrant over the previous five years, including issues such as mergers and acquisitions and material changes in the mode of conducting business. SEC (2016) requested comments on a proposal to revise Item 101(a) to require firms to disclose business strategy, whether investors would find such disclosures useful, and whether the disclosure should be required in the MD&A section. Following the consultation period, SEC (2019) provide updated proposals for the revision of Item 101(a) to require that firms provide this information at initial registration and then update their general business development disclosures with details of any material changes during the reporting period, including changes to business strategy. However, the proposals stop short of requiring an entity that has not previously disclosed its business strategy to provide such information in the future. Consistent with these proposals, from November 2020 the SEC (2020) requires firms to disclose any material changes to the firm's previously disclosed business strategy.

More recently, the IASB (2021) released an exposure draft on Management Commentary, which it defines as disclosures that complements the financial statements and present management's insights into factors that have influenced financial performance and the ability to create value. In the current proposals, business model and strategy are two of the six areas of proposed content alongside (a) resources and relationships, (b) risks, (c) factors and trends



in the external environment, and (d) financial performance and position. Moreover, illustrations of the linkages between the disclosure elements place strategy and business model centre stage (IASB, 2021, para. IN15).<sup>4</sup>

## **2.2. Prior research**

### **2.2.1. Corporate narrative disclosures**

Narrative commentary is an integral component in the corporate communication package (Michelon et al., 2020). Narrative disclosures provide substantial and varied insight into performance, risk, governance, and corporate social responsibility (CSR) among others (see Michelon et al. (2022) for a comprehensive literature review). Textual commentary plays an important role across mediums including annual reports, press releases, corporate websites, and social media. Narrative disclosures play an increasingly significant role in corporate communication strategies (Dyer et al., 2017; El-Haj et al., 2020).

Under certain conditions, theory predicts that managers voluntarily disclose (quantitative and qualitative) information to users if such information is useful. For example, the unravelling result of Grossman (1981) and Milgrom (1981) suggests firms disclose information if users have rational expectations, disclosure is costless, and disclosures are always truthful. Assuming these assumptions hold, managers are incentivised to share information because of adverse selection; in the presence of information asymmetry, firms with superior performance relative to competitors face incentives to signal their superiority (Akerlof, 1970; Kohut and Segars, 1992; Rutherford, 2003). Managers therefore face incentives to reduce information asymmetries between themselves and outsiders such as analysts and investors by providing additional information, much of which takes the form of narrative commentary. Indeed, recent

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<sup>4</sup> It is anticipated that financial statements can comply with IFRS without management commentary in line with the practice statement, with local lawmakers and regulators ultimately deciding whether to mandate compliance (IASB, 2021).

arguments in the accounting literature propose both quantitative numbers and narrative information are necessary to make financial communication meaningful (Lundholm et al., 2014). As such, firms benefit from a lower cost of capital and greater liquidity (Ahn et al., 2022; Baginski et al., 2000; Jensen and Meckling, 1976).

Narrative commentary may also reduce cost of capital through two further mechanisms. The first channel is by reducing estimation risk and improving disclosure processing arising from investors' differential estimates and interpretations of information (Barry and Brown, 1985; Blankespoor et al., 2020). The second channel is by reducing private information risk: private information increases the risk that the uninformed investor holds bad news stocks as informed investors can better adjust portfolios in light of private information (Easley and O'Hara, 2004). Narrative disclosures may reduce the private information advantage of informed traders and therefore reduce private information risk of uninformed investors.

Evidence supports the informative reporting perspective on narrative commentary. For example, Botosan (1997) finds a negative relation between the cost of capital and qualitative disclosures, whilst Henry (2008) finds narrative information in press releases associates with abnormal stock returns. Likewise, Loughran and McDonald (2011) link narrative disclosures with returns, trading volume, return volatility, fraud, material weakness, and unexpected earnings. Athanasakou et al. (2020) predict and find a U-shaped relation between the cost of equity and the volume of disclosures in UK annual reports. Results are interpreted as evidence that narrative disclosure can reduce information asymmetries, but after a given threshold the annual report becomes too cluttered. Recent evidence sheds light on when narrative information is particularly valuable, such as when there is limited information available from other sources and when firms are loss-making (Muslu et al., 2015). Moreover, changes in the narrative communication of firms predict future stock price changes, earnings, profitability,

news announcements, and future firm-level bankruptcies (Brown and Tucker, 2011; Cohen et al., 2019).

However, both theory and empirical evidence point to several frictions that undermine the assumptions of the unravelling result. First, disclosing qualitative information likely incurs proprietary and other costs. For example, Verrecchia (1983) develops a model in which management fail to disclose because they are concerned that the information may benefit other stakeholders such as competitors or employees at the firm's expense. Management may also withhold favourable information if releasing it harms their prospects, such as when a potential competitor is contemplating entry (Christensen and Feltham, 2003; Suijs, 2005). Empirical research confirms that proprietary costs from releasing sensitive information play a significant role in determining disclosure decisions (e.g., Jia, 2019; Kankanhalli et al., 2022; Li and Li, 2020; Tian and Yu, 2018).

Second, it is unlikely that disclosures are always truthful. The impression management perspective views narrative reporting as biased and obfuscated. In terms of bias, poor accounting outcomes lead to conflicts of interest between managers and shareholders. In response, management take a defensive position and seek to manipulate outsiders' perceptions by attributing (unfavourable) outcomes to external events (Aerts, 2005; Phillips, 2013). Relatedly, theoretical models of managerial discretionary disclosure predict management use sanitisation strategies that involve releasing private information while emphasising positive news and minimising adverse news (Bagnoli and Watts, 2007). Management may also consistently release good news and platitudes whilst delaying or suppressing unfavourable news (Acharya et al., 2011; Dye, 1985; Song Shin, 2003). Moreover, firms are incentivised to obfuscate firm failures and poor performance when communicating narrative information (Adelberg, 1979; Curtis, 1998) to prevent news being understood by readers and impounded into prices (Bloomfield, 2002; Li, 2008) This is particularly pressing for narrative disclosures

where managers have substantial discretion over the content of disclosures (Michelon et al., 2022; Peters and Romi, 2013), information is more challenging to extract (Athanasakou et al., 2020; Bloomfield, 2002) and where the ‘softness’ of information hinders verification (Bertomeu and Marinovic, 2016). Legitimacy theory also predicts that firms disclose narrative information to build, maintain and repair their legitimacy. This may be important where firms perform poorly, both financially (Marcus and Goodman, 1991) and otherwise (e.g., Patten, 2002), or when there are changes in market competition (e.g., Ogden and Clarke, 2005).

Evidence supports the impression management perspective. Consistent with firms providing biased narrative disclosures, studies report pronounced self-attribution bias: management emphasise and take credit for positive aspects of performance while attributing poor performance to external conditions (Clatworthy and Jones, 2003). Similarly, firms provide abnormally optimistic statements prior to performance downturns (Huang et al., 2014). In terms of obfuscation, commentaries are more challenging to read when performance is weak (Li, 2008), even after controlling for business complexity (Bushee et al., 2018).

### **2.2.2. Corporate reporting on strategy and business model**

Commentary on strategy and value creation is seen as a distinct component of the annual report (Athanasakou et al., 2022). Academics, policymakers, and users view such commentary as being unique in providing contextual information to aid user understanding of firm activities and value creation (Bini et al., 2023; FRC, 2016; IASB, 2010; Lev and Gu, 2016).

Conceptually, commentary on SBM does not provide new information directly on cash flows and value. However, stakeholders argue such information plays a contextual role that aids users’ understanding of how events and management decisions affect performance (IASB, 2010; Kay, 2012). Specifically, information on SBM builds a framework to aid users’ interpretation of new information (Verrecchia, 1980). This may be particularly important where

businesses are complex and dynamic (Lev and Gu, 2016). In turn, understanding aspects of SBM helps investors forecast cash flows and earnings by identifying critical success factors and sustainable growth (Palepu et al., 2013).

Stakeholders also pressure managers to disclose information on SBM matters to facilitate assessing managerial stewardship by aiding judgements on the effectiveness of strategic objectives, operational plans, and progress against these plans (International Federation of Accountants, 2020; Investment Association, 2017; Kohut and Segars, 1992, pp. 7-8). Similarly, Diffenbach and Higgins (1987) highlight the value of disclosing information on business model and strategy in four scenarios: (i) at business start-up when prior performance is unavailable; (ii) during cyclical slumps to disentangle managerial performance from external conditions; (iii) pending restructuring and turnarounds to disseminate the quality of the new strategy; and (iv) launching diversification strategies to overcome reservations of management hubris (Roll, 1986) and management entrenchment (Schleifer and Vishny, 1989). In this way, such discourse provides information needed by stakeholders to assess managerial stewardship (Beattie and Smith, 2013).

There are further reasons why SBM commentary is seen as being unique vis-à-vis other types of reporting. Unlike other types of disclosure, there is no common definition nor understanding of what constitutes strategy and business model among practitioners and researchers (Bini et al., 2023; Sinfield et al., 2012). Often strategy and business model is not defined within an organisation (Mintzberg and McHugh, 1985; Yang et al., 2020) while any formally defined strategy is often interpreted differently across the same management team (Schneckenberg et al., 2019). Such concerns are likely to be less pervasive for other forms of financial and non-financial disclosure. Therefore, conclusions reached by prior literature investigating other types of disclosure may not immediately translate to the context of SBM commentary.

Research investigating voluntary SBM reporting generally seeks to describe and understand content. Several studies use manual coding techniques applied to small samples to identify strategy-related topics, such as firms' industry environment or growth prospects (Bowman, 1978; Bowman, 1984; Giunta et al., 2014; Osborne et al., 2001; Padia and Yasseen, 2011; Santema and van de Rijt, 2001). For example, Bowman (1978, 1984) uses content analysis of US annual reports to count the appearances of different topics related to risk and strategy, such as the external environment and M&A activity. Santema and van de Rijt (2001) hand collect data from a small sample of Dutch annual reports to assess the extent to which firms provide information on strategy. Osborne et al. (2001) analyse the President's letter to shareholders for a sample of US firms by coding themes constructed from factor analysis before grouping firms into strategic groups. Padia and Yasseen (2011) apply an adapted version of the coding scheme developed by Santema and van de Rijt (2001) to investigate the extent of strategy disclosure in annual reports of large South African companies. Results suggest detailed insights into firm strategy and value creation are rare. Nevertheless, strategic themes are successfully traced to differences in performance, risk, and return.

Research also investigates the determinants of the features of strategy-related disclosures. Some studies examine how the prevalence of voluntary SBM disclosures varies across countries and firms. For example, Santema et al. (2005) investigate how the extent of SBM disclosure in annual reports varies across a sample of 100 firms from five European countries. They conclude national differences in corporate governance and culture play an influential role. More recently, Morris and Tronnes (2018) analyse how country- and firm-level characteristics influence the extent of SBM disclosure in a sample of press releases for 204 companies from 12 Asian and European countries. They find SBM disclosure is more prevalent in countries that are more stakeholder-oriented or have greater levels of financial transparency, while economic incentives to disclose and big four auditors explain disclosure differences at the firm level.

Limits on sample size nevertheless restrict both the scope of the research and the generalisability of these results. One exception is Athanasakou et al. (2023) who provide large scale evidence on the influence of legal regime on SBM disclosures in the bijural setting of Canada. They find substantial differences in the length and usefulness of disclosures between firms operating under common law or firms operating under French civil law.

A further strand of work explores the capital market implications of the (voluntary) disclosure of strategic issues. A number of these studies examine voluntary disclosures outside annual reports. Baginski et al. (2017) and Kotsantonis et al. (2019) examine strategic plan presentations made by companies in Italy and the US, respectively. Presentations include information on the external environment, internal strategy, and specific actions. Both studies find security price reactions around the time of the announcement, suggesting investors find such information relevant. Lu and Tucker (2012) investigate strategic plan disclosures in annual earnings announcements for US firms. They find earnings announcements containing strategic plans are associated with reduced bid-ask spreads and increased market depth. These results suggest investors find strategic plans useful in reducing information asymmetries. Gu and Li (2007) analyse the impact of technologically advanced firms disclosing information on innovation strategy in their press releases. They find abnormal returns around such press releases, again suggesting users find such disclosures credible and informative.

Other studies investigate the consequences of firms voluntarily disclosing SBM information within their annual report. Rather than disseminating price sensitive information, such disclosures provide information that contextualise financial and other information. Sieber et al. (2014) apply a manual scoring scheme to assess voluntary disclosures of strategy appearing in annual reports of German firms between 2002 and 2008. They find that higher disclosure levels are associated with lower cost of equity, suggesting such information helps reduce information asymmetries. Similarly, Mechelli et al. (2017) measure the extent of

business model commentary in annual reports across 15 European countries following the non-mandatory guidance issued by IASB (2010). With the exception of the UK (representing 14.5% of the sample), disclosure of business model in the reporting period is voluntary. The authors find that firms with broader discussion of business model are associated with higher value relevance of accounting numbers. Overall, these studies evidence market participants find disclosure of strategy and business model relevant.

However, other empirical studies suggest the informativeness of SBM annual report disclosures may be limited. Page (2014) evidences through excerpts of UK annual reports that SBM reporting may be boilerplate and may overemphasise the strengths of the firm while omitting or obfuscating weaknesses, in line with the impression management literature (e.g., Merkl-Davies and Brennan, 2007). Echoing this concern, Melloni et al. (2016) investigate the tone of business model disclosures in integrated reports in the “Integrated Reporting Emerging Practice Examples Database”, which is a source of reports illustrating trends in integrated reporting compiled by the IIRC. They find that positive tone of business model commentary correlates with weak corporate governance, poor performance, and low verifiability. Likewise, Filipovic and Wagner (2023) investigate commentary around intangible assets in takeover announcements by US firms from 2002 through 2016 and find that greater emphasis on intangible assets is associated with lower abnormal returns. Results are consistent with managers using concepts related to SBM to manage stakeholder impressions, although investors may (partially) see through the technique.

In line with the voluntary nature of most SBM commentary, research on the properties and impact of mandatory SBM disclosure is sparse. This is an important distinction because in voluntary reporting regimes, firms that are reluctant to disclose SBM information can remain silent. Studies investigating the nature and consequences of disclosures in voluntary regimes therefore focus on firms facing incentives to disclose. In contrast, firms in mandatory regimes



must provide some form of SBM commentary whether or not they face incentives to do so. Results from voluntary regimes do not therefore extrapolate naturally to mandatory regimes.

In the South African setting, Ungerer (2013) and Ungerer and Vorster (2015) examine firms listed on the Johannesburg Stock Exchange where constituents must disclose certain strategic information in their annual report as part of the integrated reporting requirement (or explain why information is not provided). They construct and apply scorecards based on GRI Standards and extant research to evaluate SBM disclosures. They find significant inter- and intra-industry variation in the content of mandated disclosures, suggesting mandating SBM disclosure is not a panacea for all firms to provide meaningful insights. In the UK setting, Bini et al. (2016) apply content analysis to a sample of 35 standalone Strategic Reports and conclude that descriptions of business models confer few details and do not clearly demonstrate links with other strategic elements meaning it is difficult for users to understand the value creation process. These results question the extent to which mandatory disclosures provide meaningful insights. Similarly, Adekemi (2018) constructs a disclosure index to capture key disclosure areas relating to business model and strategy, such as the disclosure of strategic objectives or a description of the value chain. They manually apply this framework to 14 companies listed in the UK between 2006 and 2015 and conclude that SBM disclosures improve following both the revisions to the Corporate Governance Code and Companies Act. However, there remains substantial heterogeneity in disclosure scores across firms even within the same industry. While these manual analyses provide interesting insights, the literature lacks large scale systematic evidence on the nature and content of SBM reporting in (quasi-) mandatory settings despite calls from prior literature identifying this area as a “research lacuna” (Beattie and Smith, 2013, p. 253).

Studies have begun to investigate the consequences of variation in disclosure quality within mandatory regimes. Using proprietary data from PwC in the UK, Wang et al. (2023)

document a positive association between total disclosure quality and capital market benefits. They also find that elements of quality relating to strategic objectives, ESG issues, information linkages, and forward-looking information all contribute significantly to capital market benefits. Other studies examine SBM commentary that is mandated in South Africa as part of an integrated report. Barth et al. (2017) and Barth et al. (2023) use proprietary data from EY to measure integrated reporting quality (IRQ) which focuses on whether “the integrated report gives readers a sense of the firm’s strategy and value creation process” (Barth et al., 2017, p. 44). They find that IRQ is positively associated with firm value and price informativeness, although causality is hard to determine due the absence in their setting of a counterfactual. While research highlights heterogeneity in SBM disclosures in mandatory reporting settings, little is known about the way this heterogeneity plays out in terms of the actual nature and content of commentary despite pressure for firm-specific insights on value creation (FRC, 2014b).

Recent studies have also begun to examine the capital market consequences of mandating SBM disclosure. Simoni et al. (2019) and Simoni et al. (2022) find that the mandatory disclosure on business models is associated with a positive (negative) moderating effect on the value relevance of net income (book value of equity), consistent with these disclosures contextualising revenue generating mechanisms and providing information on the intangible value of firms. Athanasakou et al. (2022) use a difference-in-differences design and document a causal link from strategy-focused disclosures to lower investor uncertainty for a large sample of UK annual reports in response to the provision in UK Corporate Governance Code 2010 to provide SBM commentary. They use automated techniques to construct a dictionary-based measure of strategic commentary across both mandated and voluntary regimes. Following the 2010 disclosure mandate, they find SBM commentary increases and this in turn results in lower capital market uncertainty. Wang et al. (2023) also examine the UK setting and focus on the

move to require Main Market listed firms to provide a standalone strategic report. They find that the association between SBM commentary and capital market uncertainty is amplified after the regulation. While these studies demonstrate that the level or quality of disclosure changes in response to the disclosure mandate, neither study provides evidence on how disclosures change, particular in relation to best practice guidance.

Rather than examining the capital market consequences of SBM disclosures, a stream of literature identifies whether and how narrative commentary can be used to derive measures of strategy-related constructs. For example, Pandey and Pandey (2019) apply dictionary approaches to a corpus of shareholder letters to develop a measure of organisational culture. Bellstam et al. (2021) use topic modelling techniques to derive a measure of corporate innovation. Kabanoff et al. (1995) use content analysis to identify organisational values and explore how this impacts organisational change. Guzman and Li (2023) measure strategic differentiation of start-up firms by measuring dissimilarity in value propositions disclosed on corporate websites and find uniqueness of value proposition is associated with increased early-stage financing.

Other studies rely on natural language processing (NLP) techniques to measure the strategy adopted by firms. Research in this area uses the language of disclosures to allocate firms according to popular typologies from strategic management. For example, Banker et al. (2022) and Banker and Ma (2021) develop and apply a textual measure of firms' generic strategies (cost leadership, differentiation through innovation, and differentiation through marketing). They go on to investigate how the generic strategy is associated with performance and economic decisions, such as cost structure, resource allocation, earnings properties and accounting policies. Kabanoff and Brown (2008) apply NLP techniques to allocate firms to the Miles and Snow (2003) typology of defenders, prospectors and analysers. By doing so, they demonstrate how strategic groupings show stability over time and differ in (financial)

performance. Teach and Schwartz (2000) provide unique insights by using content analysis, which allows them to allocate firms according to various typologies simultaneously. They conclude that firms find unique strategies by combining elements of multiple typologies and go on to demonstrate how strategies evolve over time. These studies link to the wider literature investigating the impact of strategy on performance and real decisions (e.g., Ballas and Demirakos, 2018; Ballas et al., 2020; Bentley et al., 2013; Higgins et al., 2015; Houque et al., 2023; Magerakis and Tzelepis, 2020; Naoum et al., 2023; Navissi et al., 2017).

### **2.2.3. Conclusions and next steps**

The literature on SBM narrative reporting is still emerging. My review concludes few studies examine the content and qualitative characteristics of SBM disclosures, particularly those made to provide contextual information in annual reports. Such research is generally limited to manual analyses of small samples. While these manual analyses provide interesting insights, the literature lacks large scale systematic evidence on the nature and content of SBM reporting in (quasi-) mandatory settings despite calls from prior literature identifying this area as a “research lacuna” (Beattie and Smith, 2013, p. 253). In Chapter 3, I provide a large scale, systematic analysis of the content and properties of SBM disclosures to identify whether managers on average provide meaningful insights or bland, boilerplate commentary.

Further, there are increasing calls by policymakers and stakeholders for companies to provide more information on SBM matters in annual reports. Consequently, numerous jurisdictions are currently considering or have already taken the step of mandating disclosure. Existing research examining the consequences of such disclosure requirements tend to focus on capital market effects. Few studies explore how the properties of commentary adapt in response to disclosure mandates and are limited to examining the level of disclosure changes. Specifically, the literature falls short of documenting evidence on how disclosures change,

particular in relation to best practice guidance. Recent research therefore calls for alternative approaches, and in particular textual analysis, to shed light on how the properties of SBM commentary change when these disclosures are mandated (Wang et al., 2023, p. 32). I answer this call in Chapter 4 by developing and testing predictions of how firms with different SBM reporting incentives respond to disclosure mandates, and how the form of the mandate impacts this response.

# **Chapter 3 Managers' disclosure response to regulatory prompts for greater transparency on value creation: Evidence from a corpus analysis**

## **3.1. Introduction**

Academics and policymakers are raising the alarm about the shortcomings of traditional corporate reporting. Forming a key concern is managements' inability to articulate their approach to creating and preserving value for shareholders and other stakeholders (European Commission, 2017; House of Commons Treasury Committee, 2009; Kay, 2012). This forms part of a wider debate on the need for company managers and investors to think more long term (Edmans et al., 2022; European Commission, 2017; Kraft et al., 2018), together with the need for a broader stakeholder perspective on corporate performance (Caskey and Ozel, 2017; Liu et al., 2021). As part of a suite of initiatives, regulators and stakeholders are calling for more commentary on strategy and business model (SBM) to shift the focus of management and investors toward long term value creation (CFA Institute, 2006; International Accounting Standards Board [IASB], 2021; Securities and Exchange Commission [SEC], 2012; Lev and Gu, 2016). Such calls, however, are made against a backdrop of criticism that annual reports are too long and complex (e.g., Financial Reporting Council [FRC], 2009), and concern that management may be unable or unwilling to provide meaningful commentary on SBM issues due to proprietary cost and other considerations (Bini et al., 2023; ICAEW, 2009; Verrecchia, 1983). In this chapter, I investigate whether and how managers provide meaningful insights on SBM matters when pressed to explain how they create and maintain value.

Managers' disclosure response to pressure for commentary on SBM is unclear *ex ante*. On the one hand, demand-side factors create strong incentives for managers to provide meaningful insights into SBM matters. Such disclosure provides contextual information that

helps users build a framework to aid interpretation of new information signals (Simoni, 2021; Verrecchia, 1980) and reduce information asymmetry by helping investors complete firms' information mosaic (Bini et al., 2023; Koch et al., 2013). I label this as the *gold-standard* on SBM commentary. On the other hand, several factors hinder managers' ability and willingness to provide clear commentary. First, publicly articulating strategy is likely to generate significant proprietary costs (Bini et al., 2023; Menon, 2018; Verrecchia, 1983). SBM disclosures are further complicated because strategy is fluid and often diffuse within the organisation, making it difficult to articulate in a clear and concise manner (Beattie and Smith, 2013; Falkenberg and Gronhaug, 1989; Menon, 2018; Schneckenberg et al., 2019). These frictions act as brakes on meaningful disclosure, instead pushing managers to simply repackage existing management commentary as SBM discourse when pressed to disclose. I label this as the *padding perspective* on SBM commentary. Between these extremes, the *symbolic reporting perspective* recognizes that proprietary costs and other barriers to disclosure may prevent fully informative disclosure as predicted by the gold-standard approach, but are not so pervasive that no informative disclosure is made. Rather, managers may opt to balance these competing pressures by following a legitimizing strategy whereby the lexicon of established strategy frameworks is used to give (some) informative insights and create the impression of legitimate disclosure even though actual content falls short of providing meaningful firm-specific insights (Christensen et al., 2021).

Distinguishing between these three competing perspectives is challenging. The first challenge is the difficulty of constructing a representative sample of SBM commentary in annual reporting commentary. Disclosures in voluntary regimes are patchy (Padia and Yasseen, 2011) and few jurisdictions have taken the step of mandating disclosure. Those few mandatory regimes tend not to have a standardized annual reporting framework, instead allowing firms discretion in how to structure and present commentary, with reports published in PDF format.

Extracting discourse from such annual reports on a large scale is complex (El-Haj et al., 2020). Second, it is challenging to empirically test the quality of SBM discourse given its contextual nature and its contribution to firms' information mosaic (Koch et al., 2013). Specifically, the lack of a material price sensitive component to such disclosure makes it difficult to assess quality with capital market tests of how investors *use* the discourse because it is hard to isolate effects for an individual component of the mosaic. SBM discourse also forms part of the broader annual report narrative but disentangling the capital market effect of an individual component of the entire annual report is also empirically difficult.

I overcome the first challenge by focussing on UK annual reports where the novel regulatory requirements have made SBM-related disclosure mandatory or quasi-mandatory since 2006 (see Section 2.1 for detailed discussion). Leveraging recent advances in computational linguistics (El-Haj et al., 2020), I construct a representative corpus of SBM annual report discourse drawn from 14,500 annual reports published between 2006 and 2018 by non-financial LSE firms. Using section titles in the annual report table of contents as manager-assigned labels to identify SBM discourse, I construct a pre-processed corpus of 8.2 million words from SBM sections in 7,116 reports.

Rather than relying on capital market tests to distinguish between different reporting perspectives, I employ methods from computational linguistics to examine the properties and antecedents of SBM reporting by UK firms facing regulatory pressure for greater transparency on this topic. Specifically, I examine alignment between actual disclosure characteristics and the reporting features that theory and practice identify as being key elements of meaningful management commentary in this area. My direct focus on disclosure properties reflects the contextual nature of SBM discourse and its contribution to firms' information mosaic (Koch et al., 2013). Moreover, my approach also speaks directly to regulator's attention on the



qualitative characteristics of disclosure predicted to determine the usefulness of SBM commentary (FRC, 2014b; SEC, 2016).

I employ a two-step process to distinguish between my three disclosure perspectives. My first empirical lens draws on popular strategy frameworks (Glaister and Falshaw, 1999) that emphasize themes such as core competences and industry competition (e.g., Barney, 1991; Porter, 1979). The padding perspective implies low alignment with the themes that theory predicts should be present in meaningful SBM commentary. I therefore interpret the *absence* of popular strategy themes in SBM commentary as *prima facie* evidence consistent with padding, whereas I interpret the *presence* of recognizable strategy themes as evidence for rejecting the padding hypothesis.

Using a Latent Dirichlet Allocation (LDA) topic model (Blei et al., 2003), I find that salient themes in the SBM corpus align with those identified in popular strategy frameworks. These include firms' competitive environment (industry analysis), core competences (operational and technological resources), and aspects of corporate strategy such as mergers and acquisitions. These prominent themes are salient to the SBM corpus when compared to a reference corpus comprising shareholder letters from the board chair and governance statements. Further analysis using multiple complementary approaches reveal that the relative emphasis on themes varies substantially across firms, and to a lesser extent industries, consistent with managers tailoring the mix of topics to reflect their distinctive approach to value creation. These findings do not support a padding response by the typical sample firm to regulatory encouragement to provide more SBM disclosure. In other words, my evidence suggests the barriers to disclosure are not so pervasive that SBM commentary provides no informative insights.

While the incidence of popular strategy themes is inconsistent with padding, it does not distinguish between gold-standard reporting and symbolic disclosure because managers may

use such themes as a legitimizing tool to mask generic commentary that offers limited firm-specific insights on value creation. My second step is to assess alignment with the properties of effective SBM disclosure highlighted in best practice guidance (FRC, 2014b; International Integrated Reporting Council [IIRC], 2013). Features of effective SBM commentary include entity-specific content, forward-looking orientation, and fair and balanced analysis. Evidence that SBM discourse incorporates popular strategy themes *and* best practice properties supports the *gold-standard* perspective, whereas discussions of popular themes that do not follow best practice guidance is more consistent with symbolic reporting and legitimization.

Contrary to best practice guidance, my analysis suggests SBM commentary is *less* specific than the reference corpus, as measured by direct references to named entities (Hope et al., 2016). Further, while SBM commentary contains relatively more forward-looking language, these statements are *less* precise about time horizon (both short- and long-term) and *less* balanced (i.e., more positive) in tone relative to general management commentary. Collectively, my results suggest that managers refer to popular themes from the strategy frameworks to establish credibility and authenticity but that the average quality of commentary around these themes is lower than regulators hope for. I conclude that symbolic compliance and legitimization characterize the typical annual report discussion of SBM.

Symbolism in the context of SBM disclosures may reflect different underlying motives. For example, symbolic disclosures may represent a genuine attempt by management to provide useful information that is ultimately frustrated by proprietary cost considerations. A further issue is that symbolism may reflect intentional behaviour designed to confound shareholder monitoring by masking weak strategy formulation and implementation. In further analyses, I seek evidence on these competing motives for symbolic reporting. My cross-sectional analysis suggests proprietary costs are a key factor in explaining symbolic SBM reporting. I also find that firms with incentives to confound shareholder monitoring when performance is poor

provide symbolic commentary when talking about the past or the present but provide informative insights when discussing the future.

My findings extend the literature in several ways. Research examining the properties and drivers of annual report SBM disclosures is scarce and inconsistent. Studies investigating the consequences of management presentations and voluntary strategic plan statements in press releases confirm that such disclosures help to reduce investor uncertainty (e.g., Baginski et al., 2017; Gu and Li, 2007; Lu and Tucker, 2012). However, the nature of press releases and strategic plan disclosures differ from annual report SBM commentary because they often contain price sensitive information regarding specific events, strategic actions, and performance outcomes (Baginski et al., 2017) rather than contextual information that forms part of a firm's value creation mosaic. Small sample studies analysing annual report commentary on value creation suggest that detailed insights on strategy and business model are rare (Bowman, 1978; Bowman, 1984; Santema et al., 2005; Santema and van de Rijt, 2001). Constructing a representative corpus of SBM commentary to assess the generalizability of this conclusion is challenging. Accordingly, large-sample evidence on annual report descriptions of SBM is scarce (Michalak et al., 2017; Vaara and Fritsch, 2022), despite SBM disclosures forming a key part of firms' information mosaic and policymakers placing the issue at the centre of the reporting model (IASB, 2021).

I build the first representative corpus of annual report SBM commentary and provide the first systematic analysis of the motives underlying such disclosures. Results show that pressure from stakeholders for greater transparency on value creation has only had limited success. While the SBM themes presented are consistent with theory and tailored to the reporting entity, the quality of analysis typically falls short of the standard desired by regulators and required by investors to make informed decisions. My analysis pinpoints areas where reporting remains inadequate and reveals that SBM commentary is frequently symbolic in nature.

I also extend work on symbolic reporting. Research reveals that managers report symbolically on various annual report themes to establish legitimacy (Bothello et al., 2023; Cho et al., 2015; Crilly et al., 2016; Westphal and Zajac, 1998). I develop and test two non-mutually exclusive explanations for symbolic SBM reporting and find that symbolism is increasing in proprietary costs and weak earnings performance. Results show that the desire to avoid disclosing information beneficial to competitors, and an attempt to obfuscate poor performance explain why the quality of SBM disclosures often falls short of the standard users seek. My results illustrate the contrasting roles that symbolic reporting can play for managers and shareholders. On the one hand, symbolic reporting can benefit shareholders by enabling management to comply with reporting requirements while simultaneously limiting the costs of increased transparency. On the other hand, management can apply symbolism opportunistically to obscure poor performance and confound shareholder monitoring.

### **3.2. Theory and disclosure response strategies**

Despite increasing attention from regulators and other stakeholders, few studies investigate SBM annual report commentary despite scholars identifying the area as a research lacuna (Beattie and Smith, 2013, p. 253; Tweedie et al., 2018). Small sample evidence reveals that a fraction of firms disclose SBM annual report commentary voluntarily, although quality tends to be patchy (Bowman, 1978; Bowman, 1984; Padia and Yasseen, 2011; Santema et al., 2005; Santema and van de Rijt, 2001). In mandatory settings, early evidence suggests that an increase in annual report SBM disclosure correlates with reduced capital market uncertainty (Athanasakou et al., 2022; Simoni, 2021; Wang et al., 2023). However, extant work stops short of providing evidence on the properties of SBM commentary that make such disclosure informative. The content of annual report SBM commentary therefore remains a black box. One exception is Bini et al. (2016) who apply content analysis to SBM disclosures in 35 UK

annual reports following the amendments to the Companies Act in 2013. They conclude that business model descriptions fail to provide adequate information on value creation. No research of which I am aware examines the properties of SBM disclosures and their implications regarding managers' underlying disclosure motives.

Theory offers various reasons why managers may be reluctant or unable to provide meaningful SBM commentary. For example, articulating strategy and business model publicly means competitors become better informed to take actions detrimental to the disclosing firm (Menon, 2018). Theory demonstrates this can lead managers to withhold otherwise favourable information (Prentice and Langmore, 1994; Verrecchia, 1983). Research confirms that proprietary costs from releasing sensitive information can play a significant role in determining disclosure decisions (e.g., Bao et al., 2021; Jia, 2019; Kankanhalli et al., 2022; Li and Li, 2020; Tian and Yu, 2018). Proprietary costs provide both a motive and an opportunity for management to withhold information (Dye, 1985). The resulting non-disclosure pooling equilibrium is consistent with concerns raised by the House of Commons Treasury Committee (2009) and Kay (2012) about the lack of transparency by management on their approach to value creation.

Articulating SBM clearly is challenging even where management are keen to disclose. Strategy is inherently dynamic as firms fail to realise their goals or change direction in response to changes in their environment (Mintzberg and Waters, 1982), meaning that detailed explanations of SBM can become stale quickly (Ferreira and Rezende, 2007). The strategy-as-practice perspective defines strategy as the actions and practices taken by individuals within an organisation (Hendry et al., 2010). The myriad of day-to-day activities that form strategy as a bottom-up process rather than a top-down approach to decision making may not clearly translate to formal articulation. Clear disclosure is further complicated because managers seldom formally define their strategy (Mintzberg and McHugh, 1985); and even when they do

offer a definition it is frequently interpreted differently across managers in the same organisation (Falkenberg and Gronhaug, 1989; Menon, 2018; Schneckenberg et al., 2019). Indeed, Yang et al. (2020) conclude that some firms do not even pursue formal strategies or decision-making. Finally, researchers and practitioners agree that little consensus exists on the definition of strategy or business models (Bini et al., 2023; Chaffee, 1985; Markides, 2004; Sinfield et al., 2012).<sup>5</sup>

These concerns may impact the properties of SBM commentary in several ways. In voluntary disclosure settings, many firms simply chose to withhold information on SBM matters entirely (e.g., Santema and van de Rijt, 2001). In mandatory or quasi-mandatory settings, managers may limit the amount of detail they disclose by repackaging regular management commentary as SBM discourse, substituting boilerplate statements for meaningful, entity-specific insights (e.g., Bloomfield, 2002; Bushee et al., 2018; ICAEW, 2007; Kothari et al., 2021; Li, 2008; Melloni et al., 2016), or paltering to minimize proprietary costs. Collectively, these factors characterize SBM annual report commentary as containing very few or no incremental insights on value creation. I label this view of SBM reporting as the *padding perspective*.

The padding perspective contrasts with demand-side arguments from policymakers that SBM commentary can provide valuable information. While such commentary does not provide new information on cash flows and value directly, stakeholders argue it plays a contextual role in helping users to understand how events and management decisions affect performance (IASB, 2010). Specifically, information on SBM builds a framework to aid users' interpretation of new information (Investment Association, 2017; Lev and Gu, 2016; Michalak et al., 2017; Simoni, 2021; Verrecchia, 1980). In turn, understanding SBM matters helps forecast future

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<sup>5</sup> An additional complicating factor is that users such as financial analysts do not share a common understanding of what a business model is nor how to integrate such information in valuation (Bini et al., 2023; Nielsen and Bukh, 2011).

cash flows and earnings by identifying critical success factors and sustainable growth (Palepu et al., 2013). SBM also plays a role in assessing managerial stewardship by facilitating judgements on the effectiveness of strategic objectives, operational plans, and progress against these plans (International Federation of Accountants, 2020; Investment Association, 2017; Kohut and Segars, 1992, pp. 7-8). Disclosers benefit from improved price efficiency, greater capacity for investment and enhanced reputation (Ferreira and Rezende, 2007; Fishman and Hagerty, 1989).

Consistent with these arguments, some firms choose to provide information on strategy and related matters even when not mandated to do so. Such voluntary disclosures are often associated with capital market benefits (Baginski et al., 2017; Gu and Li, 2007; Kotsantonis et al., 2019; Lu and Tucker, 2012). However, press releases and strategic plan disclosures focus narrowly on specific events, strategic actions, and performance outcomes rather than providing an overarching picture of value creation as in annual report commentary. These types of disclosure are therefore more likely to contain price sensitive information (i.e., on cash flows) rather than contextualising information. In mandatory settings, early evidence suggests that providing more SBM information reduce capital market uncertainty (Athanasakou et al., 2022; Wang et al., 2023). Theory and evidence that managers are incentivised to provide meaningful insights on SBM matters motivates the *gold-standard reporting perspective*.

Between the padding and gold-standard reporting perspectives sits a third option. This perspective recognizes that proprietary costs and other barriers to disclosure may prevent fully informative disclosure as predicted by the gold-standard approach, but are not so pervasive that no informative disclosure is made. Rather, managers concerned about revealing sensitive information to competitors could choose to report symbolically (Bromley and Powell, 2012; Meyer and Rowan, 1977). In this scenario, managers can give (some) informative insights and ensure a level of compliance with SBM disclosure expectations (and thereby achieve a degree

of legitimacy with key stakeholder groups) by using the lexicon of established strategy frameworks to discuss business models and value creation while concealing specific details on how their comparative advantage translates into value (Christensen et al., 2021). While providing some insights, such disclosures are likely to be fully informative for shareholders to use for economic decision-making (FRC, 2016). Evidence from a variety of reporting contexts including corporate governance and CSR reporting provides evidence consistent with managerial symbolism (Bothello et al., 2023; Cho et al., 2015; Crilly et al., 2016; Westphal and Zajac, 1998). It remains an open question whether the *symbolic reporting perspective* extends to SBM annual report discourse.

### **3.3. Research design**

Figure 3.1 summarizes my two-step approach to distinguishing between the padding, symbolic reporting, and informative reporting perspectives. The first step tests the padding perspective by examining the nature and distribution of key themes in SBM commentary. I conduct three complementary analyses to examine whether SBM annual report commentary contains little or no incremental insights on value creation.

First, I qualitatively assess the degree of alignment between themes present in my SBM corpus and themes predicted by theory to occur in meaningful discussions of value creation. Evidence that salient themes appearing in the SBM corpus do not align with themes predicted by theory would provide evidence consistent with managers simply repackaging existing management commentary as SBM discourse when pressed to disclose. I obtain themes from my SBM corpus using topic modelling techniques, which I discuss in detail in Section 3.4. I expect to observe weak alignment with themes from popular strategy frameworks if padding characterizes SBM commentary. I use the strategy schema developed by Nadkarni and Narayanan (2007, hereinafter NN) as an externally-derived benchmark of popular strategy



topics. NN develop their schema by analysing managers' causal statements in CEO's letters to shareholders. They use these statements to tease out elements of strategy impacting firm operations and performance.

My second analysis assesses the distinctiveness of topics in SBM commentary. While evidence that emergent themes are aligned with themes predicted by theory is not consistent with padding, it may be that commentary in SBM sections offers no incremental insights into value creation relative to general annual report commentary. I therefore interpret lack of saliency relative to a reference corpus of general annual report discourse as evidence of padding. Tests of topic saliency use the following regression:

$$Intensity_{zi} = \beta_{0z} + \beta_{1z}SBM_i + \phi + \varepsilon_{zi}, \quad (3.1)$$

where *Intensity* measures the volume of commentary on topic *z* in annual report *i* (see equation [3.4] in Section 3.4 for a formal definition); *SBM* is an indicator variable taking the value of one for commentary from SBM sections and zero for commentary from reference sections;  $\phi$  indicates firm fixed effects; and  $\varepsilon$  is a regression residual. I estimate equation (3.1) separately for each *z* based on either a raw topic extracted from the topic model or four broad SBM themes that aggregate individual topics. Padding is likely to render SBM commentary indistinguishable from normal annual report content, in which case the majority of LDA topics or themes should be no more salient in SBM sections ( $\widehat{\beta}_{1z} \leq 0$ ). Evidence that  $\widehat{\beta}_{1z} > 0$  for the majority of topics indicates higher saliency in SBM commentary, which does not support padding. To reduce the risk of bias in  $\widehat{\beta}_{1z}$  from observable and unobservable firm-time factors that influence report content and presentation, I estimate equation (3.1) after restricting the sample of reports to those containing both SBM discourse and reference discourse.<sup>6</sup>

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<sup>6</sup> Different internal teams may be responsible for preparing different sections of the annual report. My design does not control for variation in content due to different authorship.

My third approach examines the degree of SBM topic dispersion across firms and industries. Insofar as strategies and business models are unique to firms and the markets in which they operate (Prahalad and Hamel, 1990), a firm must provide commentary tailored to the unique circumstances of the firm in order to provide incremental insights into value creation. In other words, SBM commentary that is aligned with theory and is distinct from general annual report commentary yields informative insights only when tailored to the firm. Therefore, I interpret an absence of pronounced industry- and firm-level uniqueness as evidence of generic content representative of padding. I perform two complementary analyses. Initially, I follow Hassan et al. (2019) and assess the degree of industry- and firm-level uniqueness with a variance decomposition analysis which relies on the following regression:

$$Topic\_Agg_i = \delta + \varphi + \phi + v_i, \quad (3.2)$$

where *Topic\_Agg* refers to proxies (defined in Section 3.4) for the aggregate amount of commentary relating to topics in SBM sections of report *i*;  $\delta$ ,  $\varphi$  and  $\phi$  represent time, industry, and firm fixed effects, respectively; and  $v$  is a regression residual. I interpret results as being inconsistent with padding if firm, and to a lesser extent industry, fixed effects account for a substantial fraction of the variance in SBM topics. (I do not expect time effects to explain a material proportion of SBM commentary because strategy and business models are sticky over relatively short windows.)

I complement this approach with hierarchical linear modelling [HLM] (Raudenbush and Bryk, 2002). HLM is used by prior literature (e.g., Gamache et al., 2015) to partition the proportion of variation in the outcome variable between and within groups. In my analysis, the dependent variable is *Topic\_Agg*, which refers to proxies (defined in Section 3.4) for the aggregate amount of commentary relating to LDA topics in SBM sections of report *i*. I specify the annual report as the level-one unit of analysis, firm as the level-two unit of analysis, and

industry as the level-three unit of analysis. This approach allows me to calculate the proportion of variation in the dependent variable (a) across industries, (b) across firms within the same industry, and (c) across annual reports of the same firm. This final component essentially reflects a time effect capturing evolution in disclosure practice, management discussion of the evolving business environment and changes to business model and strategy, which tend to be relatively sticky over time (Prahalad and Hamel, 1990). As before, I interpret results as being inconsistent with padding if within-firm and across-firm variance account for a substantial fraction of the variance in SBM topics.

Conditional on finding evidence that rejects the padding perspective, the second step in my analysis seeks to distinguish between informative and symbolic reporting by testing whether best practice SBM reporting properties occur more frequently (i.e., are more salient) in SBM discourse relative to reference discourse. Saliency tests use the following model:

$$SBM\_Best_{pi} = \gamma_{0p} + \gamma_{1p}SBM_i + \phi + \mu_{pi} , \quad (3.3)$$

where  $SBM\_Best$  is SBM best practice reporting feature  $p$  for the relevant section in annual report  $i$ ;  $SBM$  is an indicator variable taking the value of one for commentary from SBM sections and zero for commentary from reference sections;  $\phi$  indicates firm fixed effects; and  $\mu$  is a regression residual. I estimate equation (3.3) separately for each best practice proxy (defined in Section 3.4.2). Evidence that  $\widehat{\gamma}_{1p} > 0$  for the suite effective reporting proxies indicates that the attributes of effective SBM reporting as specified in best practice guidance are more prevalent in SBM commentary. I interpret this as support for informative reporting. Conversely, if  $\widehat{\gamma}_{1p} \leq 0$  for best practices proxies then SBM commentary is not distinguished by the recommended attributes of effective SBM reporting, which I interpret as evidence consistent with symbolic reporting. I follow the approach for regression (3.1) and restrict the

estimation sample to reports containing both SBM and reference discourse to reduce the risk of bias in  $\widehat{\gamma}_{1p}$ .

### 3.4. Corpus construction and pre-processing

My tests require a representative corpus of SBM annual report discourse and a reference corpus of general annual report language. I use the algorithm from El-Haj et al. (2020) to extract document structure and content from annual reports published as PDF files between 2006 and 2018 by LSE firms. The method involves detecting and parsing the annual report table of contents, which is then used as a map to extract text separately for each report section. I restrict my focus to sections that unambiguously contain SBM discourse. Specifically, I interpret section headers as manager-assigned labels of content and then apply a crawler algorithm that retains all sections where the discourse centres on strategy and business model. Consistent with Athanasakou et al. (2022), I use the following n-grams to capture sections containing a high fraction of strategy-related content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”.<sup>7, 8</sup> I pool all valid SBM sections across reports, firms, and time to construct a corpus of SBM annual report discourse.

Corpus analysis involves comparing features of a focal corpus with a reference corpus to help identify statistically salient properties (Stubbs, 1996; Vaughan and O’Keeffe, 2015). Best practice in corpus linguistics requires the linguistic properties in the reference corpus to

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<sup>7</sup> One concern is the requirement to provide a strategic report leads to firms rebrand their business review without disclosing material information on SBM matters. For this reason, I do not include the bigram “strategic report” in the list of n-grams I use to capture sections containing meaningful SBM discourse. However, I continue to include subsections where headers include one or more of the n-grams highlighted in the main text. For example, an annual report may contain a strategic report with subheadings of ‘our business model’ and ‘our risks’. In this case, my approach does not capture text from the entirety of the strategic report; instead, I extract text from the ‘our business model’ section and exclude text from the ‘our risks’ section.

<sup>8</sup> The rationale for including “key performance indicator” and “KPI” is that manual analysis reveals such sections do not present only statistics. Rather, such sections tend to contain information which links KPIs to strategic objectives and progress therein. Omitting these sections would therefore substantially increase the risk of type II errors. However, I do recognize the risk that I may capture text from such sections which contain little or no SBM commentary.

be as similar as possible to those in focal corpus (Brezina, 2018; Vaughan and O’Keeffe, 2015). I construct a reference corpus of annual report discourse from the Chair’s letter and corporate governance statement sections of the annual report. Both sections typically discuss aspects of corporate performance and conduct but without a detailed analysis of strategy and business model.

I apply a series of text processing steps to generate the final, clean versions of the corpora that forms the basis for my empirical tests. Appendix 3.6 provides further information on the steps in my text processing pipeline. In brief, I leverage features of the El-Haj et al. (2020) tool to complete basic cleaning including removing special characters and filtering-out sentences where more than half of the characters are non-alphabetic (Li, 2008). I construct measures of best practice reporting features such as specificity using the resulting corpora. I then apply the final pre-processing steps that involve removing named entities such as the names of products or places that introduce noise into topic models, and applying a domain-specific stop word list to remove words with little semantic meaning (such as “a” and “but”). Before applying the topic model to my SBM corpus, I follow prior literature and remove both highly ubiquitous and sparse words.<sup>9</sup>

### **3.4.1. Identifying SBM themes**

My first hypothesis predicts that themes in SBM commentary are consistent with popular strategic frameworks. Testing this hypothesis therefore requires a method to extract themes from the SBM corpus. Topic modelling techniques were initially developed to provide an algorithmic approach to exploring corpora (Blei, 2012; Murakami et al., 2017) and have been

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<sup>9</sup> Removing sparse words reduces dimensionality and lowers the risk of spurious results. I follow prior literature and remove words appearing in less than 5% of documents (Loughran and McDonald, 2011). Various thresholds are used to define ubiquitous words, such as until 60% of all word occurrences are removed (Brown et al., 2020). I use a more conservative threshold of removing words appearing in over 50% of documents (Campbell and Shang, 2022)

used in the accounting and finance domain to explore disclosures relating to risk (Bao and Datta, 2014), bank supervisory actions (Goldsmith-Pinkham et al., 2016), and analyst questions in conference calls (Dai et al., 2022; Huang et al., 2018). Topic models aim to discover the main latent themes present in large, unstructured collections of documents by analysing where words appear across documents and how they are connected (Blei, 2012). I therefore apply topic modelling techniques to construct topics in the SBM corpus.

Researchers can select from a menu of topic models (see Loughran and McDonald, 2016).<sup>10</sup> One of the more popular methods is the Latent Dirichlet Allocation (LDA) model (Blei et al., 2003). LDA differs from more primitive approaches such as Factor Analysis and Latent Semantic Analysis by explicitly considering document generation (Lewis and Young, 2019). The method reduces dimensionality through a Bayesian model that treats each document as a mixture of underlying topics, where topics represent statistical collections of co-occurring unigrams in the corpus that may or may not have interpretable economic meaning (Crossno et al., 2011).<sup>11</sup> LDA has emerged as the preferred model to study discourse in various disciplines including literary studies, political science and sociology (see Denny and Spirling, 2018; Murakami et al., 2017). LDA is the preferred topic modelling method in accounting and finance

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<sup>10</sup> Early approaches use factor analysis to reduce the dimensionality of textual data by assuming each word represents a linear combination of latent variables (topics) (Péladeau and Davoodi, 2018). Latent semantic analysis (LSA) is similar to factor analysis but uses the term-document matrix instead of a covariance matrix (Loughran and McDonald, 2016). Probabilistic latent semantic analysis (pLSA) uses a generative latent class model instead of using singular value decomposition to reduce dimensionality (Hofmann, 2001). Recent developments go beyond LDA. For example, the semi-supervised correlation explanation (CorEx) allows domain knowledge to be flexibly incorporated in the topic selection process (Gallagher et al., 2017). The Structural Topic Model (STM) allows incorporation of metadata in the topic modelling process (Roberts et al., 2013). LDA continues to be the preferred choice because of its relative simplicity and there being no requirements to subjectively provide a top-down structure.

<sup>11</sup> LDA is a generative model which assumes documents have a distribution over a number of topics specified by the researcher. Each topic has its own distribution of words. LDA assumes words in a document are generated by (i) drawing topics at random from the document's topic distribution and (ii) drawing words at random from the topic's word distribution (Blei et al., 2003). The LDA model uses an iterative process to fit the document-topic and word-topic distributions to the corpus. LDA topics can refer to recognizable themes that are relatively straightforward to interpret in economic terms, or to properties of language such as grammar that are more difficult to label and interpret. Accordingly, there is no guarantee that the statistical construct that the LDA model identifies as a topic will be interpretable in a meaningful (economic) way.

researchers (Ball et al., 2015; Brown et al., 2020; Dai et al., 2022; Dyer et al., 2017; Huang et al., 2018).

A feature of LDA is that the researcher must make decisions in relation to several key choice variables. Pre-processing choices, such as whether to stem words and algorithm selection, may also substantially influence topic model performance (Blei et al., 2017; Denny and Spirling, 2018; May et al., 2016). While prior literature shows some pre-processing steps such as the removal of stop words consistently lead to improved model performance (Schofield et al., 2017), there is conflicting empirical evidence whether other pre-processing steps such as stemming improve performance (May et al., 2016; Schofield et al., 2017; Schofield and Mimno, 2016). Similarly, multiple algorithms are available to apply LDA techniques which vary in their sampling methods. Examples include the java Machine Learning for Language Toolkit (Mallet) (McCallum, 2002) that uses Gibbs sampling and the open source python library Gensim that relies on Variational Bayes sampling (Rehurek and Sojka, 2010).<sup>12</sup>

A further consideration with the LDA method is that the optimal number of latent topics in the discourse is unknown. Since different choices for the number of topics may lead to substantially different outputs, a key implementation decision involves deciding on the optimal number of topics (“T”) to extract (Murakami et al., 2017). All else equal, setting T too high (low) leads to excessive (insufficient) granularity resulting in overlapping or redundant (ambiguous) topics (AlSumait et al., 2009; Ball et al., 2015; Huang et al., 2018; Mimno et al., 2011).

No common approach to deciding key choice variables has emerged from prior literature. Studies in accounting and finance are often silent on how decisions are made or simply state that choices are in line with prior literature. However, the computational linguistics literature

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<sup>12</sup> An alternative algorithm used in the prior literature (e.g., Huang et al., 2018) is the Stanford Topic Modelling Toolbox (STMT). However, this software is no longer developed or supported.

provides a menu of quantitative approaches to identify the optimal collection of topics. I follow this literature by (a) generating topic models using stemmed and pre-stemmed data, (b) applying the Mallet and Gensim algorithms, and (c) extracting various numbers of topics. I compute the coherence score for each model to measure topic interpretability. Given the co-occurrence of words proxies for semantic relatedness, coherence is defined as the average relatedness between words in a topic in reference to a hold-out sample or external data (Aletras and Stevenson, 2013). While there are several approaches to calculating coherence scores, I use the  $C_v$  metric which consistently achieves the highest correlation with human interpretation data in the systematic evaluation by Röder et al. (2015). Higher  $C_v$  scores indicate that topics are potentially more interpretable.

Figure 3.2 plots coherence scores. Results indicate a global maximum coherence score at 16 topics and local peaks at 22, 30, 40 and 56 topics for the Mallet algorithm with unstemmed SBM sections. I follow best practice to selecting  $T$  from this candidate shortlist by applying a word intrusion task to gauge agreement between human coders on the internal validity of topics for different  $T$ s (Chang et al., 2009; Dyer et al., 2017).<sup>13</sup> Intrusion test results are tabulated in Appendix 3.2. Versions with 16, 22 and 40 topics appear to provide the most interpretable results. From this subset, I make my final choice of  $T$  on the grounds of usefulness rather than minimal differences in evaluative measures (Murakami et al., 2017). Manual inspection of word lists reveals that all topics in the specifications with 16 and 22 topics are subsumed in the 40-topic version. I also find that the 40-topic specification includes potentially interesting topics absent in other specifications, as well helping to disaggregate broad themes in the 16-

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<sup>13</sup> The intrusion test involves three coders independently receiving a set of six words for topics in each candidate model. Five words represent the top five most salient words to the topic and the sixth word is an intruder. The intruder word is drawn at random from the 15% least probable words for the given topic that also appear in the top 20 most common words in at least one other topic. I randomise the order of the six words and the order in which the topics are presented to each coder. The extent that coders working independently are able to identify intruder words indicates the interpretability of the topic.



and 22-topic specifications into more refined topics. I therefore select the 40-topic version as the basis for my main tests.

Interpreting latent themes and assigning topic labels is inherently subjective despite the algorithmic nature of LDA. I follow the approach proposed by Gioia et al. (2012) and applied by Croidieu and Kim (2017) to assign topic labels. I begin by sorting unigrams for each LDA topic by their topic word weight (TWW) to identify the 30 highest weighted words in each topic. I then use these 30 unigrams in conjunction with theoretical frameworks from the strategy literature to assign a descriptive label and establish high-level semantic meaning for each topic by grouping topics with similar semantic meaning. I and my two supervisors perform this task independently and then compare labels. For the set of disagreement cases, my supervisors and I repeat the exercise and adjust the label until we reach agreement. As a final check on the validity of topics and labels, I asked a financial analyst with over 20 years' experience in the asset management industry to repeat the labelling process independently. Their assessment was entirely consistent with the final set of labels. The first two columns in Table 3.1 present LDA topic labels and the top 10 unigrams ranked by TWW for each topic, respectively. I split Table 3.1 into four panels that aggregate LDA topics into the following aggregate topic categories: External environment, Internal resources, Performance & reporting, and Governance. My approach to aggregating topics into the four broad themes is to use as a baseline the umbrella themes developed by Nadkarni and Narayanan (2007, hereinafter NN) to group strategy schema. (See Section 3.6.1.1 for a discussion of how NN construct their umbrella themes.) Specifically, for each extracted topic I identify the umbrella theme of the corresponding NN strategy schema. I apply subjective judgement to aggregate topics (i) corresponding to multiple NN schema or (ii) which do not correspond to any NN schema.

I use these 40 LDA topics and four aggregate themes to construct proxies for my distinctiveness test [equation (3.1)] and my uniqueness test [equation (3.2)]. My distinctiveness test measures the intensity (volume) of commentary on LDA topic  $z$ :

$$Intensity_{zki} = \sum_{j=1}^J N_{zkji} \times TWW_{zkj}, \quad (3.4)$$

where  $Intensity_{zki}$  is the volume of discussion on topic  $z$  for discourse  $k$  in annual report  $i$  ( $k$  = SBM sections or reference sections);  $N$  is the count of unigram  $j$  for LDA topic  $z$  from discourse  $k$  in annual report  $i$ ; and  $TWW_j$  is the topic word weight for the  $j^{\text{th}}$  unigram in LDA topic  $z$ . Summing the weighted word counts for LDA topic  $z$  yields a measure of disclosure volume for that topic. Aggregating values across the subset of LDA topics across my four broad themes in Table 3.1 yields measures of intensity at the theme level.

My uniqueness test [equation (3.2)] evaluates whether the focus on LDA topics varies in line with firm and sector differences in strategic objectives and business models. To simplify presentation, I set aggregate topic intensity ( $Topic\_Agg$ ) equal to my four theme-level intensity proxies. I expect firm- and industry-level fixed effects to account for little variation in the volume of LDA themes if padding characterizes SBM discourse.<sup>14</sup>

### 3.4.2. Attributes of SBM best practice reporting

I focus on two prominent frameworks offering best practice guidance to managers on SBM disclosure. The FRC (2014b) provides broad principles that allow firms to ‘tell their own story’ in response to the mandatory requirement for LSE main market firms to produce a strategic report. In addition, the IIRC (2013) outlines a voluntary reporting framework to help

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<sup>14</sup> I repeat the analysis using my 40 LDA topics for completeness. Results are very similar using this more granular approach. See Appendix 3.3 for a tabulation and detailed discussion of the results.

firms illustrate how their strategy and related organisational features create value. Three communication principles feature heavily in both frameworks. The first principle is the need for entity-specific disclosures rather than generic or boilerplate discussions that offer few meaningful insights on the value creation process (FRC, 2014b, Para. 6.13-6.14). Strategy is inherently forward-looking and therefore both frameworks also recommend management provide forward-looking information (FRC, 2014b, Para. 6.10) such as expectations about the future business environment (IIRC, 2013, Para. 4.34). Finally, both frameworks encourage managers to provide information across multiple time horizons to help users understand both the short- and long-term development and future prospects of the business (FRC, 2014b, Para. 6.11-6.12). I therefore construct measures of effective SBM commentary relating to entity-specific content, forward-looking orientation, and time horizon (short- versus-long-run). I construct separate measures for SBM annual report sections and reference sections.

#### 3.4.2.1. *Specificity*

I follow Hope et al. (2016) and Dyer et al. (2017) and define *Specificity* as the number of words or phrases conveying entity-specific information, scaled by the total number of words in the discourse. I use the spaCy named entity recognition (NER) algorithm to identify n-grams relating to locations, people, organisations, money, percentages, dates, and times, and then calculate *Specificity* as:<sup>15</sup>

$$Specificity_i = \frac{NER_i}{N_i}, \quad (3.5)$$

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<sup>15</sup> Hope et al. (2016) use the Stanford NER algorithm. I use the spaCy algorithm because it has been used by prior literature examining strategic commentary in UK annual reports (Athanasakou et al., 2022). Results (untabulated) confirm findings are not sensitive to restricting entity categories to those recognised by the Stanford algorithm (i.e., date, location, organisation, percent, person, time and money).

where  $NER$  is the total number of named entities in the relevant section in report  $i$ , and  $N$  is the total number of words in the corresponding section. Higher *Specificity* indicates a higher fraction of entity-specific information and less generic boilerplate disclosure.

### 3.4.2.2. *Forward-looking orientation*

I measure the degree of forward-looking information using keywords that are more likely to occur in predictions and analysis of the future. I pool word lists and verb conjugations from prior research (Bozanic et al., 2018; Hassanein et al., 2019; Hussainey et al., 2003; Li, 2010; Muslu et al., 2015) to construct a comprehensive measure of forward-looking orientation.<sup>16</sup> I make minor adjustments to the resulting list such as removing words that create a high risk of misclassifying sentences as forward-looking.<sup>17, 18</sup> The final word list is available in Table A.3.3.2. Following prior literature (e.g., Bozanic et al., 2018; Hassanein et al., 2019), I calculate forward-looking orientation at the sentence level to avoid double-counting multiple forward-looking words in a single sentence. I use spaCy's sentencizer algorithm in python to decompose text into sentences, and then calculate the degree of forward-looking orientation (*Forward*) as

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<sup>16</sup> For example, simply including the word “plan” in the word list may introduce noise by capturing sentences that are not forward-looking, such as “in line with our plan, we invested heavily in employee training”. Therefore, Bozanic et al. (2018) and Muslu et al. (2015) include multiple conjugations of “plan” where the word verb has forward-looking orientation, such as “we plan to”.

<sup>17</sup> For example, Hussainey et al.'s (2003) list contains the word “novel”. While “novel” may be used to present forward-looking information in some cases, the appearance of the word alone does not necessarily mean the sentence contains such insights. For example, “we have a *novel* product offering” is seemingly not a forward-looking statement. Bozanic et al. (2018) caution against including words associated with uncertainty (e.g., “could” or “might”) which may not necessarily reflect forward-looking information. However, these words are relevant to my research question because best practice guidance encourages firms to explain uncertainties and how these affect future performance (FRC, 2014). My baseline word list therefore includes words associated with uncertainty, but I check the sensitivity of my results to their omission and to using alternative lists suggested by prior literature.

<sup>18</sup> I validate my alternative word list by completing the following test. I extract at random 2,500 sentences from the SBM corpus and 2,500 sentences from the reference corpus. Sentences are presented to an independent research assistant in a random order. The RA reads each sentence and identifies whether the sentence contains forward-looking content, including hypothetical statements (e.g., “could”, “may”) or aspirations (e.g., “goal”, “objective”). Untabulated analysis confirms my customised word list yields a higher F1 score than the five baseline approaches used in prior literature. My empirical results are not sensitive to the choice of word list.

the total number of sentences containing a forward-looking keyword divided by the total number of sentences.

#### 3.4.2.3. Time horizon

Best practice guidance encourages management to deliberate across multiple timeframes, including both short-term and long-term horizons (FRC, 2014, Para. 6.11-6.12). Time horizon is distinct from forward-looking orientation (Brochet et al., 2015). Specifically, forward-looking commentary may or may not include precise time horizon references such as next month, next quarter, or next year. Similarly, precise information about time horizon may not necessarily be in relation to forward looking information, such as current progress against long-term plans. I measure the degree to which managers focus on multiple time horizons using the word lists from Brochet et al. (2015) to distinguish between short- and long-term commentary.<sup>19</sup> Appendix 3.5 contains these two n-gram lists. Inspection reveals very little overlap between these lists and my forward-looking list, consistent with time horizon and forward-looking orientation representing distinct linguistic constructs. I measure time horizon at the sentence level and construct measures of long-term horizon (*LongTerm*) and short-term horizon (*ShortTerm*) as the number of sentences containing at least one long-term and one short-term n-gram, respectively, scaled by the total number of sentences.<sup>20</sup>

Motivated by concerns from policymakers and stakeholders that corporate reporting focuses too much on the short-term, I also construct a measure of time horizon that captures the relative focus on the long-term over the short-term. I define a net long-term focus

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<sup>19</sup> Brochet et al. (2015) construct their word lists from earnings calls. When applied to (diverse sections of) annual reports, some n-grams in the word list may not refer to the long-term depending on the context. For instance, an annual report may refer to the word “annual” in the context of the “annual report” or the “annual general meeting”. Similarly, “long term” may refer to “long term incentive plan” or “long term incentive scheme”. Classifying sentences as forward-looking using these n-grams is likely to introduce noise into the analysis. I therefore modify Brochet et al. (2015)’s wordlist so as not count as long term those sentences containing only “annual report”, “annual general meeting”, “long term incentive plan” or “long term incentive scheme”.

<sup>20</sup> Sentences containing at least one long-term n-gram and at least one short-term n-gram are ambiguous and therefore I classify them as neither long-term nor short-term.

(*NetLongTerm*) as the number of long-term sentences less the number of short-term sentences, scaled by the total number of sentences.<sup>21</sup> All else equal, I expect effective SBM commentary to place relatively greater focus on the long term.

## 3.5. Sample, data and SBM attributes

### 3.5.1. Sample selection

The sample period begins with fiscal year-ends on or after 1 January 2006 to correspond with the introduction of the company law mandate to disclose KPIs and ASB (2006) encouragement to report on strategy and business model. The sample period ends with December 2018 fiscal year-ends. I end the sample period at this point to avoid contamination from the COVID-19 pandemic. SBM disclosures during the pandemic period may be influenced by firms' strategic response and resilience to the exceptional social and economic environment. Such disclosures are unlikely to be representative of typical SBM commentary.<sup>22</sup> I include reports from both LSE Main Market and AIM firms. The sample therefore includes both pseudo-mandatory SBM discourse (Main Market firms' reports published after 28 May 2010) and voluntary SBM disclosure (Main Market firms' reports published before 28 May 2010 and AIM firms' reports published throughout the sample window).

My sample selection process begins with the universe of PDF annual reports available for LSE-listed firms during the sample period, from which I exclude reports with missing industry and market information on Datastream. I also remove firms in the financial sector

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<sup>21</sup> Brochet et al. (2015) define their measure of short-term focus as the number of short-term words scaled by the number of long-term words. However, this measure is undefined for sections that do not contain short-term sentences and therefore risks introducing selection bias into the analysis. I therefore scale by the total number of words in the section.

<sup>22</sup> While the first reported cases of COVID-19 occurred in December 2019, I am reluctant to include annual reports for the 2019 financial year. The reason is that annual reports are published with a lag from the end of the reporting period. Therefore, firms may choose to reflect the circumstances of the pandemic in the 2019 annual report even though the financial year end coincides with the onset of the pandemic.

(8,732 firm-year observations) because annual reports of financial firms often talk about their investment strategy in addition to (or instead of) their business strategy. I also remove overseas regulatory filings and non-English reports. Applying these criteria yields a sample of 14,502 firm-year reports, from which I select observations that contain at least one unambiguous SBM section, resulting in 7,116 firm-year observations. I use this sample to construct my SBM corpus and extract LDA topics. Requiring that reports also contain at least one reference corpus section reduces the test sample to 6,873 firm-year observations. The Industrials sector has the most reports (28% of observations), with Consumer Services (19%), Basic Materials (12%) and Technology (12%) also contributing a significant number of reports. Observations increase steadily from 2% of the sample in 2006 to 6% in 2012, reflecting increasing regulatory encouragement for UK firms to report on strategy and business model. A structural increase in reports containing at least one SBM section is evident from 2014 onwards following the mandate for LSE Main Market firms to publish a strategic report.

### **3.5.2. Preliminary corpus analysis**

As a validity check and to provide exploratory analysis of the SBM corpus, I draw on corpus analysis techniques that seek to uncover linguistic patterns to help researchers understand the language used in discourses (Baker, 2006). Corpus methods are used widely in numerous disciplines (e.g., Anson and Anson, 2017; Gabrielatos and Baker, 2008; León-Araúz and Reimerink, 2015). However, use of corpus methods to examine aspects of corporate reporting is relatively rare (exceptions include Fuoli, 2018; Huang and Zhu, 2017; Li and Haque, 2019; Lischinsky, 2015).

To understand whether differences between the SBM corpus and the reference corpus are significant, I calculate keyness to account for the relative sizes of the two corpora and the frequency of words contained therein (Baker, 2006; Scott, 1997). I measure the extent to which

terms of interest are salient in SBM disclosure relative to general corporate communication. Consistent with common practice in linguistics (see Brezina et al., 2015), I calculate n-gram keyness with the log-likelihood (LL) measure that involves comparing counts for each word or cluster across the two corpora to calculate the LL statistic:

$$-2 \ln \lambda = 2 \sum_j O_j \ln \frac{O_j}{E_j}, \quad (3.6)$$

where  $O$  is the observed frequency of the  $j^{th}$  category in the  $k^{th}$  corpus and  $E$  is the expected frequency of the  $j^{th}$  category in the  $k^{th}$  corpus, calculated as:

$$E_{jk} = \frac{N_{jk} \sum_{jk} O_{jk}}{\sum_{jk} N_{jk}}, \quad (3.7)$$

where  $N$  is the total number of categories in corpus  $k$ . I sort unigrams, bigrams, and trigrams according to keyness and use a cut-off value of 15.13 equating to a probability value of 0.0001 (Baker, 2006). I retain categories with LL statistics above this cut-off value for further analysis. For ease of exposition in the discussion of these keywords, I then use the %DIFF metric which takes into consideration the normalised frequency of the n-gram across the two corpora:

$$\%DIFF = \frac{(NFC_1 - NFC_2)}{NFC_2} \times 100, \quad (3.8)$$

where  $NFC_1$  ( $NFC_2$ ) is the normalised frequency of the SBM (reference) corpus. Normalised frequency is calculated as n-gram frequency scaled by the total number of n-grams. A value of 100 (500) indicates twice (six times) the normalised frequency in the corpus relative to the reference corpus (Gabrielatos, 2018).

Table 3.2 presents the top 50 salient unigrams, bigrams, and trigrams ranked by keyness. I display the raw frequency, keyness and %DIFF measures. Not surprisingly given my corpus



construction approach, managers are significantly more likely to use n-grams as such as “strategy”, “business model” and discussion of value creation (e.g., “we create value”). Managers also appear more likely to use n-grams associated with the external environment (“market”, “global”, “industry”, “emerging market” and “supply chain”) and the internal environment (“develop”, “technology”, “brand”, “efficiency”) in SBM commentary. Distinctive properties also include references to key stakeholders (“customer”, “consumer” and “client”) as well as environmental, social and governance (ESG) factors (“people”, “sustainability”, “health safety”, “net promoter score” and “injury frequency rate”). These preliminary findings suggest SBM commentary contains language one might expect to see based on popular representations on strategy in the literature.

I shed further light on the distinctive properties of SBM commentary by measuring alignment with discourse from the strategic management literature. I use as a benchmark the n-gram list curated by Athanasakou et al. (2022) from the indexes of five leading strategy textbooks. I apply the pre-processing steps outlined in Section 3.4 to Athanasakou et al.’s list. This leads to a list of 625 unique n-grams of which 342 are unigrams, 275 bigrams and 8 trigrams. If distinguishing features of SBM commentary are not related to popular strategic themes then n-grams curated by Athanasakou et al. (2022) should not be salient to SBM commentary. Instead, I find 51% of unigrams and 12% of bigrams identified by Athanasakou et al. (2022) are statistically distinct to my SBM corpus at the 0.01% level. This compares with only 7% (4%) of statistical distinct unigrams (bigrams) from Athanasakou et al. (2022) in the reference corpus. I find that 7% of unigrams have derivational tokens salient to both the SBM and reference corpora.<sup>23</sup> No trigrams in the Athanasakou et al. (2022) list are distinct to either corpora. Testing the difference in proportions (results not tabulated) reveals that SBM discourse

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<sup>23</sup> For example, for the unigram “implement#” in the list curated by Athanasakou et al. (2022), I find “implementable” is salient to my SBM corpus whereas “implement” and “implementation” are salient to the reference corpus.

contains significantly more n-grams from Athanasakou et al. (2022). These results provide support for the view that the SBM corpus includes distinct content relating to strategy and value creation.

### **3.5.3. Summary statistics for SBM content**

Panel A of Table 3.3 presents descriptive statistics for word counts of aggregate topic categories separately for SBM and reference sections. I apply a materiality condition when computing descriptive statistics to reduce noise and simplify the discussion, but my results and conclusions are not sensitive to this choice. I define LDA topic  $z$  as material in report  $i$  if the weighted count of unigrams for topic  $z$  exceeds four in either the SBM or reference section discourse. (I also present statistics in Appendix 3.7 for the fraction of unigrams in SBM and reference sections that relate to each LDA topic.) Results reveal that the External Environment and Internal Resources aggregate themes are significantly more prevalent in the SBM corpus. The evidence provides the first suggestion that SBM commentary includes discussion of the topics one might expect to see based on popular representations of strategy in the literature. Conversely, the Performance & Reporting and Governance aggregate themes are less salient in the SBM corpus. Although not salient to SBM commentary, the presence of these themes among my 40 LDA topics highlights the pervasive nature of governance and performance commentary throughout the annual report.

Panel B of Table 3.3 reports descriptive statistics for my SBM best practice reporting proxies computed for SBM and reference sections. Contrary to best practice guidance, SBM sections contain *less* specific language than regular annual report discourse. Named entities account for 16.7% (15.8%) of unigrams in the mean (median) SBM section. The comparable *Specificity* score for reference sections is 18.1 (18.0) and the paired difference is significant at the one percent level. SBM sections are associated with more forward-looking sentences as

best practice guidance recommends, with approximately 20% of sentences in SBM sections classified as forward-looking compared with 19% in reference sections. While the difference is statistically significant ( $p < 0.01$ ), the substantive difference is trivial. Moreover, my time horizon metrics reveal significantly *less* discussion of the long term in SBM sections.

## **3.6. Main tests**

### **3.6.1. Is SBM commentary just padding?**

I test for evidence of padding by examining the focus and distribution of salient topics in SBM commentary. I interpret a high (low) degree of alignment between LDA topics extracted from the SBM corpus and the strategy schema developed by Nadkarni and Narayanan (2007) as an external benchmark against which I draw qualitative comparisons to assess whether SBM commentary includes (omits) core themes from popular strategy frameworks. If padding characterizes SBM commentary, then I expect to observe weak alignment with NN's schema of strategic themes. I also compare the incidence of topics identified in the SBM corpus with those in the reference corpus and interpret a lack of distinctiveness as evidence of padding. Finally, insofar as strategies and business models are unique to firms and the markets in which they operate, I examine LDA topic dispersion at the industry and firm level and interpret an absence of material variation as a lack of uniqueness in SBM commentary that is consistent with the padding perspective.

#### *3.6.1.1. Alignment with theory*

I follow Gioia et al. (2012) and Croidieu and Kim (2017) by generating theoretically valid SBM constructs as benchmarks against which to compare my 40 LDA topics. My starting point is the strategy schema developed by NN who develop their scheme as a way to identify how managers interpret and discuss firm strategy. The schema is constructed by manually

collecting causal statements in CEO's letters to shareholders, which are then grouped into generalized concepts by three independent coders. Concepts are then aggregated into 35 broad themes. Broad themes are then tied the broad categories to the strategic management literature. Therefore, there is significant overlap conceptually between the objectives of NN's schema and my objective to assess whether salient themes appearing in the SBM corpus align with themes predicted by theory.<sup>24</sup>

I use the categories developed by NN as an externally defined set of SBM concepts that I expect to see occurring in meaningful discussions of strategy and business models. The final column in Table 3.1 maps the 35 NN categories to my 40 LDA topics from the SBM corpus. I allow LDA topics to map to multiple NN categories where appropriate without forcing every NN category to appear in the mapping. I do not require every LDA topic to align with at least one NN category. The mapping process is entirely subjective.<sup>25</sup>

LDA topics from the SBM corpus show a high degree of overlap with the categories from NN's strategy schema. Twenty eight of the 35 NN categories (80%) are represented in my LDA topics. The NN schema categories that do not align naturally with the LDA topics are (NN schema reference in parentheses) "Drivers of industry change" (3), "Substitute markets" (6), "Portfolio analysis" (9), "Internal growth" (12), "Capacity related strategic actions" (19), "Product performance" (26), "Culture building" (34), and "Strategic change" (35). Note that the inability to map these eight NN categories to my 40 LDA topics does not mean these themes are absent from SBM annual report commentary. Rather, it merely indicates that my LDA

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<sup>24</sup> The authors follow multiple validation steps including asking three strategy professors and four industry analysts classified the concepts into schema. They find strong inter-rater reliability with Kendall's coefficient of concordance at 0.89. In a subsequent step, NN exclude concepts where fewer than four raters agreed. The extensive validity testing provides confidence that NN's schema is an appropriate and valid benchmark.

<sup>25</sup> Findings are not sensitive to this choice. Rather, prior literature applying topic modelling techniques, and LDA in particular, stop short of taking the additional step of benchmarking against an external framework. Instead, it is common practice to stop after subjectively labelling topics after reading top unigrams. In this case, the topic labels and key unigrams in Table 3.1 suggest topics relate to key themes in the strategic management literature. Finally, empirical tests of distinctiveness and uniqueness are completed both at the aggregate theme level and the individual topic level. Results are not sensitive to this choice.

model did not identify these categories as having statistically distinct groups of cooccurring unigrams in the SBM corpus. As such, this qualitative mapping exercise likely understates the degree of alignment between topics in my SBM corpus and NN categories.

Reversing the mapping exercise reveals that 35 of the 40 LDA topics (88%) map to at least one NN category, of which twenty-two topics (55%) map to two or more NN categories. The five LDA topics that do not align naturally with the NN schema relate to risk (General risk and Financial risk) and governance (Board, Remuneration, and Shareholders). I view these topics as ubiquitous themes in corporate reporting that pervade the majority of annual report commentary regardless of specific focus. Overall, I interpret results from this mapping exercise as qualitative evidence that SBM annual report commentary discusses the issues that theory predicts should be apparent in a rigorous discussion of strategy. The findings provide a first indication that the padding perspective on corporate reporting may not apply to SBM commentary in the UK setting.

### *3.6.1.2. Distinctiveness*

Equation (3.1) tests whether coverage of LDA topics is more pronounced in SBM sections. Results for my four aggregate topic categories are reported in Table 3.4, while Table 3.5 presents results by individual topic. The indicator for SBM commentary loads positively for the External Environment and Internal Resources aggregate categories in Table 3.4. Results in Table 3.5 where I estimate equation (3.1) separately by LDA topic reveals that 16 of the 18 LDA topics (89%) in the External Environment category are more salient in SBM sections, while 80% of the 10 Internal Resources topics are discussed more intensively in SBM sections.<sup>26</sup> Findings provide strong support for the joint hypothesis that LDA topics reflect

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<sup>26</sup> Coverage of LDA topics that align with the value chain is more prevalent in SBM sections ( $p < 0.01$ ). Table 3.5 generally confirm that topics relating to firms' internal resources are salient to the SBM corpus. All topics relating to intangible or technological resources, and human resources are significantly more prominent in the

important dimensions of strategy and business model as predicted by theory, and that these topics occur more frequently in SBM annual report discourse. As such, the evidence does not support the padding perspective which predicts that SBM discourse is indistinct from other aspects of annual report commentary.

The SBM indicator loads negatively for the Performance & Reporting and Governance aggregate categories in Table 3.4. Despite being clearly relevant to the discussion of strategy and business model, results reveal that these two categories are not distinct to SBM annual report commentary; they are in fact *less* prevalent in such discourse relative to reference commentary. Table 3.5 reports results for equation (3.1) estimated separately for each of the nine LDA topics in the Performance & Reporting categories and reveals that the only two LDA topics salient in SBM sections are Net income and APM. The remaining seven LDA topics (78%) are either statistically indistinguishable across SBM and reference sections or significantly *less* salient in SBM sections. Similarly, two of the three LDA topics (Board and Remuneration) in the Governance category are *less* salient in SBM sections, while the third topic (Shareholders) is statistically indistinguishable. Evidence that less weight is given to governance themes in SBM commentary relative to the reference corpus, which contains corporate governance statements, is not surprising. Nevertheless, the presence of this aggregate topic category among my 40 LDA topics highlights the pervasive nature of governance in annual reporting. Findings are consistent with conclusions from Table 3.1 that both Performance & Reporting and Governance are ubiquitous subjects that permeate corporate reporting irrespective of the specific focus of the commentary. Evidence that both subjects are less salient in SBM commentary nevertheless suggests that strategic discourse has a narrower and more specialized focus. This aspect of distinctiveness is also inconsistent with padding.

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SBM corpus ( $p < 0.01$ ). For tangible resources, Operations and Logistics are also more salient to the SBM corpus. Contrary to expectations, Efficiency and Facilities occur more frequently on the reference corpus.

### 3.6.1.3. Uniqueness

I perform variance decomposition for equation (3.2) to assess the uniqueness of commentary in SBM sections. To simplify presentation of results, I estimate equation (3.2) for my four SBM aggregate topic categories rather than my 40 separate LDA topics, although inferences are entirely consistent for topic-level regressions (see Table A.3.3.1 in the appendix). The analysis examines how much of the variation in commentary on these aggregate topic categories is explained by various sets of fixed effects (time, industry, and firm). I measure the amount of commentary on a given category as either the weighted number of words or the count of material LDA topics for the relevant category.

Table 3.6 presents results. For models (1) through (4) where the dependent variable is weighted word count, I find that time fixed effects explain a small fraction of the variation in commentary, ranging from 0.8% for the Governance category to 3.5% for the Performance & Reporting category. The low degree of variation explained by time is consistent with stickiness in strategic objectives and business models over short horizons. Industry effects (at the Datastream Level 4 level) and the interaction of industry and time fixed effects account for a further 5.9% and 2.1%, respectively, for the External Environment category and a broadly similar pattern is also evident for the other three categories. The remaining variation in weighted word count for the External Environment category (90.3%) plays out at the firm-level, comprising 35.6% that reflects permanent differences across firms within the same sector and 54.8% reflecting transitory differences across firms within their industry. A similar pattern is repeated across the other three categories, with the degree of permanent plus transitory firm-level variation ranging from 86.6% for Internal Resources to 95.6% for Governance. Qualitatively similar results are evident for models (5) through (8) in Table 3.4 when the dependent variable is the frequency count of material LDA topics within an aggregate topic category.

I complement this analysis by applying HLM models. Table 3.7 contains results using the four aggregate topic categories, with very similar inferences evident for the topic-level analysis (see Table A.3.3.2 in the appendix). The top four rows display the Akaike information criterion (AIC) from regressions (a) with an intercept only, (b) with an intercept and firm random effects, (c) with an intercept and industry random effects, and (d) with an intercept and both firm and industry random effects. In all cases, the random effects models have lower a AIC value than the (null) intercept only model, confirming the significance of the random effects. The last three rows of Table 3.7 present the proportion of total variance explained by (a) differences within firms across annual reports, (b) differences across firms within industries, and (c) differences across industries.<sup>27</sup> Specifically, these are the three intraclass correlation coefficients (ICCs) from the HLM (except for within-firm variation, which is defined as the residual after accounting for the other ICCs).

Results from the HLM analysis paint a similar picture to the variance decomposition findings. I observe some variation across industries; columns (1) through (4) suggest approximately 11% (17%) of variation in the volume of commentary on the External Environment (Internal Environment) is explained by variation across industries. I continue to find that permanent differences across firms within the same industry account for the second largest proportion of variation (around 38% to 43%), consistent with firms forming unique strategies that are stable over short windows (Prahalad and Hamel, 1990). Similarly, I find differences across annual reports within the same firm accounts for a large proportion of variation (approximately 45%). That there is variation across time within the same firm reflects management discussion of the dynamic business environment and market conditions as well as evolution in disclosure practice. It follows that SBM disclosures are tailored to firm

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<sup>27</sup> Note that time is subsumed in the differences within firms across annual reports; controlling directly for time fixed effects does not change the results.



circumstances. Conclusions are similar when using topic counts [columns (5) through (8)] and when using word counts of individual topics.

Findings in Table 3.6 and Table 3.7 are consistent with the view that firms tailor their SBM annual report commentary to reflect their idiosyncratic circumstances and value creation approach, and to a lesser degree the competitive forces of the sector in which they operate. The rank ordering of firm, industry, and time effects is in line with the pattern one might expect to observe for meaningful strategy-related commentary. Evidence of substantial firm-level uniqueness and meaningful industry-level uniqueness in SBM discourse does not support the padding perspective. Instead, findings suggest that strategy and business model discourse reflects the core markets in which firms operate and the technologies that are key to success in those markets.

#### *3.6.1.4. Implications*

The collective evidence from my alignment, distinctiveness and uniqueness tests does not support the padding perspective on SBM discourse. Instead, my findings provide prima facie evidence that annual report commentary on strategy and business model displays attributes of meaningful discourse on value creation. In the next section, I examine whether these patterns are more consistent with insightful management commentary on plans for delivering and maintaining shareholder value, or with symbolic reporting to create an impression of legitimacy while providing little substantive information about the reporting entity's value creation process.

### **3.6.2. Informative versus symbolic reporting**

Conditional on SBM commentary containing recognizable themes linked to value creation, I interpret evidence that the properties of effective SBM reporting are more salient in

SBM discourse as support for the informative reporting perspective. Conversely, I view the absence of such properties as being more consistent with symbolic reporting and legitimization. Table 3.8 presents regression results for equation (3.3) using various proxies for best practice SBM reporting. I use fractional regression to reflect the percentage nature of the dependent variables and include firm fixed effects to control for firm-specific confounders.

The indicator variable for SBM sections loads negatively for *Specificity* in column (1) ( $p < 0.01$ ), indicating that SBM discourse typically contains less entity-specific content than a representative sample of non-SBM annual report commentary. Analysis of partial effects reveals SBM commentary includes 1.36 fewer named entities per 100 words than reference sections, equivalent to a reduction of 7.5%.<sup>28</sup> The evidence is inconsistent with best practice guidance, which favours entity-specific content over the use of vague or generic language.

Column (2) contains results for forward-looking orientation. The coefficient estimate for SBM sections is positive and significant ( $p < 0.01$ ), confirming that SBM discourse contains proportionately more forward-looking sentences than commentary in the reference corpus. Estimates of real effects suggest SBM commentary contains 1.63 more forward-looking sentences per 100 sentences than reference sections, equivalent to an increase of 8.4%. Results are not sensitive to using alternative forward-looking word lists from Bozanic et al. (2018), Muslu et al. (2015) and Li (2010) (see Appendix 3.8). Contrary to results for *Specificity*, evidence for *Forward* is consistent with management following best practice reporting guidelines for informative reporting.

Finally, I examine references to long-term and short-term time horizons in columns (3) and (4), respectively. The coefficient estimate on *LongTerm* is negative and significant ( $p < 0.01$ ), indicating that SBM commentary contains proportionately fewer long-term references

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<sup>28</sup> Calculating the average partial effect of the SBM variable in the fractional regression yields a decrease in the *Specificity* score by 1.36. The percentage reduction is calculated by scaling the average partial effect by the mean *Specificity* score of reference sections. Results are similar (a reduction of 7.8%) if scaling by the unconditional mean of the *Specificity* variable.

relative to the reference discourse. Analysis of average partial effects suggest SBM commentary contains 1.35 fewer long-term sentences per 100 sentences relative to reference sections. *ShortTerm* also loads negatively, although statistical significance is marginal ( $p < 0.1$ ) and the economic effect is unsubstantial.<sup>29</sup> Results sentences in SBM commentary contain fewer precise references to time horizon in general and to the long-term in particular. Findings, which are not sensitive to alternative specifications to account for pairwise matching and topic fixed effects (untabulated), run counter to the best practice recommendation to discuss value creation across multiple timeframes.

Motivated by concerns from policymakers and stakeholders that corporate reporting places excessive emphasis on the short-term (e.g., CFA Institute, 2006; Kay, 2012), I also assess the relative emphasis of SBM commentary on the long-term versus the short-term by replacing the dependent variable in equation (3.3) with a measure of net long-term language (*NetLongTerm*). All else equal, best practice guidance for SBM commentary suggests relatively more emphasis on the long-term (i.e., beyond one year). Contrary to expectations shaped by best practice guidance, results in column (5) reveal a significant negative coefficient estimate on *NetLongTerm* ( $p < 0.01$ ), indicating *less* emphasis on the long-term in SBM discourse relative to the reference corpus. The evidence, which is in line with results for *Specificity* and the level of commentary across multiple time horizons, provides further evidence of a disconnect between SBM discourse and the properties of effective SBM reporting despite initial findings indicating a higher incidence of forward-looking language in SBM commentary. Results are less consistent with the informative reporting perspective and more in line with symbolic reporting.

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<sup>29</sup> Estimates of economic effects suggest SBM commentary contains 0.07 fewer short-term sentences per 100 sentences than reference sections, equivalent to a reduction of 2.9%.

I explore the nature of forward-looking statements in further detail to help understand apparently conflicting evidence in column (2) of Table 3.8 that SBM commentary contains proportionately more forward-looking language. Schleicher and Walker (2010) suggest that forward-looking commentary is less verifiable than statements regarding the past and the present, and as such provides management with the opportunity to use vague language over specific facts, and to present the firm and its prospects in a more favourable light (Melloni et al., 2016). More forward-looking SBM language may therefore be consistent with symbolic reporting if such statements comprise more bland, generic, and less balanced commentary about the future. I measure *Specificity* and time horizon references (where *TimeHorizon* counts the number of sentences containing either a long-term or short-term n-gram) for forward-looking sentences appearing in SBM and reference sections. I scale these measures by the number of forward-looking sentences in each section to ensure comparability and then test whether the proportion of forward-looking SBM discourse displays lower average values for  $Specificity^{Forward}$  and  $TimeHorizon^{Forward}$ , relative to comparable sentences in reference sections. I also use the lists of positive and negative bigrams from Garcia et al. (2023) to classify the tone of forward-looking sentences. Net positive sentence tone ( $NetPositiveTone^{Forward}$ ) is equal to the number of positive bigrams minus the number of negative bigrams, scaled by total word count. I test whether forward-looking sentences in SBM sections display higher  $NetPositiveTone^{Forward}$  relative to equivalent sentences in reference sections.

Regressions in Table 3.9 compare the properties of forward-looking sentences in SBM and reference sections. The indicator variable for SBM sections loads negatively ( $p < 0.01$ ) in column (1) for  $Specificity^{Forward}$ . The result is economically significant; I estimate that forward-looking SBM commentary contains 9.56 fewer named entities per 100 words than forward-looking commentary in reference sections, equivalent to a reduction of 11.9%. Forward-

looking sentences in SBM discourse therefore contain less specific language in comparison with reference discourse.<sup>30</sup> Column (2) presents results for direct references to time horizon, which I measure as the sum of forward-looking sentences referring to either the short- or long-term, scaled by the total number of forward-looking sentences. The negative coefficient estimate on the SBM indicator ( $p < 0.01$ ) reveals that SBM discourse contains fewer precise time references on average. Analysis of average partial effects suggest forward-looking SBM commentary contains 2.01 fewer sentences with precise information on time horizon per 100 sentences than forward-looking commentary in reference sections, equivalent to a reduction of 14.1%. A similar result holds if I replace my aggregate measure of time references with the proportion of forward-looking sentences that refer to the long-term.

Column (3) in Table 3.9 contains results for net positive tone. Findings show that forward-looking SBM sentences are significantly more positive on average ( $p < 0.01$ ) than forward-looking sentences in the reference discourse. Estimating the model separately for positive and negative language in columns (4) and (5), respectively, indicates that net positivity is a consequence of more positive sentences rather than a lower incidence of negative sentences.<sup>31</sup> The evidence is inconsistent with policymakers' and practitioners' call for fair and balanced analysis (FRC, 2014b, para. 6.2-6.3; IIRC, 2013, p. 5).

Findings in Table 3.9 collectively lend further weight to claims of symbolic reporting. Forward-looking sentences in SBM discourse tend to provide less specific information, less analysis across time horizons, less discussion of the long-term, and less balanced (more positive) commentary. Accordingly, while SBM discourse displays greater forward-looking orientation, the nature of such statements tends to contradict best practice guidance. Taken

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<sup>30</sup> The same result is apparent if I restrict the *Specificity* measure to references to dates.

<sup>31</sup> Results are significant in terms of economic effects. I estimate that forward-looking SBM commentary is 5.9% more net positive than forward-looking commentary in reference sections. When looking at positive and negative language separately, I estimate that forward-looking SBM commentary contains 29.9% more negative language but 64.4% more positive language than forward-looking reference commentary.

together, results from my topic analysis in the previous section and my analysis of compliance with best practice reporting guidance in this section suggest that although management cover many of the themes that one expects to see in a useful analysis of value creation, the necessary levels of detail and critical reflection are absent. My evidence suggests that symbolism, rather than informative reporting, characterizes SBM discourse in the representative annual report.

### **3.7. Further analysis**

My tests so far focus on distinguishing between informative reporting, symbolism, and padding. With the evidence favouring symbolic reporting, my final set of tests seek evidence on the motives underlying symbolism in SBM discourse. I explore several alternative (but not necessarily mutually exclusive) explanations for why managers elect to report symbolically when discussing their strategy for creating and maintaining shareholder value. The first reason is that proprietary costs may constrain the amount of detail managers are willing to provide for fear of revealing valuable private information that would harm their firm's competitive advantage (Bini et al., 2023; Li et al., 2013; Verrecchia, 1983). The desire not to disclose proprietary information may encourage management to provide bland descriptions of strategy that offer few meaningful insights. The result may be disclosures that cover the general topics one might expect to see in a credible discussion of strategy and business model, but which lack the level of detail investors require to make fully informed decisions on value creation. I refer to this symbolic reporting motive as *bounded symbolism* because proprietary cost considerations act as limiting factor on the degree of detail management are able to provide. If bounded symbolism accounts for symbolic reporting, then I therefore expect the level of symbolism to be an increasing function of proprietary costs.

A second reason for symbolism has its roots in opportunism and obfuscation. To the extent an entity's strategy and business model is an implicit, unarticulated set of ideas in the

minds of the individuals who lead the entity, there is a risk that disclosures may simply provide a message that managers agree to tell outsiders when asked to explain their strategy rather than the fluid and uncertain set of ideas that actually drives the business (Langfield-Smith, 1997, p. 210). All else equal, the demand for symbolic reporting to camouflage the lack of formal policies and internal consensus on strategy and business model is likely to be higher when performance is weak and management competence is under the spotlight. SBM commentary that appears credible on the surface by incorporating popular themes, but which is ultimately thin on detail can help management shore up their legitimacy and deflect shareholder attention to other (external) reasons for poor performance. I label this symbolic reporting motive as *obfuscating symbolism*. If an obfuscation motive accounts for symbolic SBM reporting, then I expect symbolism to be higher for firms with weak earnings realizations.

I seek evidence on the alternative motives for symbolic SBM reporting using the following fractional regression (Papke and Wooldridge, 1996):

$$SBM\_Best_{pit} = \omega_0 + \omega_{1p} Competition_{it} + \omega_{2p} LOSS_{it} + \sum_{j=1}^J \theta_j Controls_{jit} + \varphi + \delta + \vartheta_{it} \quad (3.9)$$

$SBM\_Best$  is SBM best practice reporting feature  $p$  in SBM commentary in annual report  $I$ , where  $p$  is equal to *Specificity*; *Forward*; the number of sentences containing a long-term or short-term n-gram (*TimeHorizon*); the number of named entities scaled by the total number of words in forward-looking sentences ( $Specificity^{Forward}$ ); the number of forward-looking sentences containing a long-term or short-term n-gram scaled by the total number of forward-looking sentences ( $TimeHorizon^{Forward}$ ); and the net tone of phrases in forward-looking sentences scaled by the total number of words in forward-looking sentences ( $NetPositiveTone^{Forward}$ ).

I use *Competition* as my proxy for proprietary costs. I define *Competition* as the (scaled) text-based measure of competition from Li et al. (2013) applied to the narrative component of annual reports (excluding governance and remuneration sections). I interpret  $\hat{\omega}_1 > 0$  as evidence supporting the bounded symbolism motive. My proxy for weak performance realizations is *LOSS*, which is an indicator variable equal to one for firm-years where earnings from continuing operations is negative, and zero otherwise. I interpret  $\hat{\omega}_2 > 0$  as evidence consistent with obfuscating symbolism. Equation (3.9) includes a vector of  $J$  control variables (*Controls*) that prior research associates with symbolic reporting and legitimatisation. *Controls* comprises the number of reportable business lines (*NSEG*) and the number of geographic segments (*NGEO*) as proxies for business complexity, the change in accounting performance ( $\Delta ROA$ ), stock returns for the 12-month period ending in the month of the fiscal year-end (*Returns*), the natural log of market capitalization (*Size*), the natural log of the length of the SBM section (*SBMwords*), and an indicator for reporting regime (*MainMarket*) that equals one for firm-years with an LSE Main Market listing and zero for firm-years with an AIM listing. I also include industry ( $\varphi$ ) and year ( $\delta$ ) fixed effects.

Table 3.10 presents the results for estimations of equation (3.9). I find strong support for the bounded symbolism motive. I find an increase in *Competition* is associated with lower specificity in column (2), less focus on the long term in column (4), and less precision about time horizon both throughout SBM commentary [column (3)] and in discussions of the future [column (6)]. Coefficients for *Competition* in remaining columns are insignificant. Collectively, these results are consistent with proprietary cost considerations as a key determinant of symbolic reporting.

Results in Table 3.10 provide weaker support for the obfuscating symbolism motive. *LOSS* loads negatively and significantly ( $p < 0.05$ ) in models (1) and (4), indicating loss-making is associated with a lower degree of specificity and less focus on the long term. I find



no difference in the precision about time horizon for loss-making firms in model (3). However, in model (2) where *Forward* is the dependent variable, I find the *LOSS* coefficient is positive and significant ( $p < 0.01$ ) which implies SBM commentary in annual reports of loss-making firms contains proportionately more forward-looking commentary. Interestingly, results for models (5) through (7) suggest no significant difference in the properties of forward-looking sentences between profit- and loss-making firms. Together, these results imply loss-making firms tend to (a) obfuscate when discussing the present or the past but (b) talk proportionately more about the future, and (c) provide the same level of clarity when discussing the future as profit-making firms.<sup>32</sup>

Why loss-making firms seemingly obfuscate SBM reporting when discussing the present and the past yet discuss more about the future with no loss of detail is an open question. On the one hand, prior literature argues that firms are incentivised to obfuscate when realised performance is poor (Bushee et al., 2018; Li, 2008) and manage impressions by showing the firm in a positive light by focusing more on the future (Asay et al., 2018; Curtis, 2004). This view therefore questions the value of forward-looking statements in the context of SBM commentary (e.g., Melloni et al., 2016). On the other hand, the corporate turnaround literature finds that firms experiencing a downturn in performance are more likely to undergo strategic change, such as a reorientation of operations or cutbacks to gain efficiency (Barker and Duhaime, 1997; Schendel et al., 1976). It follows that poor performing firms choosing to report

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<sup>32</sup> In untabulated analyses, I assess the sensitivity of my findings to alternative design choices. First, I check robustness to alternative symbolism proxies. Replacing *Competition* with an indicator variable (*RD\_Binary*) equal to one where R&D intensity is positive and zero otherwise yields similar results. Exceptions are that the negative loadings in model (4) and (6) lose significance while I find a positive and marginally significant ( $p < 0.1$ ) loading in model (7) where *NetPositiveTone<sup>Forward</sup>* is the dependent variable. Alternatively, I replace *LOSS* with *PROP\_LOSS* which is defined as the proportion of years from time  $t-3$  up to and including time  $t$  for which the firm is loss-making from continuing operations. Results are the same except I find a negative coefficient ( $p < 0.01$ ) in model (3) where *TimeHorizon* is the dependent variable and a positive coefficient ( $p < 0.1$ ) in model (7) where *NetPositiveTone<sup>Forward</sup>* is the dependent variable. Second, I rerun the regressions using (a) OLS and (b) generalized estimating equations. Results are very similar. Third, I estimate equation (3.9) for the bounded symbolism and obfuscating symbolism motives separately. Results are again very similar.

informatively may focus more on the future in SBM commentary to provide users with relevant information.

To distinguish between these perspectives, I examine the ability of forward-looking statement tone in SBM commentary to predict future earnings. If the tone of forward-looking sentences is (un)informative then it should (not) predict future earnings. Following prior literature (e.g., Coulton et al., 2014; Li et al., 2013), I estimate the following OLS regressions:

$$\begin{aligned}
Earn_{i,t+\tau} = & \rho_0 + \rho_1 NetPositiveTone^{Forward}_{it} + \rho_2 LOSS_{it} \\
& + \rho_3 LOSS \times NetPositiveTone^{Forward}_{it} + \sum_{k=1}^K \rho_j Controls_{kit} \\
& + \varphi + \delta + \varepsilon_{it},
\end{aligned} \tag{3.10}$$

$$\begin{aligned}
Earn_{i,t+\tau} = & \rho_0 + \rho_1 NetPositiveTone^{Forward}_{it} + \rho_2 LOSS_{it} \\
& + \rho_3 LOSS \times NetPositiveTone^{Forward}_{it} + \rho_4 Earn_{it} \\
& + \sum_{k=1}^K \rho_j Controls_{kit} + \varphi + \delta + \varepsilon_{it}
\end{aligned} . \tag{3.11}$$

$Earn_{i,t+\tau}$  is earnings from continuing operations scaled by opening book value of total assets at one-, two- and three-year ahead horizons.  $NetPositiveTone^{Forward}$  is net tone of phrases in forward-looking sentences scaled by the total number of words in forward-looking sentences.  $LOSS$  is an indicator variable equal to one for firm-years where earnings from continuing operations is negative, and zero otherwise. I interpret  $\hat{\rho}_1 > 0$  as evidence that the tone of forward-looking SBM commentary is predictive for future earnings. I interpret  $\hat{\rho}_2 > 0$  as evidence consistent with future earnings of loss-making firms being higher than profit-making firms. For my coefficient of interest, I interpret  $\hat{\rho}_3 > 0$  as evidence that the tone of forward-

looking SBM commentary is incrementally more informative for loss-making firms. I include a battery of controls associated with future earnings predictability (*BookToMarket*, *Leverage*, *Returns*, *Size*, *NSEG*, *NGEO*, *SBMwords* and *MainMarket*) as well as industry ( $\varphi$ ) and year ( $\delta$ ) fixed effects. Equation (3.11) extends equation (3.10) by controlling for contemporaneous earnings performance ( $Earn_{i,t}$ ).

Table 3.11 presents the results. Columns (1) through (3) estimate equation (3.10). I find  $\hat{\rho}_1$  is negative ( $p < 0.05$ ) when predicting one-year ahead earnings, indicating profit-making firms that are more positive when discussing the future in their SBM commentary tend to perform worse in the next period. Estimates of  $\hat{\rho}_1$  are insignificant for two- and three-year ahead earnings, consistent with the tone of forward-looking statements containing little incremental predictive information about future earnings over the longer-term for profit firms. Estimates of  $\hat{\rho}_2$  are negative ( $p < 0.01$ ) in all three models, suggesting loss-making firms continue to realize lower performance than profit-making firms over all three horizons.

My coefficient of interest,  $\hat{\rho}_3$ , loads positively with one-year ahead ( $p < 0.05$ ), two-year ahead ( $p < 0.01$ ), and three-year ahead earnings ( $p < 0.1$ ). In the final row of Table 3.11, I test if the linear combination of ( $NetPositiveTone^{Forward} + NetPositiveTone^{Forward} \times LOSS$ ) is also positive and confirm that it is for one-year ahead and two-year ahead earnings at the  $p < 0.01$  level. These results indicate that rather than being less useful when obfuscation incentives are high, the tone of forward-looking statements has incremental predictive power. I repeat the analysis in columns (4) to (6) after controlling for contemporaneous earnings. I find  $\hat{\rho}_3$  and the linear combination of ( $NetPositiveTone^{Forward} + NetPositiveTone^{Forward} \times LOSS$ ) remain positive for all horizons, although only with two-year ahead earnings is the coefficient significant ( $p < 0.05$ ).<sup>33</sup> While the significance of the incremental predictive ability of tone in forward-looking

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<sup>33</sup> Sensitivity tests (untabulated) confirm similar results when using alternative definitions of earnings, such as replacing earnings from continuing operations with either net income before extraordinary items or operating income, or to scaling earnings figures by either closing book value of assets or average book value of assets.

sentences for loss firms is therefore sensitive to model specification, there is no evidence that forward-looking tone is any less useful compared with profit firms. The results are not consistent with obfuscation by poorly performing firms when discussing the future.

Collectively, my analysis indicates that proprietary cost considerations are a key determinant of symbolic reporting. I find firms with incentives to obfuscate limit the detail and informativeness of SBM commentary when discussing current or past events. However, my evidence reveals that forward-looking statements are incrementally *more predictive* when obfuscation incentives are high. The result suggests weaker performers are more inclined to provide useful information about the future in their SBM commentary, possibly in an effort to re-establish credibility with investors.

### **3.8. Conclusions**

I study the form disclosures take when management are encouraged or required to explain in their annual report how they create and maintain shareholder value. Pressure has been mounting from regulators and industry representatives over the last decade for firms to provide greater transparency about their strategy and business model (EU, 2017; FRC, 2019; IASB, 2021; IIRC, 2011; SEC, 2020). While proponents argue that information on the value creation process is central to both effective financial reporting and a broader understanding of firms' impact beyond capital markets, sceptics believe that such disclosures are unlikely to offer the type of objective insights and critical analysis that users require to support decision making. Despite these concerns and the increasing space allocated to such commentary in firms' annual reports, large sample evidence on the properties and of such disclosures remains elusive.

I construct the first large sample corpus of annual report commentary on strategy and business model from a population of over 14,000 firm-year reports published between 2006

and 2018 by UK non-financial firms listed on the London Stock Exchange. The sample period covers various reporting regimes during which time the level of mandatory reporting on strategy and business model increased steadily. I use an algorithm that searches the contents of firms' PDF annual reports to identify sections whose primary focus relates to business model and strategy. My search yields 7,116 firm-year disclosures on strategy and business model, and a corpus of over eight million words. I use this sample to differentiate between three reporting outcomes: *padding*, where management provide generic commentary that provides little meaningful information on value creation; *symbolic reporting*, where management discuss common themes from the strategy literature to establish their credibility and authenticity but where the average quality of commentary around these themes tends to be vague and superficial; and *informative reporting*, where management provide meaningful analysis of the type users require to make useful resource allocation decisions.

Findings from my first set of analyses discount the *padding* perspective. I find disclosure on value creation speaks to the topics one expects to see in a meaningful explanation of strategy and business model. Such disclosure is salient to SBM sections and displays substantial variation across industries, firms, and reports. However, the nature of the discussion falls short of the standards that disclosure experts highlight as being necessary to deliver the most value to annual report readers. On average, SBM disclosure fails to provide specific information or focus sufficiently on the long term. Based on this evidence, I conclude that attempts by regulators to encourage or force management to articulate their value creation approach have only partially succeeded. Although there is little doubt that disclosures in aggregate provide useful information on product markets, competitive forces, and firms' perceived comparative advantage, the average quality of insights is below the level regulators and stakeholder representatives are seeking. In further analyses, I probe more deeply into the motives for symbolic reporting in this context. I find that competitive constraints in the form of proprietary

costs explain why actual reporting quality falls short of the gold standard. My results also reveal a more nuanced relation between poor realized performance and SBM disclosures, where commentary on the past is obfuscated yet discussion about the future is more informative.

## Appendix 3.1 – Variable definitions

### Best practice properties

Specificity	Specificity is the total number of named entities scaled by the total number of words.
ForwardLooking	ForwardLooking is the number of sentences containing forward-looking n-grams (defined in Appendix 3.4) scaled by the total number of sentences.
LongTerm	LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences.
ShortTerm	ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences.
TimeHorizon	TimeHorizon is the number of sentences containing a long-term or short-term ngram (as defined by Brochet et al. (2015)) scaled by the total number of forward-looking sentences.
NetLongTerm	NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences.
Specificity <sup>Forward</sup>	Specificity <sup>Forward</sup> is the total number of named entities scaled by the total number of words in forward-looking sentences.
TimeHorizon <sup>Forward</sup>	TimeHorizon <sup>Forward</sup> is the total number of forward-looking sentences containing a long-term or short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of forward-looking sentences.
PositiveTone <sup>Forward</sup>	PositiveTone <sup>Forward</sup> is the total number of phrases identified as being positive using the bigram list provided by Garcia et al. (2023) scaled by the total number of words.
NegativeTone <sup>Forward</sup>	NegativeTone <sup>Forward</sup> is the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023) scaled by the total number of words.
NetPositiveTone <sup>Forward</sup>	NetPositiveTone <sup>Forward</sup> is the total number of phrases in forward-looking sentences identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in forward-looking sentences.

### Symbolism proxies

Competition	Competition is the (scaled) text-based measure of competition from Li et al. (2013) applied to the narrative component of annual reports (excluding governance and remuneration sections).
RD_Binary	RD_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise.
LOSS	LOSS is a binary variable taking a value of one where the firm is loss-making from continuing operations.
PROP_LOSS	PROP_LOSS is the proportion of years from time t-3 up to and including time t for which the firm is loss-making from continuing operations.

### Return predictability tests

Earn <sub>t</sub>	Earn <sub>t</sub> is earnings from continuing operations scaled by opening book value of total assets.
Earn <sub>t+1</sub>	Earn <sub>t+1</sub> is earnings from continuing operations scaled by opening book value of total assets at one-year ahead horizon.

Earn <sub>t+2</sub>	Earn <sub>t+2</sub> is earnings from continuing operations scaled by opening book value of total assets at two-year ahead horizon.
Earn <sub>t+3</sub>	Earn <sub>t+3</sub> is earnings from continuing operations scaled by opening book value of total assets at three-year ahead horizon.
<u>Control variables</u>	
NSEG	NSEG is the natural log of the number of business segments.
NGEO	NGEO is the natural log of the number of geographic segments.
ΔROA	ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets.
Returns	Returns is the 12-month return for the period ending in the month of the financial year end.
Size	Size is natural logarithm of market capitalization at financial year end.
SBMwords	SBMwords is the natural log of the total number of words in annual report sections identified as being related to strategy and business model.
MainMarket	MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise.
BookToMarket	BookToMarket is the book value or equity scaled by the market value of equity.
Leverage	Leverage is total debt divided by total equity.



### Appendix 3.2 – Word intrusion task

		Model:					
		(1)	(2)	(3)	(4)	(5)	(6)
Algorithm		Gensim	Mallet	Mallet	Mallet	Mallet	Mallet
No. Topics		8	16	22	30	40	56
Coherence		0.5865	0.5857	0.5925	0.5822	0.5711	0.5624
Score (%):	Coder 1	63%	81%	77%	73%	68%	73%
	Coder 2	100%	100%	91%	83%	95%	80%
	Coder 3	63%	100%	86%	83%	83%	78%
	Average	75%	94%	85%	80%	82%	77%

Appendix 3.2 presents the results from the word intrusion test. Each column represents a different candidate model. Algorithm is the algorithm used to estimate the topic model. No. Topics is the assumed number of latent topics provided exogenously to the model. Coherence is the coherence score as calculated using the  $C_v$  metric (Röder et al., 2015). Score (%) is the proportion of topics for which the intruder word is correctly identified by each coder. The intrusion test involves three coders independently receiving a set of six words for topics in each candidate model. Five words represent the top five most salient words to the topic and the sixth word is an intruder. The intruder word is drawn at random from the 15% least probable words for the given topic that also appear in the top 20 most common words in at least one other topic. I randomise the order of the six words and the order in which the topics are presented to each coder. The extent that coders working independently are able to identify intruder words indicates the interpretability of the topic.

### Appendix 3.3 – Topic-level analysis

In my main tests I assess the degree of industry- and firm-level uniqueness with a variance decomposition analysis using aggregate themes. Recall from equation (3.2) in the main text I estimate the following regression:

$$Topic\_Agg_{i,j} = \delta + \varphi + \phi + v_i, \quad (3.2)$$

where  $Topic\_Agg$  is the aggregated number of weighted words relating to LDA topic  $j$  in SBM sections in report  $i$ ;  $\delta$ ,  $\varphi$  and  $\phi$  represent time, industry, and firm fixed effects, respectively; and  $v$  is a regression residual. I interpret results as being inconsistent with padding if firm, and to a lesser extent industry, fixed effects account for a substantial fraction of the variance in my aggregate topic proxies. For completeness, in this appendix I rerun the uniqueness tests at the topic (rather than theme) level.

I present results in Table A.3.3.1. Consistent with my aggregate theme analysis, I find that time fixed effects explain a small fraction of the variation in commentary that ranges from 0.2% for the *Financial risk* topic theme to 2.7% for the *Mining* topic. The low degree of variation explained by time is consistent with stickiness in strategic objectives and business models over short horizons. The degree of variation explained by industry effects (at the Datastream Level 4 level) varies substantially across topics. I find Industry effects explain a substantial proportion of variation in sector-specific topics, such as 33.2% for the *Construction* topic and 45.5% for the *Defence* topic. The degree of variation explained by industry effects ranges between 28.9% and 3.1% for remaining topics. The interaction of industry and time fixed effects account for a further 1.4% to 11.6%. The remaining variation in weighted word count plays out at the firm-level rather than at the level of the sector or the economy as a whole. The minimum variation at the firm-level is 51.2% and the maximum over 90%. Generally, a greater proportion of variation is explained by permanent differences across firms in their

sector (with average 55.8% across all topics) than transitory differences across firms within their industry (with average 23.8%).

In Table A.3.3.2, I repeat the analysis using the complementary HLM approach. I continue to find variation across industries explain substantial variation in sector-specific topics, such as 37% of the *Defence* topic and 34% of the *Energy* topic. The degree of variation explained by Industry effects for remaining topics ranges between single digits to 40% for the *Differentiation* topic. For 36 out of 40 topics, I find a greater degree of variation is explained by variation across firms within the same industry. The only exceptions are *Energy*, *Defence*, *Differentiation* and *Operations*. The degree of variation explained by permanent differences across firms within industries ranges from 27% to 65% (*Infrastructure*). Other internal resources topics score highly, such as *Logistics* and *Experience*. In contrast to the variance decomposition, results from the HLM analysis suggest within-firm variation generally explains a greater proportion of variation than permanent differences. On average across all topics, variation within firms accounts for 45% relative to 39% for differences across firms.

Overall, findings in Table A.3.3.1 and Table A.3.3.2 are consistent with the view that firms tailor their SBM annual report commentary to reflect their idiosyncratic circumstances and value creation approach, and to a lesser degree the competitive forces of the sector in which they operate. The rank ordering of firm, industry and time effects is in line with the pattern one might expect to observe for meaningful strategy-related commentary. Evidence of substantial firm-level uniqueness and meaningful industry-level uniqueness in SBM discourse does not support the padding perspective. Instead, findings offer support that strategy and business model discourse reflects the core markets in which firms operate and the technologies that are key to success in those markets.

**Table A.3.3.1 – Variance decomposition of individual SBM topics**

	LDA Topic								
<i>Panel A: Aggregate SBM theme is <u>External Environment</u></i>									
	Energy	Drilling	Mining	Construction	Infrastructure	Defence	Healthcare	Geography	Industry
Time	0.59%	1.16%	2.65%	0.79%	0.59%	0.50%	1.07%	1.26%	1.65%
Industry	23.97%	23.01%	13.93%	33.22%	12.12%	45.47%	20.17%	12.18%	4.50%
Time_x_Industry	5.82%	2.94%	1.86%	4.11%	3.42%	2.80%	1.44%	6.38%	5.59%
"Firm level"	69.61%	72.89%	81.56%	61.89%	83.86%	51.23%	77.33%	80.18%	88.27%
Permanent differences across firms within sectors (Firm FE)	57.97%	49.97%	60.49%	43.85%	72.93%	42.39%	64.28%	59.06%	62.76%
Transitory differences across firms within sectors (residual)	11.64%	22.92%	21.07%	18.04%	10.93%	8.84%	13.05%	21.12%	25.51%
	Competition	Differentiation	Acquisition	Partner	Contract	Supplier	Client	Platform	Experience
Time	0.86%	0.66%	0.50%	0.97%	0.82%	0.29%	0.24%	0.42%	0.25%
Industry	15.87%	28.02%	8.10%	14.39%	16.18%	5.43%	9.37%	28.88%	9.56%
Time_x_Industry	4.50%	7.87%	6.92%	6.07%	4.48%	9.54%	3.12%	4.25%	3.86%
"Firm level"	78.77%	63.45%	84.48%	78.57%	78.52%	84.75%	87.26%	66.45%	86.34%
Permanent differences across firms within sectors (Firm FE)	61.67%	48.08%	63.19%	48.11%	59.93%	53.29%	67.28%	44.90%	72.36%
Transitory differences across firms within sectors (residual)	17.10%	15.37%	21.29%	30.46%	18.59%	31.46%	19.99%	21.55%	13.98%

**Table A.3.3.1 continued**

*Panel B: Aggregate SBM theme is Internal Environment*

	Innovation	Facilities	Logistics	Operations	Efficiency	Leadership	Expertise	Digital	Network	Solution
Time	0.23%	0.33%	0.98%	0.42%	0.63%	1.25%	0.56%	1.68%	1.06%	0.52%
Industry	27.10%	5.53%	11.68%	19.83%	6.52%	8.67%	7.92%	18.60%	18.91%	12.93%
Time_x_Industry	6.29%	8.03%	5.17%	5.61%	7.66%	7.93%	6.24%	3.67%	9.08%	6.38%
"Firm level"	66.38%	86.11%	82.17%	74.14%	85.19%	82.15%	85.28%	76.05%	70.96%	80.17%
Permanent differences across firms within sectors (Firm FE)	49.26%	59.89%	67.23%	51.49%	55.34%	61.63%	57.15%	52.58%	53.85%	59.17%
Transitory differences across firms within sectors (residual)	17.12%	26.22%	14.95%	22.65%	29.85%	20.52%	28.13%	23.46%	17.11%	21.00%

*Panel C: Aggregate SBM theme is Performance & Reporting*

	Net income	CI	APM	Balance Sheet	Reporting	CSR	Workforce	General risk	Financial risk
Time	0.49%	0.44%	1.46%	0.27%	0.71%	0.91%	1.26%	0.59%	0.17%
Industry	3.23%	8.15%	9.81%	5.57%	4.67%	8.78%	7.91%	3.57%	5.23%
Time_x_Industry	7.65%	11.28%	9.40%	18.87%	5.67%	6.11%	6.34%	6.78%	11.60%
"Firm level"	88.63%	80.14%	79.33%	75.29%	88.95%	84.20%	84.50%	89.07%	83.01%
Permanent differences across firms within sectors (Firm FE)	62.28%	50.34%	51.43%	35.19%	60.75%	51.43%	57.95%	54.64%	52.35%
Transitory differences across firms within sectors (residual)	26.34%	29.80%	27.90%	40.09%	28.21%	32.76%	26.55%	34.43%	30.66%

**Table A.3.3.1** *continued*

*Panel D: Aggregate SBM theme is Governance*

	Board	Remuneration	Shareholders
Time	0.43%	0.68%	0.94%
Industry	4.20%	3.09%	10.97%
Time_x_Industry	4.52%	5.23%	5.17%
"Firm level"	90.86%	90.99%	82.92%
Permanent differences across firms within sectors (Firm FE)	51.57%	40.06%	62.85%
Transitory differences across firms within sectors (residual)	39.29%	50.93%	20.07%

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Table A.3.3.1 presents the variance decomposition of topic intensity. Columns decompose variation in the weighted word count conditional on the LDA topic being classified as material to the annual report. An LDA topic  $z$  as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse.

**Table A.3.3.2 – Hierarchical linear modelling of individual SBM topics**

	LDA Topic									
<i>Panel A: Aggregate SBM theme is External Environment</i>										
	Energy	Drilling	Mining	Construction	Infrastructure	Defence	Healthcare	Geography	Industry	
Intercept AIC	72251.97	76142.63	79902.2	78216.21	80871.89	78617.76	75553.07	70414.67	70115.59	
Firm AIC	68007.29	72652.1	75163.29	75689.58	71918.6	72759.26	70841.15	67225.51	68164.95	
Industry AIC	70874.28	73389.25	77589.44	76986.83	80546.55	75524.79	73356.56	70184.97	70062.51	
Full AIC	67718.42	71941.99	74608.3	75374.34	71890.03	72322.9	70313.68	67211.3	68162.59	
% within Firm	31.92%	40.72%	39.11%	45.86%	24.00%	33.78%	33.62%	46.81%	54.06%	
% within Industry	33.92%	32.70%	37.67%	29.48%	64.92%	29.23%	39.48%	43.62%	40.94%	
% across Industry	34.17%	26.58%	23.22%	24.66%	11.08%	36.99%	26.90%	9.58%	5.00%	
	Competition	Differentiation	Acquisition	Partner	Contract	Supplier	Client	Platform	Experience	
Intercept AIC	76854.92	72039.68	68490.48	73293.78	74076.93	64583.32	73675.68	75762.64	74522.64	
Firm AIC	72825.22	68281.3	65187.95	71558.09	70299.69	62376.77	69933.79	70868.89	71143.08	
Industry AIC	75880.32	69774.37	68023.16	72926.7	73232.28	64279.76	72912.2	73359.61	74139.07	
Full AIC	72662.55	67890.57	65116.77	71446.92	70157.08	62298.06	69757	70369.18	71075.54	
% within Firm	42.58%	32.65%	44.40%	46.00%	42.03%	47.05%	43.56%	33.13%	42.30%	
% within Industry	39.93%	27.25%	42.11%	40.65%	39.22%	40.10%	42.77%	35.60%	45.34%	
% across Industry	17.49%	40.10%	13.49%	13.35%	18.75%	12.85%	13.67%	31.27%	12.36%	
<i>Panel B: Aggregate SBM theme is <u>Internal Environment</u></i>										
	Innovation	Facilities	Logistics	Operations	Efficiency	Leadership	Expertise	Digital	Network	Solution
Intercept AIC	68860.49	68180.85	75640.7	73909.24	72227.53	74552.26	70282.27	78692.6	73601.32	73394.98
Firm AIC	65336.83	66208.79	69960.87	70791.55	70644.33	71940.16	68191.42	76463.35	70690.39	70356.26
Industry AIC	67454.77	67929.5	75448.23	72043.79	72130.85	74179.87	69959.71	77706.66	72226.53	71971.01
Full AIC	65011.78	66148.19	69947.8	70363.18	70630.39	71910.78	68136.19	76192.38	70388.7	69980.15
% within Firm	37.57%	47.71%	41.06%	37.93%	54.91%	47.07%	50.29%	49.21%	38.00%	40.99%
% within Industry	39.58%	39.77%	51.28%	29.55%	37.54%	39.01%	36.95%	33.57%	31.05%	37.62%
% across Industry	22.85%	12.52%	7.66%	32.52%	7.55%	13.92%	12.76%	17.23%	30.95%	21.39%

**Table A.3.3.2** *continued*

*Panel C: Aggregate SBM theme is Performance & Reporting*

	Net income	CI	APM	Balance Sheet	Reporting	CSR	Workforce	General risk	Financial risk
Intercept AIC	69881.12	74607.35	69014.95	76133.44	65757.81	79537.2	75309.37	74488.45	68935.83
Firm AIC	67763.78	73168.43	66167.12	75332.08	63869.67	77723.34	73411.2	72380.19	67589.93
Industry AIC	69675.58	74428.42	68627.61	76109.24	65653.87	79153.57	74973.47	74352.08	68925.01
Full AIC	67716.9	73132.52	66127.27	75332.3	63861.46	77691.2	73348.77	72366.82	67591.93
% within Firm	45.56%	52.60%	44.57%	58.70%	47.59%	50.75%	51.20%	46.53%	56.34%
% within Industry	44.49%	37.05%	39.64%	37.21%	45.06%	34.68%	35.38%	45.45%	43.66%
% across Industry	9.95%	10.35%	15.79%	4.10%	7.36%	14.56%	13.42%	8.01%	0.00%

*Panel D: Aggregate SBM theme is Governance*

	Board	Remuneration	Shareholders
Intercept AIC	76301.47	82702.59	69866.45
Firm AIC	75752.09	82069.27	67153.83
Industry AIC	76293.52	82684.27	69544.39
Full AIC	75754.09	82071.22	67121.3
% within Firm	65.27%	63.67%	48.12%
% within Industry	34.73%	34.56%	38.90%
% across Industry	0.00%	1.77%	12.99%

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Table A.3.3.2 presents results from the hierarchical modelling analysis of SBM themes. The dependent variable is the weighted word count of discussion on each LDA topic  $z$  in annual report  $i$ . Intercept AIC is the Akaike information criterion for an intercept-only model. Firm AIC is the Akaike information criterion for a model with an intercept and firm random effects. Industry AIC is the Akaike information criterion for a model with an intercept and industry random effects. Full AIC is the Akaike information criterion for a model with an intercept and both firm and industry random effects. Industry is defined as Datastream Level 4 industry codes.



### Appendix 3.4 – Custom forward-looking word list

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also aim	and anticipate	are anticipated	are targeted	but projects	company seeks	currently believing
also aims	and anticipates	are anticipating	are targeting	but seek	company targets	currently commit
also anticipate	and assume	are assumed	are willing	but seeks	corporation aims	currently commits
also anticipates	and assumes	are assuming	assume	but target	corporation anticipates	currently committed
also assume	and commit	are believed	assumes	but targets	corporation assumes	currently committing
also assumes	and commits	are believing	believe	can	corporation commits	currently envisaged
also commit	and estimate	are committed	believes	coming financial year	corporation estimates	currently envisaging
also commits	and estimates	are committing	but aim	coming financial years	corporation expects	currently estimate
also estimate	and expect	are envisaged	but aims	coming fiscal	corporation forecasts	currently estimated
also estimates	and expects	are envisaging	but anticipate	coming month	corporation foresees	currently estimates
also expect	and forecast	are estimated	but anticipates	coming months	corporation hopes	currently estimating
also expects	and forecasts	are estimating	but assume	coming period	corporation intends	currently expect
also forecast	and foresee	are expected	but assumes	coming quarter	corporation plans	currently expected
also forecasts	and foresees	are expecting	but commit	coming quarters	corporation projects	currently expecting
also foresee	and hope	are forecasted	but commits	coming year	corporation seeks	currently expects
also foresees	and hopes	are forecasting	but estimate	coming years	corporation targets	currently forecast
also hope	and intend	are foreseeing	but estimates	commit	could	currently forecasted
also hopes	and intends	are foreseen	but expect	commits	currently aim	currently forecasting
also intend	and plan	are hoped	but expects	company aims	currently aimed	currently forecasts
also intends	and plans	are hoping	but forecast	company anticipates	currently aiming	currently foresee
also plan	and project	are intended	but forecasts	company assumes	currently aims	currently foreseeing
also plans	and projects	are intending	but foresee	company commits	currently anticipate	currently foreseen
also project	and seek	are planned	but foresees	company estimates	currently anticipated	currently foresees
also projects	and seeks	are planning	but hope	company expects	currently anticipates	currently hope
also seek	and target	are predicted	but hopes	company forecasts	currently anticipating	currently hoped
also seeks	and targets	are predicting	but intend	company foresees	currently assume	currently hopes
also target	anticipate	are projected	but intends	company hopes	currently assumed	currently hoping
also targets	anticipates	are projecting	but plan	company intends	currently assumes	currently intend
and aim	are aimed	are seeking	but plans	company plans	currently assuming	currently intended
and aims	are aiming	are sought	but project	company projects	currently believed	currently intending

**Appendix 3.4** *continued*

currently intends	do not plan	firm foresees	intends	is projecting	normally aim	not anticipated
currently plan	do not project	firm hopes	is aimed	is seeking	normally aims	not anticipating
currently planned	do not seek	firm intends	is aiming	is sought	normally anticipate	not assumed
currently planning	do not target	firm plans	is anticipated	is targeted	normally anticipates	not assuming
currently plans	does not aim	firm projects	is anticipating	is targeting	normally assume	not believed
currently predicted	does not anticipate	firm seeks	is assumed	is willing	normally assumes	not believing
currently predicting	does not assume	firm targets	is assuming	likely	normally commit	not committed
currently project	does not commit	following fiscal	is believed	look ahead	normally commits	not committing
currently projected	does not estimate	following month	is believing	look forward	normally estimate	not envisaged
currently projecting	does not expect	following months	is committed	management aims	normally estimates	not envisaging
currently projects	does not forecast	following period	is committing	management anticipates	normally expect	not estimated
currently seek	does not foresee	following periods	is envisaged	management assumes	normally expects	not estimating
currently seeking	does not hope	following quarter	is envisaging	management commits	normally forecast	not expected
currently seeks	does not intend	following quarters	is estimated	management estimates	normally forecasts	not expecting
currently sought	does not plan	following year	is estimating	management expects	normally foresee	not forecasted
currently target	does not project	following years	is expected	management forecasts	normally foresees	not forecasting
currently targeted	does not seek	foresee	is expecting	management foresees	normally hope	not foreseeing
currently targeting	does not target	foresees	is forecasted	management hopes	normally hopes	not foreseen
currently targets	envisage	forthcoming	is forecasting	management intends	normally intend	not hoped
currently willing	envisages	future	is foreseeing	management plans	normally intends	not hoping
do not aim	eventual	incoming fiscal	is foreseen	management projects	normally plan	not intended
do not anticipate	expect	incoming month	is hoped	management seeks	normally plans	not intending
do not assume	expects	incoming months	is hoping	management targets	normally project	not planned
do not commit	firm aims	incoming period	is intended	may	normally projects	not planning
do not estimate	firm anticipates	incoming periods	is intending	might	normally seek	not predicted
do not expect	firm assumes	incoming quarter	is planned	next fiscal	normally seeks	not predicting
do not forecast	firm commits	incoming quarters	is planning	next month	normally target	not projected
do not foresee	firm estimates	incoming year	is predicted	next period	normally targets	not projecting
do not hope	firm expects	incoming years	is predicting	next quarter	not aimed	not seeking
do not intend	firm forecasts	intend	is projected	next year	not aiming	not sought

**Appendix 3.4** *continued*

not targeted	now expecting	now projects	still aims	still foreseen	still targets	upcoming years
not targeting	now forecast	now seeking	still anticipated	still hope	still willing	we aim
not willing	now forecasted	now sought	still anticipating	still hoped	subsequent	we anticipate
now aim	now forecasting	now target	still assumed	still hopes	subsequent fiscal	we assume
now aimed	now forecasts	now targeted	still assuming	still hoping	subsequent month	we commit
now aiming	now foreseeing	now targeting	still believed	still intended	subsequent months	we estimate
now aims	now foreseen	now targets	still believing	still intending	subsequent period	we expect
now anticipated	now hope	now willing	still committed	still plan	subsequent periods	we forecast
now anticipating	now hoped	optimistic	still committing	still planned	subsequent quarter	we foresee
now assumed	now hopes	outlook	still envisaged	still planning	subsequent quarters	we hope
now assuming	now hoping	predict	still envisaging	still plans	subsequent year	we intend
now believed	now intended	predicts	still estimate	still predicted	subsequent years	we plan
now believing	now intending	prospect	still estimated	still predicting	unlikely	we project
now committed	now plan	seek	still estimates	still project	upcoming	we seek
now committing	now planned	seeks	still estimating	still projected	upcoming fiscal	we target
now envisaged	now planning	shall	still expected	still projecting	upcoming month	will
now envisaging	now plans	shortly	still expecting	still projects	upcoming months	year ahead
now estimate	now predicted	should	still forecast	still seeking	upcoming period	years ahead
now estimated	now predicting	soon	still forecasted	still sought	upcoming periods	
now estimates	now project	still aim	still forecasting	still target	upcoming quarter	
now estimating	now projected	still aimed	still forecasts	still targeted	upcoming quarters	
now expected	now projecting	still aiming	still foreseeing	still targeting	upcoming year	

*Panel B: Exclusions*

did anticipate	did commit	did intend	did not anticipate	did not commit	did not foresee	did not seek
did assume	did expect	did seek	did not assume	did not expect	did not intend	did not envisage
did believe	did foresee	did envisage	did not believe			

Appendix 3.4 provides the list of n-grams used to classify sentences as containing forward-looking information. I classify a sentence as forward-looking if it contains one or more n-grams from the inclusion list. I do not classify sentences as forward-looking if the forward-looking n-gram forms one of the n-grams in the exclusion list. For example, the sentence "we did anticipate prices to increase" would not be classified as forward-looking as the only forward-looking n-gram ("anticipate") forms an n-gram from the exclusion list ("did anticipate").

### Appendix 3.5 – Time horizon word list adjusted from Brochet et al. (2015)

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*Panel A:* Long term

long-term	longterm	long run	years	annually	looking ahead	outlook
long term	long-run	longrun	annual	look ahead		

*Panel B:* Short term

days	short-run	shortrun	short term	weeks	months	quarters
daily	short run	short-term	shortterm	weekly	monthly	quarterly

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Appendix 3.5 presents the word lists constructed by Brochet et al. (2015) used to classify sentences as long-term or short-term. A sentence containing an n-gram from the long- (short-) term list is classified as a sentence with long (short) term perspective. Sentences containing n-grams from both lists are not classified as either long-term or short-term.

### **Appendix 3.6 – Details on the pre-processing pipeline**

My tests require a representative corpus of SBM annual report discourse and a reference corpus of general annual report language. I use the algorithm from El-Haj et al. (2020) to extract document structure and content from annual reports published as PDF files by LSE firms during the period 2006 through 2018. I filter reports to ensure only valid data is analysed. I omit reports where (i) the tool has not processed or downloaded the report, (ii) the report is in a foreign language or is a regulatory document, (iii) the report is booklet-based, (iv) the report has less than 2000 words, (v) more than 10% of sections are empty, (vi) the financial year is shorter (longer) than 9 (15) months, (vii) the number of words or pages in the front or rear portions are below percentile 1, (viii) fog index in the front portion is above percentile 99, and (ix) the number of pages or words differs from the sum of pages or words by summing counts from the front and rear portions.

For valid reports, I use the algorithm from El-Haj et al. (2020) to detect and parse the annual report table of contents, which is then used as a map to extract text separately for each report section. I restrict my focus to sections that unambiguously contain SBM discourse. Specifically, I interpret section headers as manager-assigned labels of content and then apply a crawler algorithm that retains all sections where the discourse centres on strategy and business model. I use the following n-grams to capture sections containing a high fraction of strategy-related content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” or “KPI”. To construct the reference corpus, I also extract sections from annual reports identified by the algorithm as the Chair’s letter and corporate governance statement sections.

Extracted sections require several pre-processing steps before narrative commentary can be analysed. Figure A.3.6.1 summarises my pipeline including both the pre-processing steps and the stages at which I construct empirical measures. The tool developed by El-Haj et

al. (2020) features basic cleaning to filter some errors occurring in the extraction. The first set of corrections are at the token level. Key techniques include converting tokens to unicode to remove special characters with adjustments made for common mistranslations, removing tabs and non-ASCII characters, and adding single spaces after periods and commas to aid splitting text into sentences where new sentences are not preceded by spaces. As some reports present text in a justified format meaning words are spread across two lines separated by a hyphen, I remove dashes and spaces in passages following the pattern “alphabetic character(s)-alphabetic character(s)” (e.g., “develop- ment”) and “alphabetic character(s) -alphabetic character(s)” (e.g., “develop -ment”) without replacement (e.g., “development”). I also account for multiword expressions (MWEs) which may be formatted differently across reports.<sup>34</sup> Finally, multiple spaces are replaced with single spaces.

The second set of corrections provided by the tool are at the sentence level. After removing words over 20 characters in length and words containing numeric characters, sentences are tokenized and the number of tokens calculated. Following Li (2008), sentences with more than half of characters non-alphabetic (such as spaces and numbers) are removed. Sentences are also eliminated where (i) the number of spaces is greater than 80% of the number of alphabetic characters, (ii) the number of letters and number of spaces combined is less than 50% of all characters, (iii) the number of numeric characters exceeds the number of letters, and (iv) the string “PLC” appears greater than six times in a sentence. Sentences are also removed if the number of letters is less than 20 or the number of words is less than five.

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<sup>34</sup> MWEs are lexical items that consist of multiple words that are often characterised by the inability to derive their meaning from their parts independently (e.g., “state-of-the-art”) (Sheinfx et al., 2019). Annual reports display variation in whether components of MWEs are separated by spaces or hyphens. I curate a list of all hyphenated words in the corpus and identify MWEs with hyphen separators. I calculate the number of instances for which the MWE appears with and without hyphens. I identify MWEs where there is significant variation in the way they are presented (greater [less] than 20% [100%] are hyphenated) and follow the computational linguistics literature by retokenizing the MWE by replacing the hyphen with a single space (i.e., “long-term”) (Constant et al., 2017) to ensure consistency with hyphenated styles.

At this point, I construct from my cleaned corpus the empirical proxies for attributes of best practice guidance as defined in the main text, such as forward-looking orientation and time horizon. I also identify named entities for two reasons. First, named entities form the basis of my *Specificity* measure. Second, named entities introduce noise to topic models. This is because names of organisations, people and places add little semantic value but instead hide relations between words and concepts. Consistent with prior research in accounting and finance, I employ a supervised machine learning technique called named entity recognition (NER) to identify and extract text corresponding to names of categories. I use the algorithm provided by the spaCy python package (Brown et al., 2023a) because it has been used by prior literature examining strategic commentary in UK annual reports (Athanasakou et al., 2022).<sup>35</sup> The NER algorithm classifies text into 18 types, including “PERSON”, “ORG” (organisations), “GPE” (countries, cities and states), “PRODUCT” (such as objects, vehicles, and foods) and “EVENT” . I run the spaCy NER model on each document and extract all named entities and their categories. This allows me to count the number of entities in each document in total and for each category which forms the basis of the *Specificity* measure (Hope et al., 2016) I use to test for entity-specific disclosure. Finally, I remove named entities from the corpus.

The next stage of the pre-processing pipeline is to remove stop words. Often high frequency words are functional operators such as determiners (e.g., “the”), conjunctions (e.g., “and”) and prepositions (e.g., “at”) (Vaughan and O’Keeffe, 2015). Whilst these words serve important grammatical and syntactic functions (Vaughan and Clancy, 2013), removing functional words and focussing on lexical words illuminates more the content of the discourse (Baker, 2006). Prior research in accounting and finance uses various approaches to removing stop words. First, researchers use a pre-defined list of stop words curated for general use or

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<sup>35</sup> An alternative option used by prior literature (e.g., Dyer et al., 2017; Guest, 2021; Hope et al., 2016) is to use the Stanford NER algorithm. Sensitivity analyses (untabulated) confirm findings are not sensitive to restricting the named entity categories to those recognised by the Stanford NER algorithm (date, location, organisation, percent, person, time and money).

specific to the accounting and finance domain, such as provided by Loughran and McDonald (2011).<sup>36</sup> In light of concerns such an approach is subjective, an alternative approach is to remove words appearing frequently in the corpus, either by ranked or raw frequency (Brown et al., 2020), proportion or number of documents (Hoberg and Lewis, 2017) or a mixture of both (Dyer et al., 2017). However, this approach risks removing semantically meaningful words from the corpus and still requires subjective judgement on where the threshold(s) should be.

In my study, I adapt the long generic list of Loughran and McDonald (2011) to create a corpus-specific stop word list. I remove from the stop word list (i.e., retain in the corpus) any words that may have importance in the context of strategy-related disclosures. These include words related to sentiment, achievement, causal language, forward-looking orientation and performance (Loughran and McDonald, 2011). I augment the results with additional words and phrases ubiquitous to the corpus. I construct and manually inspect frequency lists of one-, two- and three-word clusters. Using domain-specific knowledge, I create a list of n-grams that do not provide information about strategy and value creation but which are common to financial reporting (such as “annual report” or “year end”). The final list of n-grams is removed from the corpora.

The final pre-processing step is stemming which is the process of simplifying sets of inflected or derivationally related words to a smaller number of representations that represent only the root word (Schäfer and Bildhauer, 2013). This is necessary as the research questions relate to concepts, which are represented by the lexical item, rather than their inflection. For example, in determining frequency counts and collocations of concepts, “strategy” and “strategic” or “asset” and “assets” should be combined. Several off-the-shelf stemmers are available but the Porter (1980) stemmer is the classic stemmer for English text (Schäfer and

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<sup>36</sup> Available at: <https://sraf.nd.edu/textual-analysis/resources/#StopWords>



Bildhauer, 2013) and has often been used in accounting and finance research (e.g., Donovan et al., 2021). However, I am sympathetic to the argument made by Huang et al. (2018) who highlight that stemming (using off-the-shelf models) may be inappropriate and too aggressive for financial text where the stems of words are often not synonyms. They provide examples from the Porter (1980) stemmer, such as converting “marketing” into “market”, “accounting” into “account” and “investment” into “invest”.

In response to this criticism, I construct a stemmer specific to corporate reporting of strategy and value creation. I retrieve all unique words appearing in the corpus before creating a dictionary of words appearing in 5% or more of annual reports (after all preceding pre-processing steps) to reduce dimensionality. The dictionary includes 1,192 unique words which represent 72% of the total word count. Each word is manually inspected and I record whether the word should be combined with other words in the corporate reporting domain. Reasons for combining words are: (1) to correct errors such as alternative (e.g., American versus UK English) spellings; (2) combine plural and singular words; (3) combine adjectival, adverb and noun forms; and (4) combining tenses of the same verb. From this manual analysis, I generate the stemmer by finding unique groups of words and selecting a root word (being the correct spelling, singular, noun and present tense forms). I then construct a stemming algorithm which searches for words within the group and replaces such words with the root word.

**Figure A.3.6.1 – Preprocessing pipeline**

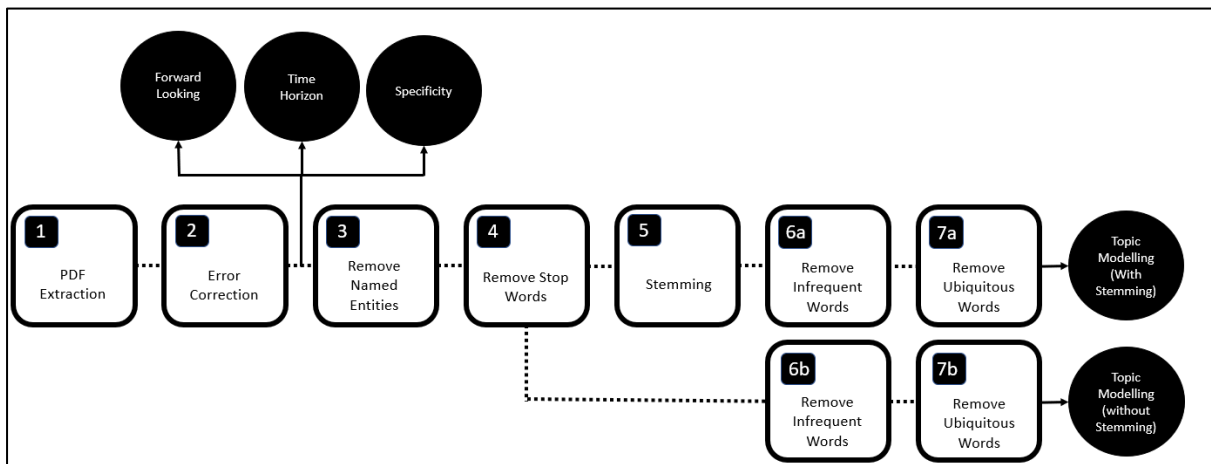


Figure A.3.6.1 summarises the pre-processing steps applied to the SBM corpus. White boxes correspond to a step in the pre-processing. Black circles identify empirical measures constructed from the corpus.

**Appendix 3.7 – Descriptive statistics for proportion of SBM and reference sections relating to LDA topics.**

*Panel A:* Aggregate SBM theme is External Environment

	N	SBM sections (%)							Reference sections (%)							p-val. for difference
		Mean	Stdev	Min	Q1	Med.	Q3	Max	Mean	Stdev	Min	Q1	Med.	Q3	Max	
Energy	2045	5.08	6.30	0.00	2.79	5.66	18.27	43.84	0.91	2.02	0.00	0.00	1.08	4.12	32.58	0.01
Drilling	1422	9.11	10.61	0.00	3.52	14.60	32.03	76.79	2.67	4.23	0.00	1.01	3.47	11.17	39.17	0.01
Mining	1126	11.01	10.99	0.00	6.68	18.42	32.06	60.30	4.58	5.91	0.00	1.97	7.06	16.45	39.78	0.01
Construction	1659	4.88	8.32	0.00	2.07	4.40	21.28	68.50	0.95	2.02	0.00	0.00	1.11	4.37	22.25	0.01
Infrastructure	2000	3.17	5.46	0.00	1.77	3.23	9.74	65.84	0.70	1.20	0.00	0.00	1.02	2.50	14.09	0.01
Defence	3107	3.04	5.59	0.00	1.56	2.87	11.24	57.06	1.07	1.08	0.00	0.92	1.36	2.91	12.94	0.01
Healthcare	1408	8.01	9.71	0.00	3.08	12.47	26.76	61.32	2.00	3.56	0.00	0.84	2.26	8.27	31.23	0.01
Geography	3470	4.33	3.92	0.00	3.15	5.65	12.09	33.07	0.71	1.10	0.00	0.00	1.11	2.76	10.62	0.01
Industry	4745	3.40	3.32	0.00	2.37	4.67	10.03	39.74	1.45	1.78	0.00	0.98	2.01	5.01	13.24	0.01
Competition	2698	5.10	6.80	0.00	2.59	5.41	20.11	54.21	0.83	1.56	0.00	0.00	1.14	3.84	19.02	0.01
Differentiation	2425	4.89	5.23	0.00	3.11	6.11	15.34	47.47	0.59	1.26	0.00	0.00	0.89	2.44	17.50	0.01
Acquisition	3752	3.86	3.99	0.00	2.66	5.03	10.94	50.01	1.25	1.39	0.00	1.00	1.71	3.80	12.75	0.01
Partner	5794	2.93	4.50	0.00	1.56	3.31	11.29	46.45	2.69	3.07	0.00	1.73	2.90	9.37	30.72	0.01
Contract	2894	3.92	5.14	0.00	2.21	4.36	14.43	62.70	1.00	1.25	0.00	0.80	1.39	3.46	8.57	0.01
Supplier	3217	2.98	2.89	0.00	2.12	3.91	8.66	26.30	0.98	1.02	0.00	0.90	1.45	2.74	13.07	0.01
Client	2452	4.56	5.83	0.00	2.41	5.87	16.28	37.61	1.10	1.36	0.00	0.86	1.44	3.67	12.50	0.01
Platform	1838	7.20	8.73	0.00	3.41	9.20	27.79	50.12	1.03	1.70	0.00	0.00	1.38	4.22	17.73	0.01
Experience	2593	3.89	5.78	0.00	2.04	4.00	14.53	49.36	0.67	1.10	0.00	0.00	1.02	2.40	17.60	0.01

*Panel B:* Aggregate SBM theme is Internal Environment

Innovation	3216	4.95	4.56	0.00	3.48	6.73	14.07	31.07	0.77	1.01	0.00	0.67	1.22	2.70	8.81	0.01
Facilities	4537	2.94	3.77	0.00	1.98	3.89	8.82	57.74	1.24	1.17	0.00	1.04	1.60	3.22	11.96	0.01
Logistics	1974	4.07	5.67	0.00	2.21	4.29	14.04	54.02	0.45	0.98	0.00	0.00	0.73	2.12	9.13	0.01
Operations	2288	6.07	6.03	0.00	3.75	8.14	19.59	36.88	0.73	1.19	0.00	0.00	1.10	3.15	12.29	0.01
Efficiency	4910	3.30	3.48	0.00	2.25	4.52	10.11	31.54	1.48	1.54	0.00	1.13	2.03	4.51	12.55	0.01
Leadership	2734	4.73	6.08	0.00	2.48	4.98	18.71	39.70	1.18	1.91	0.00	0.76	1.48	4.73	17.72	0.01
Expertise	4558	3.35	3.37	0.00	2.34	4.67	10.00	27.16	1.00	0.92	0.00	0.94	1.42	2.63	8.87	0.01
Digital	1954	5.33	6.84	0.00	2.77	6.42	19.11	58.49	0.99	1.81	0.00	0.66	1.23	4.00	22.34	0.01
Network	2175	4.72	6.07	0.00	2.58	5.16	17.43	46.51	0.59	1.16	0.00	0.00	0.86	2.71	13.60	0.01
Solution	2708	5.22	5.29	0.00	3.26	7.01	16.43	36.27	1.14	1.77	0.00	0.71	1.52	4.60	15.77	0.01

**Appendix 3.7 continued**

*Panel C: Aggregate SBM theme is Performance & Reporting*

Net income	4106	3.97	4.18	0.00	2.57	5.23	12.42	39.81	1.66	2.27	0.00	0.98	2.21	6.30	23.52	0.01
CI	4431	3.54	4.72	0.00	1.99	4.49	13.19	43.25	1.89	2.23	0.00	1.26	2.35	6.08	28.26	0.01
APM	2901	5.86	5.71	0.00	4.03	7.40	17.02	44.05	0.13	0.53	0.00	0.00	0.00	0.99	16.49	0.01
Balance sheet	4949	3.59	5.18	0.00	1.87	4.76	13.22	71.17	2.24	3.56	0.00	1.45	2.46	6.13	50.17	0.01
Reporting	6243	3.93	6.48	0.00	1.51	4.45	18.03	49.37	3.11	2.74	0.00	2.29	3.88	8.15	28.49	0.01
CSR	4507	3.49	4.62	0.00	1.86	4.77	12.85	43.57	2.07	2.16	0.00	1.47	2.70	6.17	28.32	0.01
Workforce	3987	3.84	4.57	0.00	2.28	5.26	12.85	40.79	1.33	1.33	0.00	1.08	1.78	3.68	14.25	0.01
General risk	5964	3.40	5.98	0.00	1.31	3.55	15.58	50.40	2.20	1.46	0.00	1.98	2.88	4.69	18.30	0.01
Financial risk	4767	4.23	6.09	0.00	1.83	5.35	16.88	42.84	1.24	1.32	0.00	1.02	1.60	3.27	21.86	0.01

*Panel D: Aggregate SBM theme is Governance*

Board	6674	2.33	4.23	0.00	1.29	2.69	8.48	58.58	20.08	8.54	0.79	21.69	25.78	31.60	48.62	0.01
Remuneration	6271	1.96	3.07	0.00	1.33	2.43	6.68	58.59	13.36	6.22	0.00	14.44	17.97	21.77	34.89	0.01
Shareholders	4773	3.54	3.87	0.00	2.30	4.77	11.44	32.11	1.16	1.21	0.00	0.98	1.63	3.38	12.11	0.01

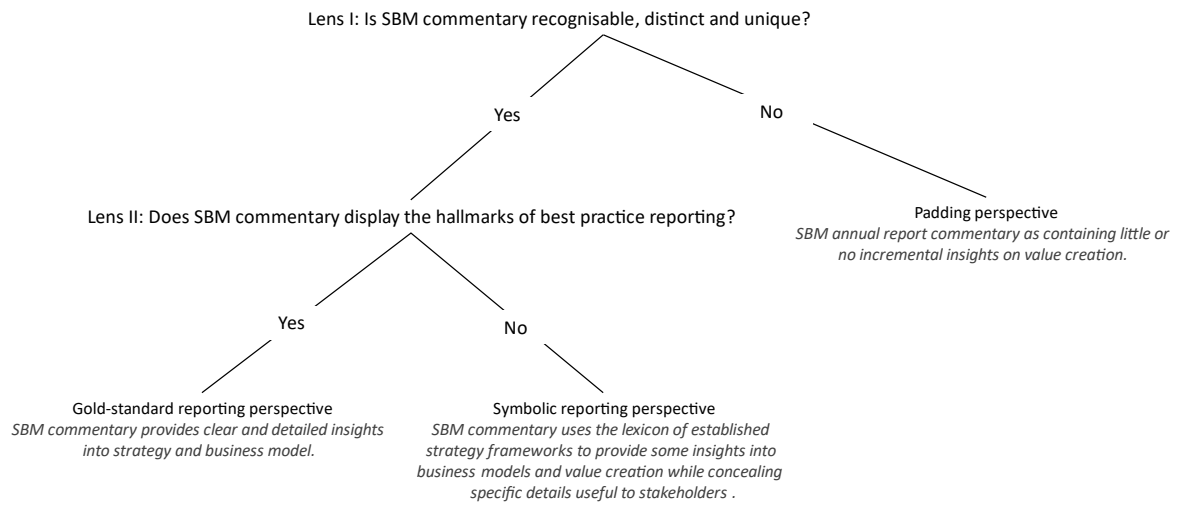
Appendix 3.7 presents descriptive statistics for the proportion of discourse (calculated for topic  $t$  as the weighted word count of topic  $t$  scaled by the total number of words in section  $j$  or report  $i$ ) discussing extracted topics for SBM and reference sections separately conditional on the topic being material to the annual report. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. For ease of exposition, proportions are displayed in percentage terms.

**Appendix 3.8 – Coefficient estimates and model summary statistics for regressions testing whether forward-looking orientation is more prevalent in SBM sections versus annual report reference sections using alternative word list approaches.**

	Forward-looking orientation as defined by:				
	Baseline (alternative)	Bozanic et al. (2018)	Hassanein et al. (2019)	Li (2010)	Muslu et al. (2015)
	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	-189.595 *** (16.90)	-226.162 *** (15.34)	-145.007 *** (11.16)	-185.737 *** (10.90)	-221.516 *** (16.73)
<i>SBM</i>	11.526 *** (0.92)	9.793 *** (1.00)	4.682 *** (0.88)	7.955 * (0.89)	17.933 *** (1.00)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.32	0.29	0.35	0.37	0.31
N	13,746	13,746	13,746	13,746	13,746

Regression results from regressing the measures of forward-looking orientation, which takes a value of 1 (0) for SBM (reference) discourse. Forward-looking orientation is defined as the number of sentences containing forward-looking n-grams scaled by the total number of sentences. N-grams are defined by the papers cited in the column headers. Baseline (alternative) is my custom forward-looking word list after removing words associated with uncertainty. Regressions are estimated with fractional regression (Papke and Wooldridge, 1996). For ease of exposition, coefficients and standard errors are multiplied by 100. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test.

**Figure 3.1 - Three perspectives on strategy and business model reporting and the two-step testing structure for distinguishing between them.**



**Figure 3.2 - Coherence scores across candidate LDA topic models with varying research design choices**

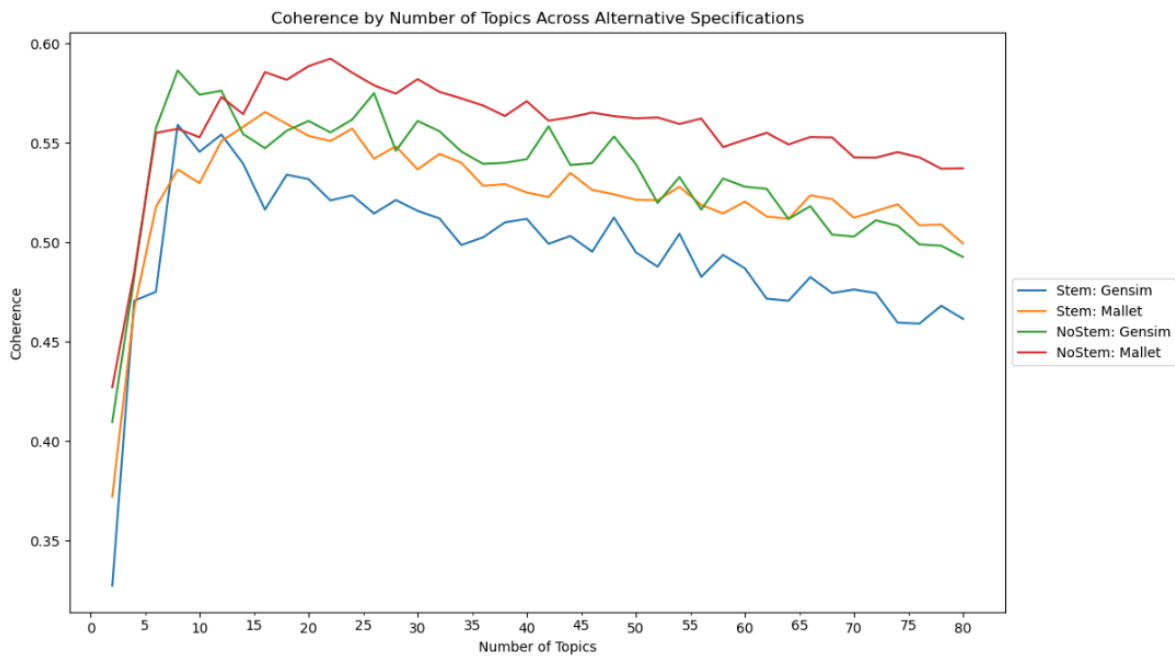


Figure 3.2 plots topic model coherence as a function of the number of topics from 2 to 80 topics inclusive in steps of two. “Stem: Gensim” (“Stem: Mallet”) refers to the LDA model specification utilising stemmed data and the Gensim (Mallet) algorithm. “NoStem: Gensim” (“NoStem: Mallet”) refers to the LDA model specification utilising pre-stemmed data and the Gensim (Mallet) algorithm.

**Table 3.1 - LDA topic model key words and labels**

Topic label	Top 10 unigrams ranked by TWW	NN Schema Categories
<i>Panel A: Aggregate SBM theme is <u>External Environment</u></i>		
Energy	energy, power, water, fuel, generation, gas, waste, electricity, projects, plant	# 4 (Customer/market environment) # 5 (competition)
Drilling	oil, gas, production, exploration, reserves, drilling, resources, assets, field, price	# 4 (Customer/market environment) # 5 (competition)
Mining	gold, mining, exploration, mine, production, ore, resources, project, projects, mineral	# 4 (Customer/market environment) # 5 (competition)
Construction	land, housing, homes, planning, local, construction, residential, property, build, site	# 4 (Customer/market environment) # 5 (competition)
Infrastructure	rail, travel, transport, local, network, public, contract, operators, regional, contracts	# 4 (Customer/market environment) # 5 (competition)
Defence	systems, security, defence, capabilities, programmes, technology, system, capability, solutions, aerospace	# 4 (Customer/market environment) # 5 (competition)
Healthcare	clinical, care, medical, patients, healthcare, health, drug, regulatory, patient, pharmaceutical	# 4 (Customer/market environment) # 5 (competition)
Geography	global, world, countries, international, america, emerging, north, growing, middle, region	# 4 (customer/market environment)
Industry	economic, sector, remain, demand, conditions, remains, environment, levels, impact, recent	# 4 (Customer/market environment)
Competition	production, prices, demand, price, supply, tonnes, lower, average, expected, due	# 5 (competition)
Differentiation	brands, brand, consumer, consumers, marketing, portfolio, volume, premium, trade, local	# 1 (macro-environment) # 2 (new entrants/barriers to entry) # 17 (marketing strategic actions)
Acquisition	businesses, acquisition, acquisitions, organic, acquired, division, integration, divisions, margins, target	# 8 (cooperative alliances)
Partner	project, agreement, joint, completed, interest, projects, limited, announced, venture, licence	# 8 (cooperative alliances)
Contract	projects, sector, infrastructure, contracts, construction, project, contract, public, sectors, delivery	# 7 (suppliers) # 8 (cooperative alliances)
Supplier	order, fy, groups, stock, trading, suppliers, proof, margin, pro, delivery	# 7 (suppliers)
Client	clients, client, recruitment, staff, professional, specialist, sector, people, sectors, fee	# 15 (service-related strategic actions)
Platform	retail, stores, food, store, online, offer, brand, retailers, channel, home	# 15 (service-related strategic actions)
Experience	online, insurance, marketing, offer, payment, payments, offering, experience, regulated, platform	# 15 (service-related strategic actions)
<i>Panel B: Aggregate SBM theme is <u>Internal Environment</u></i>		
Innovation	technology, research, commercial, property, partners, intellectual, technologies, licensing, progress, applications	# 16 (new-product-related actions) # 22 (technological resources) # 24 (organisational intangible resources)



**Table 3.1** *continued*

Facilities	facilities, site, distribution, centre, facility, sites, centres, capacity, system, staff	# 23 (organisational tangible resources)
Logistics	equipment, fleet, vehicle, vehicles, car, utilisation, cycle, returns, scale, large	# 23 (organisational tangible resources)
Operations	manufacturing, materials, supply, design, applications, production, packaging, industrial, technology, engineering	# 13 (strategic objectives) # 21 (organizational tangible resources)
Efficiency	progress, programme, improved, improve, plan, improvement, efficiency, drive, deliver, improvements	# 13 (strategic objectives) # 21 (organizational tangible resources) # 18 (low cost/pricing actions) # 28 (manufacturing quality) # 32 (strategic processes)
Leadership	innovation, global, deliver, people, leadership, drive, capabilities, excellence, priorities, sustainable	# 11 (vision) # 13 (strategic objectives)
Expertise	expertise, technical, team, knowledge, design, engineering, solutions, experience, ability, relationships	# 16 (new-product-related actions) # 20 (human capital resources), # 24 (organisational intangible resources) # 31 (people).
Digital Network	digital, content, media, advertising, online, channels, events, revenues, marketing, video data, network, mobile, networks, communications, infrastructure, devices, internet, analytics, security	# 22 (technological resources) # 22 (technological resources)
Solution	technology, solutions, software, solution, platform, systems, partners, system, technologies, enterprise	# 15 (service-related strategic actions) # 16 (new-product-related actions) # 22 (technological resources)
<i>Panel C: Aggregate SBM theme is <u>Performance &amp; Reporting</u></i>		
Net income	revenues, gross, margin, due, period, result, prior, division, reduced, previous	# 29 (financial performance)
CI	tax, net, adjusted, exceptional, items, dividend, earnings, underlying, currency, rate	# 29 (financial performance)
APM	measure, kpis, underlying, adjusted, measures, net, average, definition, earnings, return	# 29 (financial performance) # 14 (financial objectives)
Balance sheet	assets, loss, income, net, debt, interest, finance, tax, equity, impairment	# 25 (financial resources)
Reporting	ended, directors, december, shares, limited, june, principal, period, ordinary, march	# 21 (organisational tangible resources) # 33 (strategic controls)
CSR	safety, employees, health, environment, environmental, local, standards, emissions, training, social	# 27 (strategic performance)
Workforce	people, make, engagement, deliver, great, employee, survey, experience, success, score	# 20 (human capital resources) # 31 (people)
General risk	risks, impact, regulatory, regulations, principal, failure, ability, factors, material, subject	N/A
Financial risk	risks, principal, credit, currency, exchange, rate, foreign, interest, exposure, liquidity	N/A
<i>Panel D: Aggregate SBM theme is <u>Governance</u></i>		
Board	executive, chief, director, directors, corporate, information, governance, chairman, officer, audit	N/A

**Table 3.1** *continued*

Remuneration	remuneration, internal, plan, process, senior, external, plans, policy, bonus, executive	N/A
Shareholders	returns, shareholders, portfolio, assets, shareholder, deliver, sustainable, return, maintain, balance	N/A

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The initial sample comprises 14,502 annual reports published by non-financial firms during the period 2006 through 2018. I construct the SBM corpus by extracting distinct SBM sections listed in the report table of contents. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. A 40-topic LDA model is implemented using the Mallet algorithm (without word stemming) to identify vectors of co-occurring unigrams that represent latent themes (topics) in the corpus. Each unigram in a given topic has a corresponding Topic Word Weight (TWW) representing that unigram’s relative importance to the topic. Unigrams can appear in multiple topics. Author-assigned descriptors for the 40 LDA topics are included in column 1. Topics are grouped into the four generic themes presented in panels A through D. Column 2 presents the top 10 unigrams (ranked by TWW) for the corresponding topic. Column 3 maps each topic to the 35 strategy schemas developed by Nadkarni and Narayanan (2007) analysis of causal statements in CEO letters to shareholders. An LDA topic may map to multiple NN categories where appropriate, there is no attempt to force every NN category to appear in the mapping, and there is no requirement for every LDA topic to align with at least one NN category. N/A indicates that the topic does not map to any of the 35 NN schemas. The mapping process is an entirely subjective exercise.

**Table 3.2 - Salient unigrams, bigrams and trigrams to SBM commentary**

<i>Panel A: Unigrams</i>									
Rank	Unigram	Keyness	Frequency	%-Diff	Rank	Unigram	Keyness	Frequency	%-Diff
1	we	364999	141339	137	26	consumer	9907	10379	438
2	customer	62336	64259	427	27	device	3805	10352	Infinite
3	market	83795	58696	253	28	patient	3796	10328	Infinite
4	product	50895	44408	335	29	source	9533	10212	454
5	growth	52376	35205	241	30	client	12818	9824	282
6	revenue	39953	25399	226	31	model	13999	9642	248
7	increase	45325	17992	140	32	emission	3463	9422	Infinite
8	grow	22216	16924	280	33	rate	16642	9416	199
9	kpi	9595	16661	1298	34	low	13702	9125	238
10	brand	16598	15959	384	35	clinical	3298	8973	Infinite
11	indicator	11461	15868	729	36	price	19251	8653	158
12	technology	22780	15149	238	37	network	8914	8570	384
13	cost	35962	14382	141	38	average	9523	8488	345
14	drive	15809	14215	349	39	ore	3115	8475	Infinite
15	demand	14470	14154	394	40	data	11421	8432	269
16	sale	30834	14106	160	41	supply	13213	8398	226
17	solution	14059	13522	384	42	invest	12071	8394	251
18	deliver	25365	12947	179	43	develop	23400	8355	128
19	measure	15707	12941	310	44	world	11888	8287	251
20	global	19121	12367	230	45	build	15594	8202	184
21	high	32872	12095	131	46	manufacture	9157	8123	342
22	strategy	69579	11975	71	47	new	49847	8028	68
23	innovation	10813	11265	434	48	efficiency	8548	8019	371
24	margin	13564	10846	298	49	definition	2886	7852	Infinite
25	production	16871	10517	221	50	target	15065	7372	171

**Panel B: Bigrams**

Rank	Bigram	Keyness	Frequency	%-Diff
1	performance__indicator	8782	10685	712
2	our__customer	12421	10202	357
3	strategy__report	19217	9678	195
4	key__performance	8347	9458	614
5	our__strategy	11301	7452	266
6	our__business	13016	4357	131
7	business__model	8191	4049	191
8	market__share	4105	3750	419
9	revenue__growth	3849	2993	330
10	our__market	4192	2883	280
11	lost__time	1194	2790	Infinite
12	indicator__kpi	1697	2788	1666
13	accounts__strategy	4294	2587	238
14	how__we	4211	2416	225
15	our__product	4356	2405	216
16	we__aim	2560	2343	421
17	per__tonne	976	2281	Infinite
18	capital__employ	1613	2206	939
19	strategy__priority	2330	2201	443
20	we__measure	1270	2175	1970
21	supply__chain	3407	2136	250
22	report__strategy	3804	2130	219
23	finance__kpi	1259	2113	1812
24	strategy__action	1388	2012	1102
25	fy__fy	855	1998	Infinite

Rank	Bigram	Keyness	Frequency	%-Diff
26	product__service	2714	1824	272
27	new__product	3833	1795	181
28	customer__service	2647	1705	258
29	mineral__resource	724	1692	Infinite
30	our__client	2692	1653	244
31	high__quality	3731	1636	169
32	weighted__average	694	1622	Infinite
33	market__overview	902	1613	2399
34	create__value	1910	1608	370
35	operate__profit	6315	1572	101
36	customer__we	1911	1513	339
37	our__brand	1947	1512	329
38	we__use	1670	1510	413
39	customer__our	1891	1505	341
40	cash__ow	644	1505	Infinite
41	market__we	3402	1447	164
42	our__people	3801	1446	147
43	accounts__our	1290	1441	597
44	raw__materials	615	1437	Infinite
45	latin__america	603	1409	Infinite
46	low__cost	2314	1391	238
47	emerging__market	1856	1379	310
48	definition__definition	582	1360	Infinite
49	use__our	1887	1336	291
50	we__create	1397	1322	444

*Panel C: Trigrams*

Rank	Trigram	Keyness	Frequency	%-Diff	Rank	Trigram	Keyness	Frequency	%-Diff
1	key__performance__indicator	7829	9099	736	26	strategy__report__business	581	799	1136
2	our__business__model	3200	3740	745	27	lost__time__injury	351	761	Infinite
3	strategy__report__continue	1866	3150	2527	28	performance__indicator__key	408	734	3701
4	performance__indicator__kpi	1595	2386	1500	29	our__strategy__priority	666	715	620
5	strategy__report__ending	1300	2355	3874	30	our__strategy__our	724	696	503
6	strategy__report__our	1473	2131	1334	31	director__present__their	631	683	631
7	report__accounts__strategy	4252	2106	202	32	chief__executives__strategy	410	660	2011
8	strategy__report__strategy	1331	1829	1134	33	our__strategy__action	415	658	1880
9	accounts__strategy__report	3533	1543	177	34	net__promoter__score	303	657	Infinite
10	report__accounts__our	1198	1347	684	35	injury__frequency__rate	298	646	Infinite
11	report__our__strategy	738	1323	3602	36	indicator__key__performance	333	640	6415
12	fy__fy__fy	558	1210	Infinite	37	report__business__model	417	639	1636
13	report__key__performance	753	1179	1789	38	strategy__our__strategy	462	636	1138
14	strategy__report__key	568	1008	3373	39	how__we__perform	477	633	1024
15	their__strategy__report	518	1005	7139	40	how__we__create	360	626	2962
16	present__their__strategy	523	1003	6295	41	performance__indicator__use	347	614	3295
17	q__q__q	457	991	Infinite	42	annual__report__strategy	940	611	279
18	we__create__value	553	948	2747	43	finance__statement__strategy	1025	598	244
19	free__cash__flow	1320	923	307	44	accounts__key__performance	376	593	1836
20	accounts__our__strategy	478	914	6135	45	link__strategy__link	295	586	9520
21	business__model__our	731	899	841	46	finance__key__performance	533	585	650
22	report__our__business	652	854	990	47	strategy__link__strategy	294	577	8118
23	report__strategy__report	2490	838	137	48	how__we__measure	353	571	2058
24	return__capital__employ	766	834	638	49	why__we__measure	305	569	4873
25	weighted__average__number	373	809	Infinite	50	strategy__report__market	289	553	6183

Table 3.2 presents salient n-grams in the SBM corpus relative to the reference corpus. Keyness measures the extent to which terms of interest are salient in SBM disclosure relative to general corporate communication. It is calculated with the log-likelihood (LL) measure. Frequency is the number of occurrences of the n-gram in the SBM corpus. %-DIFF is the measure proposed by (Gabrielatos, 2018) and calculated as  $100 * (NFC1 - NFC2) / NFC2$  where NFC1 (NFC2) is the normalised frequency of the SBM (reference) corpus. Note “Infinite” occurs when the normalized frequency of the reference corpus is zero. Normalised frequency is calculated as n-gram frequency scaled by the total number of n-grams. A value of 100 (500) indicates twice (six times) the

normalised frequency in the corpus relative to the reference corpus. Panel A presents results for unigrams. Panel B presents results for bigrams where tokens are separated by "\_\_\_". Panel C presents results for trigram where tokens are separated by "\_\_\_".

**Table 3.3 - Descriptive statistics for topic themes and best practice reporting features**

*Panel A: Topic word counts*

	SBM sections								Reference sections						p-val. for difference	
	N	Mean	Stdev	Min	Q1	Med.	Q3	Max	Mean	Stdev	Min	Q1	Med.	Q3		Max
External Environment	6,870	229.1	244.5	0.0	56.8	133.1	310.5	1,100.8	150.5	142.0	0.0	56.8	110.0	197.1	1,100.8	0.01
Internal Resources	6,824	142.4	175.2	0.0	22.3	71.0	196.6	789.9	80.9	92.2	0.0	23.1	53.4	103.5	789.9	0.01
Performance & Reporting	6,867	149.5	179.9	0.0	34.3	90.1	193.9	1,086.1	222.8	215.4	0.0	73.1	154.6	292.9	1,086.1	0.01
Governance	6,850	45.3	113.3	0.0	7.5	19.2	47.8	2,751.8	758.9	718.3	0.0	176.9	527.6	1,186.6	2,751.8	0.01

*Panel B: Best practice SBM reporting features*

	SBM sections								Reference sections						p-val. for difference	
	N	Mean	Stdev	Min	Q1	Med.	Q3	Max	Mean	Stdev	Min	Q1	Med.	Q3		Max
Specificity	6,873	16.7	6.4	0.8	12.4	15.8	20.1	37.0	18.1	4.0	4.2	15.8	18.0	20.1	37.0	0.01
ForwardLooking	6,873	20.9	11.5	0.0	13.3	20.0	27.3	52.4	19.3	7.2	0.0	14.8	18.5	22.7	52.4	0.01
LongTerm	6,873	6.1	5.4	0.0	2.0	5.3	8.8	23.1	7.5	3.7	0.0	5.2	7.3	9.6	23.1	0.01
ShortTerm	6,873	2.5	3.3	0.0	0.0	1.3	3.7	15.2	2.5	2.4	0.0	1.0	2.1	3.5	15.2	0.11
NetLongTerm	6,873	3.7	6.2	-11.7	0.0	3.0	6.9	21.3	4.9	4.5	-11.7	2.4	5.1	7.6	21.3	0.01

Panel A presents statistics for aggregate measures of theme intensity (calculated as the number of words discussing the theme) at the SBM theme and section level computed separately for SBM and reference sections. I include topics in the aggregate measure if the topic is material to the report. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. Panel B presents statistics for features of best practice reporting separately for SBM and reference sections. Specificity is the total number of named entities scaled by the total number of words. ForwardLooking is the number of sentences containing forward-looking n-grams (defined in Appendix 3.4) scaled by the total number of sentences. LongTerm (ShortTerm) is the total number of sentences containing a long-term (short-term) n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams, scaled by the total number of sentences. For ease of exposition, all measures in Panel B are multiplied by 100.

**Table 3.4 - Coefficient estimates and model summary statistics for aggregate SBM theme distinctiveness in SBM annual sections versus annual report reference sections**

	Aggregate SBM theme			
	External Environment (1)	Internal Resources (2)	Performance & Reporting (3)	Governance (4)
<i>Intercept</i>	4.680 <sup>***</sup> (0.23)	4.967 <sup>***</sup> (0.27)	5.263 <sup>***</sup> (0.25)	5.194 <sup>***</sup> (0.30)
<i>SBM</i>	0.335 <sup>***</sup> (0.01)	0.398 <sup>***</sup> (0.02)	-0.466 <sup>***</sup> (0.01)	-2.867 <sup>***</sup> (0.02)
Firm fixed effects	Yes	Yes	Yes	Yes
R-squared	0.62	0.64	0.55	0.93
N	13,740	13,648	13,734	13,700

The dependent variables are defined as the number of words discussing the aggregate theme. SBM is an indicator variable which takes a value of 1 (0) for SBM (reference) discourse. I include topics in the aggregate measure if the topic is material to the report. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. Regressions are estimated with a negative binomial specification and firm fixed effects. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test.



**Table 3.5 - Coefficient estimates and model summary statistics for SBM topic distinctiveness in SBM annual sections versus annual report reference sections**

	LDA Topic									
<i>Panel A: Aggregate SBM theme is <u>External Environment</u></i>										
	Energy	Drilling	Mining	Construction	Infrastructure	Defence	Healthcare	Geography	Industry	
Intercept	0.028 (1.08)	1.529* (0.85)	3.766*** (0.36)	0.472 (1.02)	1.289* (0.75)	3.691*** (0.41)	1.276* (0.66)	2.338*** (0.44)	2.646*** (0.44)	
SBM	2.166*** (0.05)	0.897*** (0.04)	0.638*** (0.04)	2.053*** (0.05)	1.239*** (0.05)	-0.483*** (0.03)	1.093*** (0.05)	1.587*** (0.03)	0.248*** (0.03)	
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R-squared	0.55	0.72	0.81	0.68	0.53	0.49	0.62	0.43	0.22	
N	4,090	2,844	2,252	3,318	4,000	6,214	2,816	6,940	9,490	
	Competition	Differentiation	Acquisition	Partner	Contract	Supplier	Client	Platform	Experience	
Intercept	-0.535 (1.17)	1.577*** (0.56)	0.961 (0.91)	2.854*** (0.44)	2.556*** (0.42)	2.054*** (0.46)	1.779*** (0.57)	1.867*** (0.34)	1.667*** (0.45)	
SBM	2.028*** (0.04)	2.311*** (0.04)	0.201*** (0.03)	-1.375*** (0.02)	0.612*** (0.04)	0.181*** (0.03)	0.401*** (0.04)	1.638*** (0.04)	1.453*** (0.04)	
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R-squared	0.55	0.58	0.38	0.43	0.44	0.34	0.42	0.68	0.48	
N	5,396	4,850	7,504	11,588	5,788	6,434	4,904	3,676	5,186	
<i>Panel B: Aggregate SBM theme is <u>Internal Environment</u></i>										
	Innovation	Facilities	Logistics	Operations	Efficiency	Leadership	Expertise	Digital	Network	Solution
Intercept	1.058** (0.53)	3.748*** (0.33)	1.578 (1.00)	1.745*** (0.39)	2.418*** (0.43)	2.56*** (0.39)	2.489*** (0.47)	2.184*** (0.42)	3.594*** (0.42)	3.46*** (0.42)
SBM	1.037*** (0.04)	-0.316*** (0.03)	2.879*** (0.05)	1.976*** (0.04)	-0.165*** (0.03)	1.100*** (0.03)	0.069** (0.03)	1.398*** (0.04)	2.558*** (0.04)	1.454*** (0.04)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.40	0.29	0.66	0.58	0.28	0.49	0.27	0.55	0.62	0.47
N	6,432	9,074	3,948	4,576	9,820	5,468	9,116	3,908	4,350	5,416

**Table 3.5** *continued**Panel C: Aggregate SBM theme is Performance & Reporting*

	Net income	CI	APM	Balance Sheet	Reporting	CSR	Workforce	General risk	Financial risk
Intercept	3.508*** (0.42)	1.652 (1.03)	-3.142*** (0.86)	3.609*** (0.44)	3.802*** (0.37)	2.558*** (0.45)	2.833*** (0.42)	3.877*** (0.44)	3.492*** (0.47)
SBM	0.551*** (0.03)	-0.583*** (0.03)	4.755*** (0.04)	-0.981*** (0.03)	-1.720*** (0.02)	-0.963*** (0.03)	-0.246*** (0.03)	-1.604*** (0.03)	-0.399*** (0.03)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.27	0.30	0.86	0.41	0.46	0.43	0.39	0.37	0.18
N	8,212	8,862	5,802	9,898	12,486	9,014	7,974	11,928	9,534

*Panel D: Aggregate SBM theme is Governance*

	Board	Remuneration	Shareholders
Intercept	4.435*** (0.43)	5.164*** (0.40)	1.504 (0.99)
SBM	-3.905*** (0.02)	-3.479*** (0.02)	0.010 (0.03)
Firm fixed effects	Yes	Yes	Yes
R-squared	0.83	0.83	0.28
N	13,348	12,542	9,546

The dependent variables are defined as the number of words discussing the topic. SBM is an indicator variable which takes a value of 1 (0) for SBM (reference) discourse. I include topics in the aggregate measure if the topic is material to the report. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. Regressions are estimated with a negative binomial specification and firm fixed effects. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test.

**Table 3.6 - Variance decomposition of aggregate SBM themes**

	Variance decomposition of weighted word count:				Variance decomposition of topic count:			
	External Environment (1)	Internal Resources (2)	Performance & Reporting (3)	Governance (4)	External Environment (5)	Internal Resources (6)	Performance & Reporting (7)	Governance (8)
Time	1.68%	3.32%	3.48%	0.73%	0.80%	3.10%	3.00%	1.07%
Industry	5.90%	6.94%	4.31%	2.55%	3.14%	11.01%	4.81%	0.91%
Time_x_Industry	2.07%	2.93%	1.94%	1.14%	2.32%	2.30%	2.09%	1.70%
"Firm level"	90.34%	86.82%	90.27%	95.57%	93.74%	83.59%	90.10%	96.32%
Permanent differences across firms within sectors (Firm FE)	35.56%	32.71%	33.51%	24.91%	24.99%	25.86%	22.70%	18.98%
Transitory differences across firms within sectors (residual)	54.78%	54.10%	56.76%	70.66%	68.75%	57.73%	67.39%	77.34%

Table 3.6 presents the variance decomposition of theme intensity. Columns (1) through (4) decompose variation in the weighted word count. Columns (5) through (8) decompose variation in the number of topics materially discussed. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. Industry is defined as Datastream Level 4 industry codes.

**Table 3.7 - Hierarchical linear modelling of aggregate SBM themes**

	By word count:				By topic count:			
	External Environment	Internal Resources	Performance & Reporting	Governance	External Environment	Internal Resources	Performance & Reporting	Governance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept AIC	100253.75	96105.93	95981.89	89587.81	36165.19	33438.34	31451.71	19618.22
Firm AIC	97806.68	94014.81	94642.88	88736.03	34469.06	30969.74	30023.11	18667.77
Industry AIC	99973.33	95546.85	95870.75	89559.36	35951.34	32347.86	31288.65	19559.58
Full AIC	97285.61	93310.93	94030.21	88586.34	34075.82	29946.52	29395.19	18327.61
% of outcome explained by variation across reports within firm	45.65%	45.43%	51.45%	60.04%	46.80%	40.33%	49.19%	55.75%
% of outcome explained by variation across firms within industry	43.21%	37.61%	40.26%	36.40%	41.31%	38.19%	39.17%	37.61%
% of outcome explained by variation across industry	11.14%	16.96%	8.29%	3.56%	11.89%	21.48%	11.64%	6.64%

Table 3.7 presents results from the hierarchical modelling analysis of SBM themes. Columns (1) through (4) analyse the weighted word count. Columns (5) through (8) analyse the number of topics materially discussed. An LDA topic  $z$  is classified as material in report  $i$  if the unweighted count of the top 20 unigrams for  $z$  exceeds four in either the SBM or reference section discourse. Intercept AIC is the Akaike information criterion for an intercept-only model. Firm AIC is the Akaike information criterion for a model with an intercept and firm random effects. Industry AIC is the Akaike information criterion for a model with an intercept and industry random effects. Full AIC is the Akaike information criterion for a model with an intercept and both firm and industry random effects. Industry is defined as Datastream Level 4 industry codes.

**Table 3.8 - Coefficient estimates and model summary statistics for regressions testing whether features of best practice reporting are more prevalent in SBM sections versus annual report reference sections**

	Best practice reporting feature:				
	Specificity (1)	Forward (2)	LongTerm (3)	ShortTerm (4)	NetLongTerm (5)
<i>Intercept</i>	-133.506 *** (5.23)	-165.276 *** (11.15)	-237.597 *** (12.10)	-321.209 *** (15.72)	-164.311 *** (6.69)
<i>SBM</i>	-9.540 *** (0.53)	10.332 *** (0.84)	-21.579 *** (1.08)	-3.095 * (1.73)	-9.476 *** (0.57)
Firm fixed effects	-1.36 Yes	1.63 Yes	-1.34 Yes	-0.07 Yes	-1.26 Yes
R-squared	0.33	0.34	0.32	0.29	0.34
N	13,746	13,746	13,746	13,746	13,746

Regression results from regressing the measures of best practice reporting features on the indicator variable SBM, which takes a value of 1 (0) for SBM (reference) discourse. Specificity is the total number of named entities scaled by the total number of words. ForwardLooking is the number of sentences containing forward-looking n-grams (defined in Appendix 3.4) scaled by the total number of sentences. LongTerm (ShortTerm) is the total number of sentences containing a long-term (short-term) n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams, scaled by the total number of sentences. Regressions are estimated with fractional regression (Papke and Wooldridge, 1996). For ease of exposition, coefficients and standard errors are multiplied by 100. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test. Economic effects for the SBM variable are in italics beneath the standard errors. Economic effects are calculated as the average partial effect of a unit increase in the explanatory variable (i.e., transitioning from reference sections to SBM sections). Economic effects are multiplied by 100 to aid interpretation. For example, the value of -1.36 for Specificity can be interpreted as SBM commentary disclosing 1.36 fewer named entities per 100 words than reference sections. Likewise, the value of 1.63 for ForwardLooking can be interpreted as SBM commentary disclosing 1.63 more forward-looking sentences per 100 sentences than reference sections.

**Table 3.9 - Coefficient estimates and model summary statistics for regressions comparing the properties of forward-looking sentences in SBM sections versus annual report reference sections**

	Specificity <sup>Forward</sup>	TimeHorizon <sup>Forward</sup>	NetPositiveTone <sup>Forward</sup>	PositiveTone <sup>Forward</sup>	NegativeTone <sup>Forward</sup>
	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	142.487 *** (23.61)	-148.455 *** (30.68)	-463.255 *** (6.15)	-615.396 *** (22.07)	-609.755 *** (24.56)
<i>SBM</i>	-55.958 *** (1.84)	-18.008 *** (1.75)	5.840 *** (0.53)	49.089 * (2.46)	26.044 *** (2.54)
	-9.56	-2.01	0.06	0.09	0.03
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.27	0.21	0.22	0.25	0.22
N	13,746	13,746	13,746	13,746	13,746

Regression results from regressing the measures of reporting features of forward-looking information on the indicator variable SBM, which takes a value of 1 (0) for SBM (reference) discourse. Specificity<sup>Forward</sup> is the total number of named entities scaled by the total number of words in forward-looking sentences. TimeHorizon<sup>Forward</sup> is the total number of forward-looking sentences containing a long-term or short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of forward-looking sentences. NetPositiveTone<sup>Forward</sup> is the total number of phrases in forward-looking sentences identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in forward-looking sentences. PositiveTone<sup>Forward</sup> (NegativeTone<sup>Forward</sup>) is the total number of phrases identified as being positive (negative) using the bigram list provided by Garcia et al. (2023) scaled by the total number of words. Regressions are estimated with fractional regression (Papke and Wooldridge, 1996). For ease of exposition, coefficients and standard errors are multiplied by 100. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test. Economic effects are calculated as the average partial effect of a unit increase in the explanatory variable (i.e., transitioning from reference sections to SBM sections). Economic effects are multiplied by 100 to aid interpretation. For example, the value of -9.56 for Specificity<sup>Forward</sup> can be interpreted as forward-looking SBM commentary disclosing 9.56 fewer named entities per 100 words than reference sections. Likewise, the value of -2.01 for TimeHorizon<sup>Forward</sup> can be interpreted as forward-looking SBM commentary disclosing 2.01 fewer sentences with clear references to time horizon per 100 sentences than reference sections.

**Table 3.10 - Coefficient estimates and model summary statistics for regressions testing factors motivating symbolic reporting in SBM annual report commentary**

	Specificity (1)	Forward (2)	TimeHorizon (3)	NetLongTerm (4)	Specificity <sup>Forward</sup> (5)	TimeHorizon <sup>Forward</sup> (6)	NetPositiveTone <sup>Forward</sup> (7)
Intercept	-163.232 *** (26.142)	-261.998 *** (32.178)	-301.039 *** (42.159)	-81.715 *** (19.013)	-120.465 ** (57.275)	-248.169 ** (96.650)	-475.762 *** (16.559)
Competition	-3833.159 ** (1569.177)	502.083 (2319.813)	-6530.893 ** (2753.609)	-5674.658 *** (1682.857)	2817.158 (4172.934)	-14424.502 *** (4816.461)	1320.412 (1208.630)
LOSS	-4.347 ** (1.690)	8.650 *** (2.382)	-2.694 (2.829)	-7.677 *** (1.804)	3.989 (4.498)	-2.331 (5.215)	-1.092 (1.349)
NSEG	1.373 (1.005)	-4.263 *** (1.447)	4.299 ** (1.693)	4.504 *** (1.073)	-1.867 (2.734)	6.006 ** (3.026)	2.892 *** (0.863)
NGEO	2.237 ** (1.068)	-3.025 ** (1.504)	-2.266 (1.767)	0.742 (1.090)	-3.530 (2.798)	4.125 (3.125)	2.590 *** (0.857)
ΔROA	-2.360 (4.995)	3.204 (7.365)	2.616 (9.559)	2.117 (5.399)	-29.066 ** (14.286)	-12.001 (17.209)	-5.443 (4.630)
Returns	-1.897 (1.706)	-0.606 (2.304)	3.623 (2.729)	7.092 *** (1.747)	1.065 (4.619)	8.604 * (5.035)	5.641 *** (1.402)
Size	-1.311 *** (0.412)	-2.537 *** (0.615)	1.429 ** (0.707)	4.044 *** (0.438)	-5.405 *** (1.156)	0.168 (1.349)	1.154 *** (0.351)
SBMwords	-4.678 *** (0.918)	16.949 *** (1.214)	3.477 ** (1.514)	-10.183 *** (0.928)	35.252 *** (2.456)	13.845 *** (2.765)	-2.629 *** (0.646)
MainMarket	-1.092 (1.775)	-8.746 *** (2.659)	12.577 *** (3.218)	7.339 *** (1.949)	-1.198 (5.030)	8.811 (5.870)	5.339 *** (1.439)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R Squared	0.098	0.087	0.055	0.112	0.103	0.031	0.047
N	5,580	5,580	5,580	5,580	5,580	5,580	5,580

Results for cross-sectional determinants of best practice reporting features. Specificity is the total number of named entities scaled by the total number of words. ForwardLooking is the number of sentences containing forward-looking n-grams (defined in Appendix 3.4) scaled by the total number of sentences. TimeHorizon is the number of sentences containing a long-term or short-term

ngram (as defined by Brochet et al. (2015)) scaled by the total number of forward-looking sentences. Specificity<sup>Forward</sup> is the total number of named entities scaled by the total number of words in forward-looking sentences. TimeHorizon<sup>Forward</sup> is the total number of forward-looking sentences containing a long-term or short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of forward-looking sentences. NetPositiveTone<sup>Forward</sup> is the total number of phrases in forward-looking sentences identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in forward-looking sentences. Competition is the (scaled) text-based measure of competition from Li et al. (2013) applied to the narrative component of annual reports (excluding governance and remuneration sections). LOSS is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. NCEO is the natural log of the number of geographic segments.  $\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. SBMwords is the natural log of the total number of words in annual report sections identified as being related to strategy and business model. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. Regressions are estimated with fractional regression (Papke and Wooldridge, 1996). For ease of exposition, coefficients and standard errors are multiplied by 100. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test.



**Table 3.11 - Coefficient estimates and model summary statistics for regressions testing the predictive ability of forward-looking statements in SBM commentary**

	Earn <sub>t+1</sub>		Earn <sub>t+2</sub>		Earn <sub>t+3</sub>		Earn <sub>t+1</sub>		Earn <sub>t+2</sub>		Earn <sub>t+3</sub>	
	(1)		(2)		(3)		(4)		(5)		(6)	
Intercept	0.051		-0.012		-0.063		0.049		-0.028		-0.092	
	(0.054)		(0.066)		(0.069)		(0.048)		(0.064)		(0.069)	
NetPositiveTone <sup>Forward</sup>	-0.924	**	-0.697		-0.615		-0.569	*	-0.303		-0.261	
	(0.454)		(0.431)		(0.482)		(0.308)		(0.332)		(0.405)	
LOSS	-0.194	***	-0.162	***	-0.146	***	-0.070	***	-0.051	***	-0.044	***
	(0.010)		(0.010)		(0.012)		(0.008)		(0.009)		(0.010)	
NetPositiveTone <sup>Forward</sup> *LOSS	3.656	**	4.718	***	2.929	*	1.547		2.899	**	1.349	
	(1.558)		(1.494)		(1.705)		(1.209)		(1.232)		(1.566)	
Earn <sub>t</sub>							0.543	***	0.483	***	0.441	***
							(0.030)		(0.034)		(0.036)	
BookToMarket	0.020	***	0.013	**	0.017	**	0.007		0.003		0.008	
	(0.006)		(0.006)		(0.007)		(0.004)		(0.005)		(0.006)	
Leverage	0.000		0.003		0.002		-0.001		0.002		0.002	
	(0.002)		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)	
Returns	0.075	***	0.070	***	0.052	***	0.047	***	0.046	***	0.030	***
	(0.007)		(0.008)		(0.008)		(0.005)		(0.007)		(0.007)	
Size	0.009	***	0.009	***	0.010	***	0.004	***	0.005	***	0.007	***
	(0.002)		(0.002)		(0.002)		(0.001)		(0.002)		(0.002)	
NSEG	0.000		0.001		0.001		-0.001		0.001		0.001	
	(0.002)		(0.002)		(0.002)		(0.001)		(0.001)		(0.002)	
NGEO	0.001		0.001		0.001		0.001		0.001		0.000	
	(0.001)		(0.001)		(0.002)		(0.001)		(0.001)		(0.001)	
SBMwords	-0.003		-0.001		-0.002		-0.002		0.000		-0.001	
	(0.003)		(0.003)		(0.004)		(0.002)		(0.003)		(0.003)	
MainMarket	0.019	**	0.027	***	0.033	***	0.014	***	0.019	***	0.025	***
	(0.008)		(0.009)		(0.010)		(0.005)		(0.007)		(0.008)	

N	5422	5164	4889	5399	5144	4868
R Squared	0.434	0.357	0.308	0.607	0.489	0.416
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>NetPositiveTone</i> <sup>Forward</sup> +	2.732 *	4.021 ***	2.314	0.979	2.596 **	1.088
<i>NetPositiveTone</i> <sup>Forward</sup> * <i>LOSS</i>	(1.423)	(1.420)	(1.634)	(1.139)	(1.197)	(1.529)

Results for regressions testing the predictive ability of forward-looking statements in SBM commentary.  $Earn_{t+1}$ ,  $Earn_{t+2}$  and  $Earn_{t+3}$  are earnings from continuing operations scaled by opening book value of total assets at one-, two- and three-year ahead horizons respectively.  $NetPositiveTone^{Forward}$  is the total number of phrases in forward-looking sentences identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in forward-looking sentences. *LOSS* is a binary variable taking a value of one where the firm is loss-making from continuing operations.  $Earn_t$  is earnings from continuing operations scaled by opening book value of total assets. *BookToMarket* is the book value or equity scaled by the market value of equity. *Leverage* is total debt divided by total equity. *Returns* is the 12-month return for the period ending in the month of the financial year end. *Size* is natural logarithm of market capitalization at financial year end. *NSEG* is the natural log of the number of business segments. *NGEO* is the natural log of the number of geographic segments. *SBMwords* is the natural log of the total number of words in annual report sections identified as being related to strategy and business model. *MainMarket* is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise.  $NetPositiveTone^{Forward} + NetPositiveTone^{Forward} * LOSS$  is the linear combination of the interaction term and net positive tone main effect. Regressions are estimated using OLS. Standard errors are in parentheses. Superscripts \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05 and 0.01 levels, respectively, for a two-tailed test.

# **Chapter 4 On the shoulders of giants: (How) Does Mandating Annual Report Discourse on Strategy and Business Model Improve Transparency About Value Creation?**

## **4.1. Introduction**

Understanding how a firm creates value is fundamental to analysing financial information and assessing future performance (International Accounting Standards Board [IASB], 2010; Palepu et al., 2013; Verrecchia, 1980). Shareholders therefore view insights into strategy and business model (SBM) as integral to understanding firms' information mosaic (Koch et al., 2013; Kohut and Segars, 1992; Simoni, 2021). Nevertheless, despite clear demand from investors and other stakeholders (e.g., CFA Institute, 2006), a significant proportion of firms elect to provide little information in voluntary disclosure regimes (e.g., Morris and Tronnes, 2018). Management often cite proprietary costs as a reason for not disclosing (Menon, 2018; Verrecchia, 1983). In response, policymakers can mandate management to report on strategy and business model in their annual report. For example, the Securities and Exchange Commission (SEC) has been undertaking a consultation project to seek views on whether to revise Item 101(a)(1) to force registrants to describe their business model in the Management Discussion and Analysis section of their Form 10-K (SEC, 2016; 2019; 2020). The latest IASB exposure draft on Management Commentary places the discussion of SBM centre stage in the annual report and accounts (IASB, 2021). A handful of jurisdictions have already gone a step further and introduced mandatory disclosure requirements for SBM annual report commentary including the European Union [EU] (EU, 2014), South Africa (Barth et al., 2023) and the UK (BIS, 2013). In this chapter, I examine how the properties of SBM commentary change in response to a disclosure mandate, and whether the form of the mandate impacts disclosure outcomes.

Theory offers competing insights into the effectiveness of disclosure mandates in the area of strategy and business model. On the one hand, models that acknowledge proprietary costs are pessimistic about the quality of disclosures when management are forced to say something. Specifically, this line of research cautions that requiring disclosure may yield biased or obfuscated commentary from firms reluctant to reveal the source of their competitive advantage (Bloomfield, 2002; Versano, 2021). On the other hand, the unravelling principle contends that disclosure will occur for all firms except those with the poorest strategy (Akerlof, 1970; Milgrom, 1981). Further, institutional theory argues that failure to provide adequate disclosure threatens firm legitimacy (DiMaggio and Powell, 1983; Higgins and Larrinaga, 2014). How SBM reporting properties change following a reporting mandate is an empirical question that extant research has overlooked.

At least two factors add further complexity to this question. First, debate around legislating non-financial reporting question whether the form of the mandate can impact disclosure outcomes. Some argue that lighter-touch regulation in the form of comply or explain provisions are more effective as they promote more aspirational standards and give preparers flexibility to focus disclosures on key areas rather than prescribing one-size-fits-all rules (London Stock Exchange [LSE], Ho, 2017; 2012, p. 8). Opponents of comply or explain contend that the approach encourages boilerplate or tick-box disclosures at the expense of meaningful insights (Christensen et al., 2021; Sergakis, 2013). Instead, mandatory requirements that establish minimum acceptable standards for all firms are considered more effective. If and how the form of the disclosure mandate affects the properties of SBM reporting is unclear.

A second complicating factor is how firms' pre-mandate disclosure policy conditions their response to a regulatory intervention. Recent analytical work by Versano (2021) shows how voluntary disclosers that provide substantive information may be crowded-out by lower

quality disclosures made by reluctant firms in response a reporting mandate. Conversely, Arena et al. (2021) show that substantive voluntary disclosers may respond to a disclosure mandate by providing additional information beyond the minimum requirement to differentiate themselves. A small set of empirical studies provide mixed conclusions on this issue and none of them examine the specific setting of SBM commentary where proprietary costs are particularly acute.

I examine SBM annual report disclosure in the UK setting where several innovative disclosure mandates provide a novel opportunity to study the evolution of reporting in response to regulatory interventions in 2010 and 2013. In the period before 2010, a material proportion of firms elected to provide commentary on SBM matters voluntarily. The Corporate Governance Code was modified in 2010 to include a provision requiring firms listed on the LSE Main Market to articulate their strategic objectives and business model or explain the reason(s) for not complying with the provision. In 2013, identical disclosure requirements were enacted into company law as part of a broader disclosure mandate. I exploit these structural changes to investigate the following three questions: how did SBM commentary develop as transparency requirements increase? How does the form of the disclosure mandate condition disclosure outcomes? How did firms' pre-mandate SBM reporting policy affect their response?

My empirical analysis employs a corpus of SBM disclosures drawn from 14,500 annual reports published between 2006 and 2018 by non-financial firms listed on the LSE. My empirical strategy involves testing how SBM disclosure properties change in response to the 2010 and 2013 regulatory interventions. I operationalize SBM disclosure characteristics along four dimensions. I examine the *presentation* of SBM commentary to determine whether disclosures are more likely to be concentrated in separate, clearly labelled strategy section(s) or distributed throughout the annual report. I measure the *volume* of SBM commentary by counting the number of sentences discussing SBM matters regardless of where they occur in

the report. I investigate disclosure *content* by analysing the distribution of SBM topics across the report. Finally, I examine disclosure *effectiveness* by analysing the properties of effective SBM disclosure highlighted in best practice guidance (FRC, 2014b; IIRC, 2013).

In the first step of my analysis, I construct a difference-in-differences (DiD) analysis using firms listed on the LSE Alternative Investment Market (AIM) as my counterfactual because they were not subject to the 2010 and 2013 mandates. My results suggest a weak treatment effect for Main Market firms in response to the 2010 comply or explain provision. Specifically, I find no consistent evidence of an incremental increase in disclosure volume or best practice reporting. I do, however, observe a greater tendency to concentrate commentary in a standalone SBM section. Results suggest the 2010 mandate influenced the presentation of SBM commentary rather than increasing the disclosure volume or its effectiveness. In contrast, I find a substantial treatment effect for volume and effectiveness in response to enacting identical SBM reporting requirements into company law in 2013. Specifically, I find consistent evidence that Main Market firms increase the volume of SBM disclosure and improve coverage of both internal resource and external environment topics. I also find that Main Market firms provide greater long-term focus. Results are economically meaningful: estimates suggest that Main Market firms increased their commentary on SBM matters by approximately 50 sentences. This translates to a 13% (16%) increase relative to the sample mean (median). Collectively, my findings reveal that disclosure mandates improve transparency concerning managements' value creation approach, but that the form of the regulatory intervention has an important impact on the nature of the improvement.

Next, I investigate cross-sectional variation in the response to disclosure mandates among the group of treated Main Market firms. I restrict my analysis to firms listed on the Main Market and partition between firms that already provide substantive SBM commentary in the pre-mandate period (hereinafter 'Enthusiastic' disclosers) and firms that provide little or

no SBM commentary in the pre-mandate period (hereinafter ‘Reluctant’ disclosers). Although Reluctant disclosers are assumed to be the primary target of regulatory intervention, the relative response of Reluctant versus Enthusiastic firms is hard to predict *ex ante*, particularly given competing predictions that disclosures from Enthusiastic firms may be crowded out (Versano, 2021) or may be improved as a means of differentiation (Arena et al., 2021). I use two approaches to distinguish Reluctant disclosers from Enthusiastic disclosers. My first approach uses the inclusion of a separate SBM section as an unambiguous partition to identify firms providing clear SBM commentary. My second approach recognises that SBM commentary may be distributed across annual report sections. I therefore partition firms using a composite SBM disclosure score (e.g., Grewal et al., 2019; Ioannou and Serafeim, 2019). I construct my SBM disclosure score using principal components analysis of variables capturing the presence of a separate SBM section and the volume of SBM disclosure in non-SBM sections.

Results suggest that Reluctant reporters experience no treatment effect for SBM volume in response to the 2010 comply or explain provision when I define Reluctant firms using my composite disclosure score. I also find no treatment effect for coverage of internal resources topics and only marginal evidence that external environment discussion increases more for Reluctant firms relative to Enthusiastic firms. I also find no treatment effect for Reluctant reporters in terms of SBM disclosure effectiveness. Rather, results confirm that neither group adjusts their disclosure policy to align with best practice reporting. My results are qualitatively similar when partitioning firms on the presence of a separate SBM section. Overall, my findings suggest a muted response by Reluctant firms to the introduction of the comply or explain provision. However, I do find evidence of firms without a separate SBM section beginning to restructure and reorganise commentary into identifiable sections.

In response to enacting the same disclosure requirements into law in 2013, I find Reluctant firms (as defined using the SBM section partition) increase their disclosure volume

substantively relative to Enthusiastic firms. I also find improved coverage of both external environment and internal resources topics. Analysis of economic effects reveals discussion of SBM matters increases to the point where post-2013 disclosure volume for Reluctant firms is similar to pre-mandate levels evident for Enthusiastic reporters. Meanwhile, Enthusiastic firms respond by increasing their disclosure volume further, consistent with attempts to maintain their differentiated disclosure position (Arena et al., 2021; Versano, 2021). I find no incremental improvement in SBM disclosure effectiveness for Reluctant firms. Rather, both groups shift the focus to the long term but reduce the specificity of commentary by a similar degree. Therefore, the gap in disclosure effectiveness remains similar across the two groups after the regulatory mandate.

My evidence from analysing the two regulatory mandates points to the form of the SBM mandate conditioning firms' disclosure response. I seek direct evidence on whether the form of the mandate matters by constructing a formal DiD test that directly assesses the relative impact of the 2010 and 2013 SBM interventions. My approach involves focusing on the subset of Main Market firms with at least one annual report available in each of the pre-2010, 2010-2013, and post-2013 periods. I use the subset of AIM firms with equivalent report availability as my counterfactual. I use this constant sample to compare the relative magnitude of the changes in SBM disclosure properties corresponding to the 2010 and 2013 interventions. I also test whether SBM disclosure properties change significantly after each intervention relative to the pre-2010 voluntary disclosure period. Results confirm that Main Market firms' response in terms of SBM disclosure volume and topic coverage is confined to the 2013 mandate. I nevertheless find that Main Market firms respond to both regulatory interventions by presenting commentary in a single section and focusing more on the long term, but that the response is stronger to the 2013 legal mandate. My results suggest that the legal SBM mandate



prompted a more pronounced disclosure response than the same underlying requirement presented as a comply or explain provision.

My findings contribute to a central topic in corporate reporting that has received little attention in the literature to date, despite increasing regulatory pressure for management to provide more commentary on SBM matters. Prior research investigating SBM discourse typically relies on manual analysis of small samples (e.g., Bini et al., 2016; Bowman, 1984; Santema et al., 2005) or strategic plan disclosures occurring outside the annual report. More recent developments provide large-scale empirical analysis of capital market implications of SBM annual report disclosure mandates (Athanasakou et al., 2022; Simoni et al., 2022; Wang et al., 2023). I complement these concurrent studies by going beyond an analysis of disclosure volume with evidence on the reporting themes and qualitative characteristics predicted by regulators to influence disclosures usefulness (Beattie and Smith, 2013; Wang et al., 2023). This is important as it reflects the contextual nature of SBM discourse and its contribution to firms' information mosaic (Koch et al., 2013). Despite substantial proprietary and other costs, my results contribute evidence consistent with disclosure mandates successfully prompting firms to adapt disclosure in terms of volume, presentation, topic coverage and time horizon.

I also contribute to the non-financial disclosure literature. Recent work advocates expanding how we view regulation of non-financial information beyond a binary (voluntary versus mandatory) choice to also consider the form of the regulation (e.g., Christensen et al., 2021; Leuz, 2010). It is unclear whether light-touch regulation is an effective way to improve transparency, especially in the face of high proprietary costs. Proponents argue that it permits preparers flexibility to tailor commentary to their unique circumstances and reduce the risk of creating an unnecessary burden on companies (Ho, 2017; Sergakis, 2013). On the other hand, critics caution that preparers may approach comply or explain provisions as tick-box exercise that yields bland, boilerplate disclosure (Arcot et al., 2010; Moore, 2009). Evidence analyzing

firm-level disclosure decisions over time in response to different forms of regulatory intervention is rare (Ho, 2017). I complement this literature by leveraging the novel setting of mandates by UK regulators requiring disclosure of SBM commentary. My novel institutional setting facilitates direct comparison of firm responses to different forms of regulatory mandate, holding the disclosure requirements constant. Extant studies analysing the UK setting focus exclusively on either the 2010 comply or explain provision (Athanasakou et al., 2022) or the 2013 legal requirement (Simoni et al., 2022; Wang et al., 2023). I provide the first analysis comparing how firms respond to different forms of SBM mandate. My analysis shows a response to the comply or explain provision for presentation and some qualitative characteristics, but a substantially stronger response to legal requirements in the area of SBM commentary. My insights are relevant both to the academic literature and policymakers currently considering non-financial reporting mandates, such as SBM disclosure regulation (FRC, 2019; IASB, 2021; SEC, 2020).

## **4.2. Theory and predictions**

### **4.2.1. Related literature**

Despite interest from investors and action from policymakers, few studies investigate the properties of SBM disclosure in annual reports. Early research focuses on the incidence and quality of voluntary SBM disclosures, often finding that relatively few firms volunteer information and that where they do, reporting quality tends to be patchy (Bowman, 1978; Bowman, 1984; Osborne et al., 2001; Padia and Yasseen, 2011; Santema and van de Rijt, 2001). In mandatory and de facto mandatory settings, empirical evidence questions the informativeness of SBM disclosures. Bini et al. (2016) analyse 35 strategic reports in the UK and conclude that business model descriptions fail to provide adequate information on value

creation. I extend Bini et al. (2016) in Chapter 3 by constructing and analysing a large corpus of SBM annual report commentary for UK firms. I find that while the themes of SBM discourse align with popular strategy frameworks and that managers tailor disclosures to the circumstances of the firm, commentary does not typically display the hallmarks of effective reporting as defined by regulators.

Few studies examine the impact of mandating SBM disclosure. Athanasakou et al. (2022) investigate the introduction of a comply or explain provision in 2010 to provide annual report commentary on SBM. They document an increase in the volume of SBM commentary in the annual report, along with spillover disclosure effects to other reporting channels such as earnings announcements and investor presentations. Further analysis reveals that the increase in SBM commentary reduces investor uncertainty. Focusing on the amendments to the 2013 legal mandate, Wang et al. (2023) examine the relation between SBM reporting quality and capital market benefits in the form of higher liquidity, lower cost of capital, and reduced analyst forecast dispersion.<sup>37</sup> They find more pronounced capital market benefits after the regulatory change. Simoni et al. (2019) find that mandatory SBM disclosure post-2013 has a positive (negative) moderating effect on the value relevance of net income (book value of equity), consistent with these disclosures contextualising revenue generating mechanisms and providing information on intangible aspects of firm value. However, no work of which I am aware provides direct evidence on how the properties of SBM disclosure change in response to mandatory requirements, nor examines whether the form of the reporting mandate matters.

Most research investigating how non-financial disclosures change following regulatory intervention is limited to examining disclosure volume. For example, Ioannou and Serafeim (2019) conduct a cross-country analysis to investigate how firms respond to comply or explain

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<sup>37</sup> Wang et al. (2021) define SBM disclosure quality using proprietary data from PwC UK, which contains assessments from a team of experts. The evaluative framework is based on “*regulatory guidance and their internal research with investors to understand their reporting preferences*” (p. 6).

provisions for ESG reporting. They find an increase in disclosure volume as well as greater propensity to adopt reporting guidelines and seek assurance. Nelson and Pritchard (2016) examine how the volume and readability of risk disclosures by US firms varies following an SEC mandate in 2005. They find the gap in disclosure characteristics between high and low ex-ante litigation risk narrowed following the regulatory change. Matuszak and Róžańska (2021) content analyse 134 annual reports across two financial years to investigate how firms adapt their disclosure in response to Directive 2014/95/EU. They document higher disclosure across a range of different non-financial reporting themes. Park (2023) investigates the revisions to the UK Corporate Governance Code in 2010 and finds a shift towards non-earnings performance reporting. Nevertheless, analysis of how qualitative characteristics of narrative disclosures in general, and SBM commentary in particular, change following disclosure mandates is an underexplored issue in the literature.

## **4.2.2. Empirical predictions**

### *4.2.2.1. Regulatory features of the UK setting*

Chapter 2.1.1 explains the features of SBM disclosure regulation in the UK. Briefly, firms have traditionally had discretion to disclose information on SBM matters via a variety of channels including their annual report. In addition, from 2006 onwards the Companies Act 2006 required firms to report details of critical success factors in the Business Review section of the annual report. Nevertheless, UK policymakers raised concerns that financial reports were failing to provide users with the information they require to scrutinise management decisions and evaluate corporate health, particularly in the area of value creation (House of Commons Treasury Committee, 2009). The UK Corporate Governance Code (CGC) was therefore modified in 2010 to include the ground-breaking obligation for LSE Main Market firms to provide information on strategic objectives and business model in their annual report (Financial

Reporting Council [FRC], 2010, para. C.1.1). Under UK securities listing requirements, management have the option to comply with provisions in the CGC or explain in the annual report why they fail to do so. Firms listed on the Alternative Investment Market (AIM) were exempt from the disclosure provision.

The UK government also initiated a consultation process in 2010 to examine how UK narrative reporting was working in practice (BIS, 2010a). BIS subsequently published an impact assessment on narrative reporting (BIS, 2010b) that identified several concerns including increasingly lengthy and complex annual reports, a propensity to provide boilerplate commentary, and a lack of comparability. The report recommended that firms should produce a high-level strategic report to ensure disclosure of relevant information in a focused and concise way. Requirements for the Strategic Report were published in full on 9 August 2013, effective for financial periods ending on or after 1 October 2013 as part of revisions to the Companies Act. As part of these changes, the legislation pivoted reporting regulations from a comply or explain approach to enacting the same disclosure requirements in law. AIM firms were again not subject to the same requirements.

Together, these disclosure requirements provide a novel regulatory environment and render the UK an ideal setting to analyse how the properties of SBM commentary change in response to (different) disclosure mandates.

#### *4.2.2.2. Issues specific to mandating SBM commentary*

Several novel aspects of SBM reporting complicate attempts by regulators to mandate disclosure. Publicly articulating firm strategy and business model likely incurs competitive costs (Menon, 2018), leading firms with good strategies to hide favourable information (Verrecchia, 1983). Indeed, survey evidence confirms proprietary costs as a key consideration among preparers when designing disclosures of business models (Bini et al., 2023). That firms

with good strategies face incentives to remain silent creates scope for a pooling equilibrium where firms with poor strategies also fail to disclose and therefore avoid scrutiny (Dye, 1985).

Leaving proprietary costs to one side, provision of clear and concise discussion of SBM is a challenging task for several reasons. First, where firms operate across geographic locations or sectors, managers often devise strategies and business models for different business areas (Bini et al., 2023). Second, strategy is dynamic and diffuse across the organisation (Falkenberg and Gronhaug, 1989; Menon, 2018; Schneckenberg et al., 2019). The dynamic nature of strategy also leads to concern that managers may incur reputational damage from changing strategy in the future (Ferreira and Rezende, 2007). For these reasons, some firms (hereinafter ‘reluctant’ disclosers) choose to remain silent in voluntary reporting regimes because the costs of disclosure outweigh the benefits.

Accounting theory is pessimistic about the informativeness of disclosures where reluctant firms are forced to say something due to concern over biased or obfuscated disclosure (Bloomfield, 2002; Versano, 2021). Empirical evidence is consistent with firms providing biased and complex commentary to avoid disclosure costs (Bushee et al., 2018; Kothari et al., 2021; Li, 2008). Alternatively, disclosers can use boilerplate commentary as a low cost compliance strategy (Christensen et al., 2021). Research documents evidence of boilerplating in the context of general annual report disclosure (Lang and Stice-Lawrence, 2015), ESG commentary (Christensen et al., 2021) and risk reporting (Hope et al., 2016).

On the other hand, the isomorphism literature offers reasons why the regulatory change may prompt more substantive disclosure. Normative isomorphism posits that firms are pushed to adopt the norms of their environment to maintain legitimacy (DiMaggio and Powell, 1983). A material proportion of firms voluntarily commented on SBM topics before 2010 and continued to provide substantive commentary under the comply or explain regime. Widespread inclusion of SBM commentary in the annual report puts pressure on silent firms. At the same

time, various stakeholder groups publicly advocate for and lobby firms to disclose clear information on strategy and business model plans (e.g., CFA Institute, 2006; International Federation of Accountants, 2020; Investment Association, 2017).

Against this backdrop of increasing pressure, introducing a disclosure mandate may provide the push that tips reluctant firms to begin providing disclosure. Specifically, coercive isomorphism predicts that refusing to comply with new rules may be costly and damage organisational legitimacy (Higgins and Larrinaga, 2014) if firms fail to operate within the confines of the regulatory mandate (DiMaggio and Powell, 1983). Indeed, prior studies provide empirical evidence consistent with coercive isomorphism forcing firms to provide general narrative commentary (e.g., Korca et al., 2021). At the same time, firms may be incentivised to go beyond the minimum requirements. Mimetic isomorphism suggests firms emulate other firms that are perceived to be successful (Tolbert and Zucker, 1983). It follows that disclosers generally tend towards mimicking firms that provide the most meaningful disclosures. Failing to provide clear and adequate disclosure therefore risks leaving reluctant firms behind and threatening their legitimacy, while firms already saying something about SBM matters could be prompted to further improve disclosure to retain their distinctiveness.

Given the competing theoretical arguments, I offer the following null hypothesis as the basis for my empirical analysis:

H<sub>0</sub>1: *On average, mandating disclosures of strategy and business model yields a muted response by Main Market firms in terms of qualitative disclosure characteristics.*

The alternative hypothesis is that Main Market firms respond in line with regulatory pressure to provide more and better quality information on value creation.

#### *4.2.2.3. The form of the regulatory mandate*

While I offer the null hypothesis as an average effect for disclosure mandates in general, arguments in the literature suggest that the form of the disclosure mandate may matter. Indeed, research advocates expanding how we view regulation of non-financial information beyond a binary (voluntary versus mandatory) choice to also consider the form of the regulation (e.g., Christensen et al., 2021; Leuz, 2010). It is unclear whether less prescriptive regulation or explicit legal requirements offer a more effective way to improve transparency in the context of SBM commentary.

Research examining comply or explain provisions yield mixed conclusions. Proponents argue that such a regulatory approach can be effective as it allows preparers the flexibility to tailor their commentary to the unique circumstances of the firm (Christensen et al., 2021; Ho, 2017). This flexibility can challenge firms to improve standards more quickly and effectively than strict rules that all firms must apply immediately (LSE, 2012, p. 8). In other words, rather than setting a minimum standard which must be achievable for all firms, comply or explain provisions are seen by some as setting aspirational standards (LSE, 2012). This may be particularly helpful where the disclosures are costly and these costs (and benefits) are heterogeneous across firms (Ogus, 1995; Sergakis, 2013), such as where firms face substantial proprietary costs as in the case of SBM commentary (Bini et al., 2023; Menon, 2018). Failing to comply with the provisions or providing an unsatisfactory explanation may be penalised by investors, the threat of which serves a disciplining mechanism towards clear and meaningful reporting (MacNeil and Li, 2006).

Opponents nevertheless voice concerns that investors have insufficient time or resources to analyse and verify firms' explanations (Arcot et al., 2010; Moore, 2009), thus inhibiting the market's role as a disciplining force. Potential outcomes include non-compliance coupled with boilerplate explanations, or weak compliance and symbolic disclosure (Ho, 2017; Sergakis,



2013). Management may also find it challenging to articulate clear and concise explanations for non-compliance, particularly against a backdrop of lengthening annual reports (Moore, 2009; Sergakis, 2013) where stakeholders including the Financial Reporting Council (FRC) are pushing managers to cut clutter (FRC, 2009).

Empirical evidence provides mixed insights. Studies comparing firm decisions before and after comply or explain provisions generally find a substantial response by firms subject to the regulation in terms of disclosure volume, adopting voluntary guidance, or seeking assurance on disclosures (e.g., Ackers and Eccles, 2015; Ioannou and Serafeim, 2019; Matuszak and Róžańska, 2021). However, several studies document that a material proportion of firms fail to comply or fail to provide a satisfactory explanation for non-compliance. These findings apply in a range of contexts including variations of the UK Corporate Governance Code and its antecedents (Arcot et al., 2010; FRC, 2013a; MacNeil and Li, 2006), as well as the Slovenian Corporate Governance Code (Cankar et al., 2010) and remuneration disclosures mandated by the German Corporate Governance Code (Andres and Theissen, 2008).

In the case of the 2010 CGC mandate, it is not clear whether firms respond to the comply or explain provision by improving SBM reporting. On the one hand, the mandate represents a clear increase in pressure for management to say something while still providing flexibility to tailor the content and design of commentary. In this way, managers may choose to comply with the mandate by providing meaningful commentary while shying away from disclosure on particularly costly topics. On the other hand, such a disclosure strategy withholds potentially useful information demanded by investors (Investment Association, 2017; Kohut and Segars, 1992) that may harm organisational legitimacy (Higgins and Larrinaga, 2014). Managers could instead leverage the flexibility of the mandate by electing to remain silent while explaining to shareholders the reasons for not disclosing. To maintain legitimacy, managers need to convince shareholders that remaining silent is in their interests (e.g., to minimise proprietary costs) and

is not motivated by managers' incentives to avoid scrutiny and confound effective monitoring of poor or ill-defined strategy (Dye, 1985).

The second regulatory intervention in 2013 pivots from a comply or explain obligation in listing rules to enacting the same disclosure requirements in law. It is unclear from theory whether such a transition leads to a pronounced change in disclosure behaviour. On the one hand, under the comply or explain provision, non-compliance is a breach of listing rules. Yet, prior literature fails to identify any examples of the Financial Services Authority (FSA) initiating an enforcement action against a company for non-compliance (Keay, 2014) despite known breaches of the Corporate Governance Code (e.g., FRC, 2013a). Instead, regulators choose informal suasion rather than formal charges, while also expecting investors to press managers for change (Armour, 2010). However, following enactment of the disclosure mandate into law, disciplining firms for not complying with the disclosure requirement is no longer left only to investors who may have insufficient time or resources to analyse and verify firms' explanations (Arcot et al., 2010; Moore, 2009). This transition represents a move towards coercive isomorphism where firms must comply with the requirements to continue operating within the law (DiMaggio and Powell, 1983). Prior studies provide empirical evidence consistent with coercive isomorphism forcing firms to provide general narrative commentary (Korca et al., 2021).

Further, a key difference between legal mandates and comply or explain rules is that the former are seen as setting minimum requirements that must be achieved by all and the latter aspirational standards (LSE, 2012). In my setting, disclosure requirements are the same in both regimes. Therefore, what was the aspirational standard in the comply or explain regime becomes the minimum requirement following the legal mandate. Shortly after the transition to the 2013 CA mandate, the FRC also issued non-mandatory guidance on best practice reporting (FRC, 2014b). Accordingly, the 2013 change placed a mandatory floor on SBM disclosure

coupled with an enhanced (voluntary) gold standard for preparers to aspire towards. This may lead to a step-change in reporting practice.

Theory nevertheless suggests firms may not respond to a legal mandate by substantively improving their disclosures. SBM disclosures continue to be costly, both in terms of revealing proprietary information to competitors (Bini et al., 2023; Menon, 2018) and having the potential to damage managers' reputation (Dye, 1985; Ferreira and Rezende, 2007). For firms where such costs are particularly high, managers can choose to remain silent in the comply or explain provision. Following the introduction of the comply or explain provision, managers can no longer choose to remain silent and instead must say something or risk their legitimacy by explaining non-compliance. Firms may therefore select from a menu of disclosure policies to minimise costs while appearing to comply with the disclosure provision. For example, boilerplate commentary could substitute for meaningful, entity-specific insights (Bloomfield, 2002). Such disclosure strategies have been observed empirically, such as in general annual report commentary (Li, 2008), conference calls (Bushee et al., 2018) and press releases (Kothari et al., 2021). Managers may follow a decoupling strategy by using the lexicon of established strategy frameworks to discuss business models and value creation while concealing specific details on how their comparative advantage translates into value (Christensen et al., 2021). Evidence from a variety of reporting contexts including corporate governance and CSR reporting provides evidence consistent with managerial symbolism (Bothello et al., 2023; Cho et al., 2015; Crilly et al., 2016; Westphal and Zajac, 1998). Overall, these arguments point towards observing (at best) a superficial increase in the quantity and quality of SBM commentary.

Given these competing arguments from prior accounting literature, in my empirical analysis I test the following null hypotheses:

H<sub>0</sub>2A: *The response to the 2010 comply or explain provision for Main Market firms to provide strategy and business model commentary in their annual report was limited.*

H<sub>0</sub>2B: *The incremental impact in 2013 of transforming the 2010 comply or explain provision into a legal requirement for Main Market firms to provide strategy and business model commentary in their annual report was limited.*

#### 4.2.2.4. *The pre-mandate disclosure policy of firms*

So far, my discussion focuses on the average treatment effect across all firms subject to disclosure mandates. However, it is likely that the benefits and costs of disclosure vary across firms. Indeed, prior research documents substantial heterogeneity in SBM disclosures in voluntary regimes where some firms voluntarily disclose insights into SBM matters while others remain silent (Padia and Yasseen, 2011; Santema and van de Rijt, 2001). Recent accounting theory shines a light on the impact of firms' pre-mandate disclosure policy on the response to disclosure mandates (Versano, 2021).

The above predictions are predicated on firms that, on average, fall short of the disclosure requirements before the mandate by providing little or no disclosure. In contrast, there may be a subset of 'enthusiastic' firms that voluntarily provide substantive SBM disclosure that meets (or even exceeds) the reporting requirements. How such firms respond to SBM disclosure mandates is unclear for several reasons. First, the requirement to say something about SBM does not directly impact on the disclosure decision of voluntarily reporters if their existing disclosures meet or exceed the requirement. Therefore, the disclosure mandate can only influence the disclosure of enthusiastic firms through an indirect channel, namely in response to the (anticipated) changes in the disclosure of reluctant firms that provide little or no SBM commentary. However, as the discussion in Section 4.2.2.2 reveals, it is not clear ex ante that

these reluctant firms change their disclosure policy substantially, in which case there is little reason for enthusiastic firms to substantively alter their reporting strategy in response to a disclosure mandate.

Conversely, reluctant reporters may increase their SBM disclosure in response to a reporting mandate as intended by the regulator. However, such commentary may be of poor quality with few firm-specific insights (Bloomfield, 2002). Prior literature in accounting offers competing insights into how enthusiastic firms might respond. For example, Versano (2021) highlights the possibility that disclosures made by enthusiastic firms may become swamped by poor-quality disclosures made by reluctant firms. In response, previously enthusiastic firms may look to differentiate themselves by going beyond minimum disclosure requirements (Arena et al., 2021). Management can achieve this by increasing disclosure volume and providing more transparency on topics where proprietary costs are higher.<sup>38</sup>

There are at least two reasons why firms that voluntarily disclosed SBM information before a regulatory intervention may subsequently reduce the meaningfulness of their SBM commentary. First, the disclosure requirement likely increases the volume of SBM information available, which is potentially of poor quality (Versano, 2021). Given users have limited attention and processing power, there is the risk that investors are swamped in (low quality) disclosures and need to choose which information to acquire and integrate (Blankespoor et al., 2020; deHaan et al., 2015; Hirshleifer et al., 2009). These factors could imply less attention is paid to SBM disclosures by investors, which in turn may reduce the capital market benefits from great transparency relative to the proprietary costs (Menon, 2018). Second, enthusiastic disclosers may benefit from spillovers, either from enhanced investor confidence and liquidity

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<sup>38</sup> In the specific case of the legal requirement in 2013, the mandate is supported by the provision of best practice reporting by regulators (FRC, 2014) which exemplifies what effective reporting looks like. It follows that enthusiastic disclosers may tend towards mimicking firms providing the most meaningful disclosures or, in this case, towards the inclusion of reporting features identified as being gold standard. Empirically disentangling the effect of the best practice guidance from the effect of enacting disclosure requirements in law is challenging given the best practice guidance was released soon after the legal requirement became effective.

spillovers (Bushee and Leuz, 2005) or by investors having deeper understanding of market dynamics (Admati and Pfleiderer, 2000). These spillovers can reduce the marginal benefit to disclosure, with the result that voluntary reporters respond by *reducing* disclosure levels (Breuer et al., 2022).

These competing perspectives on how voluntary SBM reporters respond to disclosure mandates makes it difficult to develop an unambiguous directional prediction. Instead, the relative response of enthusiastic versus reluctant SBM disclosers in terms of the quality and quantity of SBM commentary is an empirical question. I therefore offer the following hypothesis regarding the differential response by enthusiastic and voluntary firms in null form:

H<sub>03</sub>: *Mandating disclosures of strategy and business model yields a similar response by Main Market firms already providing substantive disclosures to Main Market firms previously remaining silent.*

## **4.3. Research design**

### **4.3.1. Aggregate tests of reporting mandates**

My core research question explores how the properties of SBM commentary change in response to a disclosure mandate, and whether the form of the mandate impacts disclosure outcomes. The null form of H<sub>01</sub> predicts negligible response by Main Market firms to regulatory intervention mandating SBM commentary. The alternative hypothesis is that Main Market firms respond inline with regulatory pressure to provide more and better quality information on value creation. I provide empirical evidence on this question by investigating the 2010 and 2013 regulatory mandates separately. Evidence of a material change in qualitative characteristics following either (or both) regulatory interventions will lead me to reject H<sub>01</sub> in favour of the alternative hypothesis that the disclosure mandates enhanced SBM reporting.

Similarly, finding a material response to the 2010 and 2013 regulatory mandates will lead me to reject  $H_{02A}$  and  $H_{02B}$ , respectively.

Figure 4.1 defines the sample periods with which I empirically investigate the two regulatory mandates. To investigate the response to the inclusion of a comply or explain provision for SBM commentary in the CGC 2010, I define the pre-mandate sample (pre-CGC) to include reports with year-ends from 1 June 2007 to 28 May 2010. The end of the sample period reflect the date when the final revisions to the CGC were first made public. The post-mandate sample (post-CGC) includes reports with year-ends from 29 May 2010 to 11 June 2013, with the end date marking the point when draft regulations for a strategic report were first made public. The final sample for testing the impact of the CGC 2010 mandate includes the subset of firms with at least one report available in both the pre- and post-CGC periods.

I investigate the disclosure response to the 2013 legal requirement for SBM commentary by defining the pre-mandate sample (pre-CA) to include reports with year-ends from 19 September 2011 to 30 September 2013. The start date for this sample coincides with publication of the BIS (2011) consultation project and the initial plan for a strategic report. The end date for the pre-CA sample corresponds to the day before the legal requirements for a strategic report became effective. The post-mandate sample (post-CA) includes reports with year-ends from 1 August 2013 to 30 September 2016. I restrict my sample to the subset of firms with at least one available report in both the pre- and post-CA periods.

Following prior literature examining the same institutional setting (e.g., Athanasakou et al., 2022; Park, 2023), my empirical strategy involves isolating the incremental response through a differences-in-differences (DiD) analysis that uses Alternative Investment Market (AIM) firms as my counterfactual. Such firms were not subject to the same regulatory requirements but instead could elect to provide SBM commentary on a voluntary basis throughout my sample period. This makes AIM firms a natural choice of control group.

However, I am cognisant this choice of control group in my setting may violate the assumption of perfect compliance necessary for DiD analysis (Rubin, 1974). Specifically, DiD analyses assume no firms in the control group receive the treatment but all firms in the treatment group should receive the treatment. In my setting, spillover effects from the regulations to AIM firms may be possible if such firms voluntarily adopt the requirements of the mandate. This may be the case where an AIM firm is considering a Main Market listing. I reduce this risk by removing firms from each sample period where the firm switches from the AIM to Main Market (and vice versa). Nevertheless, violation of the perfect compliance assumption due to spillover effects biases *against* finding a treatment effect for Main Market firms in my setting. I therefore interpret my findings with this caveat in mind. As detailed below, my empirical specification allows me to shed light on the presence of spillover effects.

A second consideration is that there may be systematic structural differences between Main Market and AIM firms which may confound my DiD analysis. I address this concern by applying a matching strategy using entropy balancing (EB). The objective of EB is to estimate non-negative weights for each control sample observation such that the specified moment (i.e., mean) of the covariate distribution of weighted control observations is (nearly) identical to the treated sample (Hainmueller, 2012). Relative to other matching techniques such as propensity score matching (Rosenbaum and Rubin, 1983), EB offers several advantages including preserving sample size by maximizing available control sample observations and avoiding the need to identify a (potentially noisy) one-to-one match for each treated observation (e.g., Beck et al., 2022; Glendening et al., 2019).<sup>39</sup>

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<sup>39</sup> An alternative to entropy balancing is to use the synthetic control method (Abadie and Gardeazabal, 2003; Abadie et al., 2010). Synthetic controls are designed to compare a single (or few) treated observations with a weighted sample of control cases, such as examining the effect of introducing a particular tax on a product to the consumption of that product in a given country or territory. Entropy balancing follows a similar spirit but is instead designed to balance a larger sample of treatment units.



Applying EB in practice nevertheless comes with limitations. For example, a concern with EB arises when the analysis involves a panel dataset with multiple pre- and post-treatment periods. In such settings, EB may systematically overweight observations in either the pre- or post-treatment periods. I follow the recommendation of McMullin and Schonberger (2022) and focus exclusively on the year immediately prior to the regulatory intervention. A second consideration is that applying EB when there is limited overlap in (at least) one covariate can lead to substantial overweighting of a subset of variables. In my setting, AIM caters to smaller and more risky companies in comparison to the Main Market. I therefore follow McMullin and Schonberger (2022) and first remove Main Market and AIM observations that are unlikely to have covariate overlap by estimating a propensity score model to identify Main Market (AIM) firms which have very low propensity of being AIM (Main Market) firms. I remove firms from my sample if the propensity score in the year immediately prior to treatment is above 0.95 or below 0.05 of being classified as Main Market (McMullin and Schonberger, 2022). I then apply EB to the remaining firms before applying the firm-specific weight calculated in the pre-treatment year to all observations of the same firm throughout the sample period.<sup>40</sup> Appendix 4.2 provides the covariate balance table. Applying the bounds suggested by Rubin (2001) to assess covariate balance, I find all but two control variables (*Loss\_Binary* and *MarketToBook*) are balanced in the sample testing the CGC regulation and all control variables are balanced in the sample testing the CA regulation. Therefore, there is sufficient common distribution support between the treated and control samples.

I use the following general DiD structure with entropy balancing to assess the impact of the 2010 and 2013 regulatory interventions on the properties of SBM commentary:

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<sup>40</sup> An alternative option proposed by McMullin and Schonberger (2022) is to apply EB in each year of the sample period, which has the advantage of allowing observation weights to vary over time. However, if covariates are correlated with post-treatment variation, there is the risk that such an approach would balance away (some of) the treatment effect.

$$Property_{zi} = \beta_{0z} + \beta_{1z}Post^Y_i + \beta_{2z} + Post^Y_i \times Treated^k_i \sum_{j=1}^J \theta_j Controls_{ji} + \emptyset + \varepsilon_{zi} \quad (4.1)$$

I estimate equation (4.1) separately to assess the impact of the 2010 and 2013 interventions. *Property* measures SBM lexical feature *z* for annual report *i* published by firm *f* (see next section for details of *Property<sub>z</sub>*); *Post<sup>Y</sup>* is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise (*Y* = 2010 for the CGC sample or *Y* = 2013 for the CA sample); *Treated<sup>k</sup>* is an indicator variable equal to one where the annual report is published by a firm listed on the LSE Main Market in treatment sample *k* and zero otherwise (*k* = June 2007 through June 2013 for the CGC sample or September 2011 through September 2016 for the CA sample);  $\emptyset$  are firm fixed effects; and  $\varepsilon$  is the regression residual.<sup>41</sup> I interpret  $\hat{\beta}_{2z} > 0$  as evidence consistent with property *z* increasing more for Main Market firms relative to AIM firms following a particular regulatory intervention. Meanwhile,  $\hat{\beta}_{1z} > 0$  is evidence consistent with SBM property *z* increasing for AIM firms not subject to the regulatory mandate (i.e., spillover effect).<sup>42</sup>

Equation (4.1) includes a vector of *J* control variables (*Controls*) that prior research associates with SBM disclosure (Athanasakou et al., 2022; Simoni et al., 2022; Wang et al., 2023). Elements of *J* are an indicator variable for investment in research and development (*RD\_Binary*); an indicator variable for whether the firm is loss-making from continuing operations (*Loss\_Binary*); business complexity as proxied by the (log) number of segments (*NSEG*); current accounting performance (*ROA*); the change in accounting performance

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<sup>41</sup> Inclusion of firm fixed effects subsumes the *Treated<sup>k</sup>* main effect. In sensitivity tests where I construct industry fixed effects, the *Treated<sup>k</sup>* variable is included in the regression framework.

<sup>42</sup> A spillover effect to AIM firms would lead to a positive and significant *Post* coefficient. However, I would also observe a positive and significant *Post* coefficient if AIM firms gradually increase disclosures over time. Untabulated analyses suggest SBM disclosure volume and the propensity to provide a separate SBM section are increasing over time. Formally identifying a spillover effect would therefore require assessing whether there is a significant incremental change in the disclosure practice of AIM firms relative to a control group of firms for which spillover effects are not feasible.

( $\Delta ROA$ ); stock returns for the 12-month period ending in the month of the fiscal year-end (*Returns*); size as proxied by (log) market capitalization (*Size*); and the (log) word count of the financial statements (*FinStatwords*); market value of equity scaled by the book value of equity (*MarketToBook*); net proceeds from new equity financing (*NewEquity*); and generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values indicate prospector (defender) firms (*GenericStrategy*).

I estimate equation (4.1) using different methods depending on the properties of the dependent variable (see Section 4.3.4 for formal definitions of dependent variables). For count variables such as the number of SBM sentences in the annual report, I use negative binomial and Poisson regression. I use logistic regression for binary outcomes such as the presence of a separate SBM section, and I use OLS for other SBM features. I complement tests of statistical significance with analysis of economic significance.

### **4.3.2. Comparing the response to different forms of mandate**

H<sub>0</sub>2A and H<sub>0</sub>2B make null predictions about how firms respond to different forms of mandate. My preceding analysis tests these predictions by identifying the incremental response of Main Market firms relative to a control group of AIM firms using separate samples and regressions for the 2010 and 2013 interventions. As such, the analysis does not permit me to compare the magnitude of responses to the two mandates directly, which is necessary to understand if the form of the mandate matters. Specifically, my analysis using the 2010 sample compares qualitative disclosure characteristics of Main Market firms in a comply or explain regime to a voluntary regime, after controlling for the reporting of control firms. Meanwhile, the 2013 sample compares disclosure properties in a legal mandate regime with a comply or explain regime. The  $\hat{\beta}_{2z}$  treatment effects are therefore not comparable across the two models. The sample composition also varies across the two models.

I therefore provide a formal test of whether the response to the two mandates differs. My approach involves pooling observations from the CGC and CA sample periods. Specifically, I collect measures for annual reports published by Main Market and AIM firms for the period from 1 June 2007 to 30 September 2016. I restrict observations to firms which (a) do not switch between AIM and Main Market listings and (b) have at least one observation in the pre-2010 CGC period, the period between 2010 CGC and 2013 CA, and the post-2013 CA period.<sup>43</sup> I then estimate the following regression:

$$\begin{aligned}
Property_{zi} = & \rho_{0z} + \rho_{1z}Post2010Pre2013_i + \rho_{2z}Post2013_i \\
& + \rho_{3z}Post2010Pre2013_i * MainMarket_i \\
& + \rho_{4z}Post2013_i * MainMarket_i \\
& + \sum_{j=1}^J \varphi_j Controls_{ji} + \Phi + \mu_{zi}
\end{aligned} \tag{4.2}$$

where *Property* is a measure of SBM commentary (as defined in Section 4.3.4); *Post2010Pre2013* is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise; *Post2013* is an indicator variable equal to one for the period after the enactment of disclosure requirements in law and zero otherwise; *MainMarket*

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<sup>43</sup> Unlike previous analyses, I do not apply entropy balancing. As discussed by McMullin and Schonberger (2022), applying entropy balancing to panel data is challenging, particularly when there are two treatments. Essentially, balancing across observations throughout the period may bias the treatment effect as we may apply positive weight to a control variable in one period (e.g., an AIM observation post-2013) that appears to be similar to a treatment observation in the pre-period (e.g., a Main observation pre-2010). An alternative option is to follow the approach used in the earlier analyses and balance in a single pre-period. This approach assumes that control weights remain consistent in the post-treatment period. This could be problematic if there are changes to (relative) fundamentals when moving across periods. While this is less of a problem over short windows (e.g., from 2007 to 2013 for our CGC analysis), it may be more problematic over the full sample (i.e., 2007 to 2016). A third option is to balance in each period separately (i.e., 2007-2010, 2010-2013, and 2013-2016). This would allow for changes in (relative) fundamentals without matching across pre- and post-periods. However, to the extent that post-treatment covariates is endogenous (directly or indirectly) to the regulatory changes, the approach would balance away some of the treatment effect. A further consideration is that I have a small number of firms which match my selection criteria (of having observations in each regulatory period and do not switch from AIM to Main or vice versa). I have approximately 220 AIM firms and 320 Main firms. If I apply propensity score trimming before balancing, I risk reducing this sample size even further.

is an indicator variable taking the value of one if the firm is listed on the Main Market and zero otherwise; and  $\mu$  is the regression residual. I include the same vector of  $J$  control variables and firm fixed effects  $\emptyset$ . I interpret  $\rho_{1z} > 0$  ( $\rho_{2z} > 0$ ) as evidence consistent with property  $z$  being higher in the comply or explain period (legal requirement period) relative to the voluntary period for AIM firms. Similarly, I interpret  $\rho_{3z} > 0$  ( $\rho_{4z} > 0$ ) as evidence consistent with property  $z$  being incrementally higher for Main Market firms beyond AIM firms in the comply or explain period (legal requirement period) relative to the voluntary period. I test the null hypothesis  $\rho_{1z} = \rho_{2z}$  using a Wald test to determine whether spillover effects to AIM firms differ across the form of reporting mandates. I also test the null hypotheses  $\rho_{3z} = \rho_{4z}$ . Evidence that  $\rho_{3z} > \rho_{4z}$  ( $\rho_{3z} < \rho_{4z}$ ) supports a more pronounced incremental response to the comply or explain (legal requirement) mandate for Main Market firms. Finally, I assess whether the full impact of the two regulatory interventions on Main Market firms is equivalent by testing the null hypothesis  $(\rho_{1z} + \rho_{3z}) = (\rho_{2z} + \rho_{4z})$ . Evidence that  $(\rho_{1z} + \rho_{3z}) \neq (\rho_{2z} + \rho_{4z})$  suggests that the form of the mandate influences the response of treated firms.

### **4.3.3. Conditional analysis on pre-mandate disclosure policy**

H<sub>03</sub> provides the null hypothesis that mandating disclosures of strategy and business model yields a similar response from the group of Main Market firms providing voluntary SBM disclosures (enthusiastic reporters) to the group of less transparent Main Market firms (reluctant reporters). Testing this prediction empirically requires partitioning firms according to their pre-mandate disclosure strategy in the pre-CGC and pre-CA subperiods. My first partitioning approach exploits the flexibility afforded by UK annual report structure for management to provide a clear and distinct discussion of SBM issues. I identify whether annual reports in pre-mandate periods contain at least one section clearly identified in the report table of contents as containing SBM-related commentary. Sections are identified as being SBM-

related if the section header includes one or more of the following n-grams: ‘strategy’, ‘strategies’, ‘strategic’, ‘business model’, ‘key performance indicator’ or ‘KPI’. I construct an indicator variable (*Strategy\_Section*) that takes the value of one for firms that publish one or more reports in the corresponding pre-mandate period containing at least one strategy section and zero otherwise. I view this as a presentation-based materiality partition.

I am nevertheless cognisant that SBM information may also appear in other annual report sections such as in the Chair’s Letter, CEO Review, Remuneration Report, etc. My presentation-based partitioning approach therefore risks overlooking material commentary in non-SBM sections. I therefore construct a second measure of SBM content for the entire annual report that combines presentation-based materiality with substantive SBM content in other annual report sections. My strategy involves counting the number of annual report sentences that discuss strategy and business model. I follow prior research (e.g., Athanasakou et al., 2022) and apply a word list approach to identify sentences in non-SBM sections of the annual report that contain SBM content. The starting point for my SBM wordlist is the set of SBM topics from Chapter 3. I pool the top ten keywords from all salient topics relating to the External Environment and Internal Resources themes. I define sentences as including SBM content if they include at least one word from the resulting list. The final count of SBM sentences excludes sentences appearing in SBM sections to avoid double counting. I also calculate the aggregate number of words in all SBM sentences. Finally, I apply principal components analysis (PCA) to combine the SBM section indicator, the aggregate SBM sentence count in non-SBM sections (*Strategy\_Sentences\_ExSBM*), and the aggregate word count for SBM sentences in non-SBM sections (*Strategy\_Sentences\_Words\_ExSBM*) into a single index of SBM commentary.<sup>44</sup>

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<sup>44</sup> PCA was originally developed for multivariate normal data (Kolenikov and Angeles, 2009). Because my variables include both binary (*Strategy\_Section*) and (pseudo) continuous measures, I follow Kolenikov and Angeles (2009) and calculate polychoric correlations between my measures in order to construct my PCA model. Final partitions are not sensitive to this choice.

Table 4.1 reports results for the pre-CGC subperiod in Panel A and the pre-CA subperiod in Panel B. Diagnostics reveal that the PCA satisfies standard tests of sampling adequacy. Bartlett's test of sphericity shows that the correlation matrix is significantly different from an identity matrix at the 1% level in both panels. The KMO criterion for both subperiods is (marginally) above 0.5, confirming there is sufficient proportion of variance among the three variables that could be common variance. Results in both panels reveal that the first principal component explains approximately 99.9% in the three measures. I therefore rely on the first component to construct my SBM index.<sup>45</sup> In both sample periods I find positive loadings for the volume of strategy disclosure in non-SBM sections (*Strategy\_Sentences\_ExSBM* and *Strategy\_Sentences\_Words\_ExSBM*). The indicator variable for the presence of a distinct SBM annual report section loads negatively in both pre-periods.<sup>46</sup> I extract the first principal component score for each annual report and average across available reports at the firm level. Firms with an average principal component score above (below) the median value for the pre-CGC or pre-CA period are classified as Enthusiastic (Reluctant) disclosers in the corresponding subperiod. This composite approach to partitioning overcomes the type II errors associated with presentation-based materiality at the expense of greater scope for type I errors. This is because applying a SBM word list approach risks falsely classifying sentences as SBM-related when they are not.

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<sup>45</sup> The menu of heuristics described by Allee et al. (2022) confirm one component should be extracted. For example, the Kaiser criterion prescribes computing eigenvalues and retaining components equal to the number of components with eigenvalues greater than one. In the case of the components from my PCA, untabulated analyses show for both sample periods are the eigenvalues of the first components above two whereas the eigenvalue of the second component is close to zero. Other heuristics (including Cattell's scree test, parallel analysis, and the number of factors for the proportion of variation to exceed 60%) all suggest only the first component should be extracted.

<sup>46</sup> That *Strategy\_Section* loads negatively may appear counterintuitive. However, it is likely that either firms pool SBM commentary together in a single section or distribute SBM commentary across standard annual report sections. Therefore, annual reports with high SBM commentary in standard report sections are less likely to include a separate SBM section, and vice versa. The negative loading of *Strategy\_Section* on the first component likely reflects this substitution effect. To check this intuition, I partition firms in both pre-periods by the median of the first principal component and construct a binary vector taking the value of one where the annual report is above median, and zero otherwise. I then measure the Spearman correlation with the *Strategy\_Section* indicator variable. I find a correlation of 0.38 for the pre-CGC period and 0.59 for the pre-CA period.

I use both partitioning approaches to test how firms' response varies according to their pre-intervention disclosure strategy. I restrict observations to annual reports published by Main Market firms only and use Enthusiastic reporters as my counterfactual because these firms were already providing material SBM commentary prior to the regulatory intervention. Note that both Reluctant and Enthusiastic groups are treated by the regulatory intervention, but Enthusiastic firms do not require the treatment. Therefore, my empirical test is not a differences-in-differences analysis in the strictest sense. However, the design has been used by prior literature (e.g., Doukakis, 2014). A further caveat when interpreting the results is that differences-in-differences assumes that the treatment effect for any given unit (or individual) is not influenced by the treatments assigned to other units (Rubin, 1978). In other words, the potential outcomes for a unit depend only on the treatment that unit receives and are not affected by the treatments received by other units. The assumption may be violated in my setting if Enthusiastic firms' response to the regulatory interventions is partially conditioned by the (anticipated) disclosure decision of reluctant firms. Specifically, Enthusiastic firms responding to the (anticipated) disclosure decision of Reluctant firms by increasing (decreasing) disclosure characteristics would bias *against (for)* finding a treatment effect for Reluctant firms in my setting. I therefore interpret my findings with this caveat in mind.

I match Enthusiastic firms with Reluctant firms using an EB procedure as previously described. Appendix 4.3 presents the covariate balance table. I then estimate the following regression:

$$Property_{zi} = \gamma_{0z} + \gamma_{1z}Post^Y_i + \gamma_{2z}Post^Y_i \times Reluctant_i + \sum_{j=1}^J \vartheta_j Controls_{ji} + \emptyset + \epsilon_{zi}, \quad (4.3)$$

where *Reluctant* is an indicator variable taking a value of one for firms classified as Reluctant reporters (using either of the two partitioning methods described previously) relative to each



regulatory intervention, and zero otherwise;  $\epsilon$  is the regression residual; and other variables are defined as in equation (4.1).<sup>47</sup> I use the same suite of controls as in equation (4.1) and estimate equation (4.3) using a negative binomial or Poisson model when the dependent variable is count data, a logit model for binary variables, and OLS otherwise. I interpret  $\gamma_{2z} > 0$  as evidence consistent with SBM property  $z$  increasing incrementally for Reluctant disclosers in response to the regulatory intervention. I interpret  $\gamma_{1z} > 0$  as evidence of a distinct disclosure response for SBM property  $z$  by Enthusiastic disclosers following the regulatory intervention.

In the next step of my analysis, I seek formal evidence on the joint effects of firms' pre-mandate disclosure policy and mandate type. For the same reasons as discussed in Section 4.3.2, it is difficult to compare the magnitude of responses for Enthusiastic and Reluctant disclosers to the two mandates using separate regressions. I therefore run an analysis similar in spirit to that described in Section 4.3.2 by pooling observations from both the CGC and CA sample periods. I collect measures for annual reports published by Main Market firms for the period from 1 June 2007 to 30 September 2016. I restrict observations to firms which (a) appear only in the Main Market throughout the sample period and (b) have at least one observation in the pre-2010 CGC period, the period between the 2010 CGC and the 2013 CA interventions, and the post-2013 CA period. My baseline regressions classify firms into Reluctant and Enthusiastic disclosers using PCA scores computed for the per-intervention period:<sup>48</sup>

$$\begin{aligned}
 Property_{zi} = & \delta_{0z} + \delta_{1z}Post2010Pre2013_i + \delta_{2z}Post2013_i \\
 & + \delta_{3z}Post2010Pre2013_i \times Reluctant_i \\
 & + \delta_{4z}Post2013_i \times Reluctant_i + \sum_{j=1}^J \omega Controls_{ji} + \emptyset + \tau_{zi}
 \end{aligned}
 , \quad (4.4)$$

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<sup>47</sup> Inclusion of firm fixed effects subsumes the Main Market main effect. In sensitivity tests where I construct industry fixed effects, the Main Market variable is included in the regression framework.

<sup>48</sup> For the reasons discussed in the earlier footnote, I do not apply entropy balancing in this analysis.

where *Reluctant* is an indicator variable taking the value of one if the firm is classified as Reluctant in the voluntary period using the PCA partitioning approach, and zero otherwise;  $\tau$  is the regression residual; and other variables are as previously defined. I interpret  $\delta_{1z} > 0$  ( $\delta_{2z} > 0$ ) as evidence consistent with property  $z$  being higher following the CGC (CA) intervention for Enthusiastic firms. Similarly, I interpret  $\delta_{3z} > 0$  ( $\delta_{4z} > 0$ ) as evidence consistent with property  $z$  being incrementally higher for Reluctant firms following the CGC (CA) intervention relative to Enthusiastic disclosers. I then test  $\delta_{1z} = \delta_{2z}$  to determine whether Enthusiastic firms respond differently to the two forms of mandate. Similarly, I test  $\delta_{3z} = \delta_{4z}$  for Reluctant disclosers. Evidence that  $\delta_{3z} > \delta_{4z}$  ( $\delta_{3z} < \delta_{4z}$ ) is consistent with Reluctant firms showing a more pronounced incremental response to the CGC (CA) mandate. I also test whether the full impact is different for Reluctant firms by testing  $(\delta_{1z} + \delta_{3z}) = (\delta_{2z} + \delta_{4z})$ .<sup>49</sup>

#### 4.3.4. Properties of SBM commentary

##### 4.3.4.1. SBM Volume

My first set of measures focuses on the volume of SBM commentary. My approach involves counting the number of sentences containing SBM content. I classify a sentence as containing SBM content if it contains at least one word from a self-constructed SBM word list. I construct my SBM word list using two sources. First, I follow the same approach to when identifying SBM sentences for my PCA partitioning approach in Section 4.3.3 and use results from the LDA model constructed in Chapter 3. Specifically, I pool the top ten keywords from

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<sup>49</sup> This baseline approach allows me to assess how firms with the lowest disclosure scores in the voluntary period adapt to the two forms of disclosure mandate. I test the sensitivity of my analysis to instead partitioning firms in the pre-period to those which provide (at least) one SBM section in (at least) one annual report in the voluntary period. The benefit of both this approach and my baseline approach is that it sheds light on how the two mandates in combination influence reporting behaviour. The drawback of these approaches is that a firm may respond substantially to the first mandate, meaning this baseline analysis fails to capture which type of regulatory intervention has the largest conditional impact on disclosure. I therefore rerun the analysis an adapted version of equation (4.4) in which I partition firms twice (once in the voluntary period and once following the comply or explain provision but before the legal requirement). Results are tabulated in the Appendix and discussed in the main text.

the 25 topics salient to SBM sections in the External Environment or Internal Resources themes (including sector specific topics).<sup>50</sup> Second, I add all ubiquitous unigrams that I previously removed from the SBM corpus in Section 3.4 prior to applying my LDA model, but which are nevertheless salient to the SBM corpus.<sup>51,52</sup> (Recall from Section 3.4 that I remove ubiquitous words, defined as those appearing in 50% or more documents, from my SBM corpus because their high frequency confounds LDA topic selection.) My *StrategySentences* variable for report *i* is equal to the count of strategy sentences, winsorized at the 99<sup>th</sup> percentile. In supplementary tests I assess the sensitivity of my sentence classification approach to alternative word lists developed by Athanasakou et al. (2022) and Hanley and Hoberg (2010).

I disaggregate my total count of strategy sentences into three non-mutually categories with the aim of providing richer empirical insights. The first category (*GeneralSentences*) comprises SBM sentences that include at least one of the words that are salient to SBM commentary but which I remove from the LDA model on the grounds that they are ubiquitous. The second category comprises SBM sentences that include at least one of the top ten keywords

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<sup>50</sup> I focus exclusively on internal resource and external environment topics rather than including all salient topics identified in Chapter 3 to balance type I and type II errors. Indeed, two topics in the aggregate themes of Performance & Reporting and Governance are salient to SBM commentary. However, while topics such as Net Income may be discussed in relation to strategy and business model, there is substantial risk that the top ten words from the topic may commonly be used in other contexts. For example, the top three key words for the Net Income topic “revenues”, “gross” and “margin”. Including such words in my word list presents material risk that I erroneously capture commentary with no SBM content as being strategy related. I therefore take a more cautious approach of focusing on sentences by restricting my word list to capture key words from topics which are more clearly aligned with core themes of popular strategy frameworks. At the same time, the risk of type II errors remains relatively low given it is unlikely that a sentence can contain SBM content without using one of the key words from salient topics under the aggregate themes of External Environment and Internal Resources.

<sup>51</sup> I define a word as salient to SBM commentary following the same definition as Chapter 3.5.2. Briefly, I calculate keyness with the log-likelihood (LL) measure which involves comparing counts for each word in the SBM corpus relative to the reference corpus, formed from governance statements and the letter from the chair. I define a word as salient to SBM commentary if the log-likelihood statistic exceeds 15.13, equating to a probability value of 0.0001 (Baker, 2006). I check the sensitivity of my analysis to alternative approaches to identifying words salient to SBM commentary, including finding the intersection between the ubiquitous words and the n-grams used in the lists of Athanasakou et al. (2022) and Hanley and Hoberg (2010).

<sup>52</sup> I do not include such ubiquitous words when identifying SBM sentences for my PCA partitioning approach in Section 4.3.3. The reason is that it is crucial to exclude words which are ubiquitous but not salient to SBM commentary in order to reduce the risk of erroneously identifying sentences as SBM which contain little SBM content. While there are multiple imperfect approaches to identifying salient words (as discussed in the footnote above), any measurement error in identifying salient SBM words is magnified when identifying SBM sentences for my PCA partitioning approach because there I only calculate SBM volume in non-SBM sections. I therefore take the conservative approach of not including (salient) ubiquitous SBM words when calculating firm partitions.

from salient LDA topics in the External Environment theme (*ExternalSentences*). Similarly, the third category comprises SBM sentences relating to salient LDA topics in the Internal Resources theme (*InternalSentences*). The resulting disaggregation enables me to assess how the volume of disclosure discussing each of the three broad areas changes following the regulatory interventions.<sup>53</sup>

#### 4.3.4.2. SBM topics and themes

I supplement measures of total SBM disclosure volume with analysis of how the mix of SBM topics shifts in response to regulatory pressure for more transparency. I classify a sentence as discussing SBM topic *T* if the sentence contains at least one word from the top 10 keywords for topic *T*. Similar to my approach to identifying the number of sentences containing SBM content, I restrict my focus to topics that I find salient to SBM commentary in Chapter 3 under the External Environment or Internal Resources themes. I then count the number of annual report sentences relating to each topic. I allow sentences to be classified into multiple topics.

#### 4.3.4.3. SBM presentation

In addition to analysing disclosure volume and content, I also examine how firms present their SBM commentary. The importance of how information is presented is gaining traction in the academic literature (Blankespoor et al., 2020; Bushee et al., 2018) following widespread focus among regulators and practitioners (e.g., FRC, 2009). Consistent with the view that users find it easier to locate and integrate information when it is concentrated in a clearly demarcated section (Blankespoor et al., 2020), I measure whether firms present SBM commentary in a

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<sup>53</sup> Note that a sentence can be classified into more than one category. For example, the sentence “Our strategy is to develop brand awareness by investing in advertising” would be counted in the *GeneralSentences* measure (as “strategy” is included in the ubiquitous word list) and in the *ExternalSentences* measure (as “brand” is a top ten keyword in the *Differentiation* topic under the external environment theme).

separate section. Specifically, I interpret section headers from the report table of contents as manager-assigned labels of content and then apply the following n-grams to capture sections containing a high fraction of SBM-related content: ‘strategy’, ‘strategies’, ‘strategic’, ‘business model’, ‘key performance indicator’ or ‘KPI’. I construct a binary indicator (*SBM\_Indicator*) taking the value of one where the annual report contains at least one SBM section and zero otherwise. I also count the number of SBM sections (*SBM\_Count*).

A factor that potentially confounds this approach is the introduction of the Strategic Report mandate as part of the revisions to the Companies Act in 2013. The requirement for Main Market firms to provide a Strategic Report in their annual report may lead some firms to re-label legacy sections such as the Business Review without including any material SBM content. I therefore test the sensitivity of my results to an alternative approach to classifying SBM section headers. Specifically, I adapt my n-gram list by removing inflections of the word ‘strategy’. The resulting list therefore contains the n-grams ‘business model’, ‘key performance indicator’ and ‘KPI’. I then define a binary indicator (*BM\_Indicator*) and count of sections (*BM\_Count*) analogous to above.

#### *4.3.4.4. SBM best practice properties*

My final set of SBM properties shed light on the extent that SBM commentary contains features that regulators identify as being helpful to users. I focus on two prominent frameworks offering best practice guidance to managers on SBM disclosure. The Financial Reporting Council (2014b) provides broad principles that allow firms to ‘tell their story’ in response to the 2013 mandate for LSE Main Market firms to produce a Strategic Report. Concurrently, the IIRC (2013) outlines a voluntary reporting framework to help firms illustrate how their strategy and related organisational features create shareholder value. Both sets of guidance share similar reporting principles. The first principle is the need for entity-specific disclosures rather than

generic or boilerplate discussions that offer few meaningful insights on the value creation process (FRC, 2014b, para. 6.13-6.14; IIRC, 2013, para. 3.38). Both frameworks also encourage managers to provide information across multiple time horizons to help users understand both the short- and long-term development and future prospects of the business (FRC, 2014b, para. 6.11-6.12; IIRC, 2013, para. 3.3). Finally, SBM commentary should provide fair and balanced analysis (FRC, 2014b, para. 6.2-6.3; IIRC, 2013, para. 3.39). I therefore construct measures of effective SBM commentary relating to entity-specific content, time horizon (short- versus-long-run), and balance. Continuous variables are winsorized at percentiles one and 99 in each sample period.

I follow Hope et al. (2016, p. 1013) and Dyer et al. (2017) and define entity-specific content (*Specificity*) as the number of named entities in strategy sentences, scaled by the total number of words in strategy sentences. I use the spaCy NER algorithm to identify n-grams relating to locations, people, organisations, money, percentages, dates, and times, and then calculate *Specificity* as the total number of named entities in strategy sentences in the annual report scaled by the total number of words in the corresponding sentences.<sup>54</sup> Higher *Specificity* indicates a higher fraction of entity-specific information and less generic boilerplate disclosure.

Best practice guidance encourages management to deliberate across multiple timeframes, including both short-term and long-term horizons. I measure the degree to which SBM discourse contains commentary across multiple time horizons using the adjusted wordlists from Brochet et al. (2015) that I develop in Chapter 3.<sup>55</sup> I measure time horizon at the strategy

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<sup>54</sup> Hope et al. (2016) use the Stanford NER algorithm. I use the spaCy algorithm because it has been used by prior literature examining strategic commentary in UK annual reports (Athanasakou et al., 2022). Results (untabulated) confirm findings are not sensitive to restricting entity categories to those recognised by the Stanford algorithm (i.e., date, location, organisation, percent, person, time, and money).

<sup>55</sup> Brochet et al. (2015) construct their word lists from earnings calls. When applied to (diverse sections of) annual reports, some n-grams in the word list may not refer to the long-term depending on the context. For instance, an annual report may refer to the word “annual” in the context of the “annual report” or the “annual general meeting”. Similarly, “long term” may refer to “long term incentive plan” or “long term incentive scheme”. Classifying sentences as forward-looking using these n-grams is likely to introduce noise into the analysis. I therefore modify Brochet et al. (2015)’s wordlist so as not count as long term those sentences containing only “annual report”, “annual general meeting”, “long term incentive plan” or “long term incentive scheme”.

sentence level and measure long-term horizon (*LongTerm*) as the number of strategy sentences containing at least one long-term, scaled by the total number of strategy sentences. I use an analogous approach to construct a measure of short-term horizon (*ShortTerm*).<sup>56</sup> For completeness, I also define a proxy for net long-term focus (*NetLongTerm*) equal to the number of long-term strategy sentences less the number of short-term strategy sentences, scaled by the total number of strategy sentences.<sup>57</sup>

SBM commentary should provide fair and balanced analysis (FRC, 2014b, para. 6.2-6.3; IIRC, 2013, para. 3.39). I use the lists of positive and negative bigrams from Garcia et al. (2023) to classify the tone of SBM sentences. I define the net tone of SBM sentences (*NetPositiveTone*) as equal to the number of positive bigrams minus the number of negative bigrams, scaled by total word count.

#### **4.4. Sample and data**

I collect annual reports for LSE-listed Main Market and AIM firms relating to fiscal years ending 1 June 2007 through 30 September 2016 from Filings Expert. I use the algorithm from El-Haj et al. (2020) to extract document structure and text from annual reports published as PDF files. I remove firms in the financial sector because annual reports of financial firms often talk about their investment strategy in addition to (or instead of) their business strategy. I also remove overseas regulatory filings, non-English reports and reports where structured text extraction fails (El-Haj et al., 2020). I retain observations for firms where at least one annual report is available in both the pre-intervention and post-intervention periods. Applying these

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<sup>56</sup> Sentences containing at least one long-term n-gram and at least one short-term n-gram are ambiguous and therefore we classify them as neither long-term nor short-term.

<sup>57</sup> Brochet et al. (2015) define their measure of short-term focus as the number of short-term words scaled by the number of long-term words. However, this measure is undefined for strategy sentences that do not contain short-term sentences and therefore risks introducing selection bias into the analysis. I therefore scale by the total number of words in the strategy sentence.

criteria generates a sample of 4,343 observations for 597 unique firms for the 2010 CGC analysis and 3,031 observations for 494 unique firms for the 2013 CA analysis. Requiring data for control variables further reduces the number of observations in some tests.<sup>58</sup>

Table 4.2 presents descriptive statistics for measures of SBM commentary for the 2010 CGC sample (in Panel A) and the 2013 CA sample (in Panel B). In each panel, the first 9 rows present statistics for all observations in each sample period, followed by number of observations, mean, and standard deviation for Main Market and AIM firms separately in columns 10 to 17. The final two rows present probability values for tests of difference between the Main Market and AIM samples. Results show that approximately a third (35%) of annual reports in the 2010 CGC sample contain a separate SBM section. For Main Market firms, the fraction of reports containing a SBM section is 45%, compared with AIM firms at 20%. Conditional on the annual report containing a SBM section, the mean section length for Main Market firms is 1,873 words compared with 773 words for AIM firms. Across the entire annual report, Main Market firms provide 31% more SBM sentences and 54% more words. They also provide 32% more sentences relating to External Environment topics and 27% more sentences relating to Internal Resources topics. SBM commentary from Main Market firms also includes more focus on the long term and higher net positivity. I find no significant difference in the degree of entity-specific information.

Results for the 2013 CA sample in Panel B reveal a higher fraction of reports with a SBM section (72%) relative to the 2010 CGC sample, and such sections are also longer on average (2,376 words). I find that the average number of SBM sentences, SBM words, sentences discussing External Environment and Internal Resources topics across the entire annual report also appear qualitatively higher relative to the 2010 CGC sample. I also find

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<sup>58</sup> The number of observations is further reduced in some tests where there is no within-firm variation in the dependent variable. For example, some firms in the CGC sample fail to provide a SBM section in all years, meaning *SBM\_Indicator* is zero for all observations of the firm. Observations for such firms are subsumed by firm fixed effects and drop out of the sample.



significantly higher values for Main Market firms relative to AIM firms in the 2013 CA sample. Main Market firms provide 162% more SBM sentences throughout the annual report, with 161% more sentences discussing the external environment and 155% more sentences discussing internal resources. SBM sentences for Main Market firms continue to display greater long-term focus and higher net positivity. Conversely, no difference in the level of specificity is apparent between Main Market and AIM firms.

Figure 4.2 visualizes the location of SBM commentary in the annual report for Main Market firms, and how these patterns vary across regulatory regimes. Specifically, I calculate the mean number of SBM sentences in each standardized section across reports for the voluntary reporting period (from June 2007 until May 2010), the comply or explain period (from June 2010 until September 2013), and the legal requirement period (from October 2013 until September 2016). Results in Figure 4.2 suggest increasing discussion of SBM topics across most standardized report sections during the sample period. Particularly dramatic growth in SBM content is evident in remuneration reports, CSR disclosures, and separate SBM sections. The only sections showing a decrease in SBM commentary are the Business Review and Operating Review sections, which almost certainly reflects a move away from these section headings in favour of the Strategic Report.

## **4.5. Results**

### **4.5.1. How do firms respond to disclosure mandates on average?**

#### *4.5.1.1. Volume*

The first four columns of Table 4.3 present results for my volume measures while the first four columns of Table 4.4 presents estimates of economic effects for the same variables. In both tables, Panel A (B) focuses on the 2010 CGC (2013 CA) period. Beginning with the comply or explain provisions, the coefficient estimate on  $Post \times Treated^{2010}$  is not significant at

conventional levels when *StrategySentences* is the dependent variable. The interaction coefficient remains insignificant when disaggregating between general sentences, external environment sentences, and internal resources sentences. Nevertheless, coefficients for *Post* are positive and significant ( $p < 0.01$ ) for all volume measures meaning that on average control firms provided SBM disclosure with greater volume after the year 2010 compared to before 2010, which may be consistent with spillover effects. Estimates of economic significance in Panel A of Table 4.4 confirm volume is meaningfully higher; I find an average increase of 37 SBM sentences, with 26 (15) more sentences discussing external environment (internal resources) topics. Collectively, these results point to both Main Market and AIM firms providing SBM commentary with greater volume following the regulatory mandate, but I do not find evidence of Main Market firms increasing volume incremental to AIM firms not subject to the same regulatory requirements. While my evidence fails to reject null hypotheses  $H_{01}$  and  $H_{02A}$ , the results contradict evidence presented in Athanasakou et al. (2022) who find an incremental increase in SBM commentary by Main Market firms following the introduction of the comply or explain provisions relative to AIM firms.<sup>59</sup>

In contrast, results in Panel B of Table 4.3 are consistent with a substantial incremental response by Main Market firms to enacting requirements in law.  $Post \times Treated^{2013}$  loads positively ( $p < 0.01$ ) for all volume measures. Panel B of Table 4.4 confirms the effect is economically meaningful. For example, Main Market firms experience increases in *StrategySentences*, *ExternalSentences* and *InternalSentences* beyond AIM firms by 50, 31 and 13 sentences, respectively. In Panel B of Table 4.3, *Post* loads positively ( $p < 0.01$ ) when the

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<sup>59</sup> In untabulated analyses, I continue to find no significant interaction coefficients when (a) estimating with Poisson regression or OLS regression after log-transforming the dependent variable to account for the distribution of the sentence counts and (b) applying industry fixed effects in place of firm fixed effects. My analysis yields similar insights when replacing  $Post \times Treated^{2010}$  and *Post* variables with year fixed effects and their interactions with  $Treated^{2010}$ . I yield similar conclusions when replacing my sentence counts with word counts using the lists of Athanasakou et al. (2022) and Hanley and Hoberg (2010). However, I find positive ( $p < 0.01$ ) interaction coefficients when using OLS with unadjusted dependent variables. While such results are more consistent with prior studies investigating SBM disclosure (e.g., Athanasakou et al., 2022), residuals plots confirm the violation of underlying assumptions of OLS estimation.

dependent variable is *GeneralSentences* or *InternalSentences* and is marginally significant when the dependent variable is *StrategySentences* ( $p < 0.1$ ). I therefore find evidence consistent with AIM firms also increasing disclosure following the enacting of disclosure requirements in law. Estimates of economic effects confirm the results are meaningful; I find *StrategySentences*, *GeneralSentences* and *InternalSentences* increase by 12, 14 and 8 sentences respectively for AIM firms. Overall, my evidence rejects the null hypotheses of  $H_01$  and  $H_02B$ ; rather, I find a substantive incremental response by Main Market firms to the enactment of disclosure requirements in law. Untabulated results confirm similar insights for both forms of regulatory mandate when replacing my sentence counts with word counts using the lists of Athanasakou et al. (2022) and Hanley and Hoberg (2010).

I check the sensitivity of my analyses of both regulatory mandates to various research design choices. Results are the same if using the full sample of control firms (without entropy balancing). Relying on industry (rather than firm) fixed effects yields qualitatively similar results. Alternative modelling specifications also yield similar insights.

#### 4.5.1.2. *Topics and themes*

While SBM disclosure volume does not appear to increase incrementally for Main Market firms in response to the 2010 CGC mandate, it is possible that the focus of the discussion changes following introduction of the comply or explain provision. Panel A of Figure 4.3 plots the mean number of sentences for Main Market firms (pink) and AIM firms (green) in the pre-CGC period (circles) and post-CGC period (triangles). Topics are ordered by disclosure volume for Main Market firms in the pre-CGC period. To understand whether shifts in topic coverage are significant, I rerun estimations of equation 4.1 with the count of the number of sentences discussing each topic as the dependent variable. Topic labels are suffixed by \* (†) when  $Post \times Treated^{2010}$  loads positively (negatively) at the 5% significance level. Plots

suggest little evidence of a substantial shift in topic mix following the 2010 regulatory intervention for Main Market firms. Only one topic (*Leadership*) loads with a positive and significant  $Post \times Treated^{2010}$  coefficient, while  $Post \times Treated^{2010}$  loads negatively for three topics (*Competition*, *Infrastructure* and *Healthcare*). All remaining topics demonstrate no significant difference in reporting volume. Results in Panel A of Figure 4.3 also show little substantive increase in the coverage of topics by AIM firms. Overall, I find muted effects for Main Market firms in terms of disclosure content across the majority of SBM topics, consistent with null hypothesis H<sub>0</sub>2A.

Panel B of Figure 4.3 plots the mean number of sentences for Main Market firms (pink) and AIM firms (green) in the pre-CA period (circles) and post-CA period (triangles). Topics are ordered by disclosure volume of Main Market firms in the pre-CA period. Topic labels are suffixed by \* (†) when  $Post \times Treated^{2013}$  loads positively (negatively) at the 5% significance level. I find consistent evidence with Main Market firms increasing disclosure across a broad range of topics incremental to AIM firms. I find positive ( $p < 0.05$ )  $Post \times Treated^{2013}$  coefficients for 15 out of 25 topics. Topics displaying an incremental increase for Main Market firms are diverse across External Environment (e.g., *Industry* and *Competition*) and Internal Resources (e.g., *Expertise* and *Innovation*) topics. My evidence points to Main Market firms responding to the enactment of disclosure requirements in law by substantially increasing the coverage of a broad range of SBM topics, which runs against my null hypothesis H<sub>0</sub>2B.

#### 4.5.1.3. Presentation

The final four columns of Table 4.3, Panel A present results for my SBM presentation variables for the CGC period. My analysis suggests a weak incremental response to the comply or explain provision for Main Market firms. I find positive  $Post \times Treated^{2010}$  coefficients for all presentation variables except *SBM\_Count*, although coefficients are only significant at the 0.1

level. The interaction coefficient is economically meaningful for the indicator variables; I find odds ratios of 2.0 and 35.0 for SBM and BM indicators, respectively. In other words, the odds of disclosing a SBM (BM) section for Main Market firms increased by two (35) times more than AIM firms after the comply or explain provision. Indeed, *Post* loads positively ( $p < 0.05$ ) for both the SBM section indicator and section count variables, consistent with disclosure spillover effects. Estimates of economic significance suggest that AIM firms are substantially more likely to provide an SBM section (with an odds ratio of 2.8), whereas the increase in the section count is near zero. I continue to find a positive *Post* coefficient when looking only at BM sections, although statistical significance reduces ( $p < 0.1$ ). Overall, the evidence points to an incremental but modest response by Main Market firms in terms of SBM disclosure presentation, with firms more likely to consolidate SBM disclosures into separate, identifiable section(s) in the annual report.

Moving to how firms adapt the presentation of SBM commentary following the 2013 CA intervention, Panel B of Table 4.3 reveals no incremental effect for Main Market firms;  $Post \times Treated^{2013}$  is not significant at conventional levels. The exception is a negative coefficient ( $p < 0.01$ ) when *SBM\_Count* is the dependent variable, meaning the number of separate SBM sections increases less for Main Market relative to their AIM counterparts. Indeed, I find AIM firms respond by concentrating disclosure in separate sections. I find positive *Post* coefficients ( $p < 0.01$ ) when the dependent variable is *SBM\_Indicator*, *SBM\_Count* and *BM\_Count*. Results appear economically meaningful; I find an odds ratio of 217 (5) when the dependent variable is *SBM\_Indicator* (*BM\_Indicator*), while the count of SBM sections increases 0.67. Therefore, my evidence suggests both Main Market and AIM firms are equally more likely to concentrate SBM commentary in clearly demarcated sections in response to the 2013 legal mandate.

#### 4.5.1.4. Effectiveness

Finally, I examine how firms respond to regulatory mandates in terms of best practice properties. Panel A (B) of Table 4.5 present regression estimates for the CGC (CA) period, while Table 4.6 tabulates corresponding marginal effects. I estimate marginal effects as the change in the best practice property scaled by the unconditional mean of the best practice property. Beginning with the introduction of the comply or explain provision, I find all  $Post \times Treated^{2010}$  coefficients are insignificant at conventional levels in Table 4.5 Panel A, indicating no incremental response by Main Market firms. Results also suggest AIM firms do not adapt the properties of SBM commentary in response to the comply or explain provisions. The  $Post$  coefficient is insignificant for all properties in Panel A. Collectively, the results do not permit me to reject the null hypothesis  $H_{02A}$  and I therefore conclude that Main Market firms did not respond to the comply or explain provision by improving the effectiveness of SBM commentary.

I find mixed results in Panel B where I focus on the response by Main Market firms to enacting disclosure requirements in law. I find little evidence consistent with responding to the regulatory intervention by focusing incrementally more on the long term as  $Post \times Treated^{2013}$  is insignificant when  $NetLongTerm$  is the dependent variable. Splitting the net measure between focus on the long term and short term separately, I find a positive  $Post \times Treated^{2013}$  coefficient ( $p < 0.1$ ) when  $LongTerm$  is the dependent variable. However, the positive interaction coefficient ( $p < 0.05$ ) when  $ShortTerm$  is the dependent variable suggests Main Market firms also provide more information on the short term after the mandate relative to AIM firms. Furthermore, I find no incremental effect on the net tone of SBM commentary, while there is weak evidence that Main Market firms *reduce* the amount of firm-specific information. Estimates in Panel B of Table 4.6 suggest a 2.4% reduction in  $Specificity$ . For AIM firms, I find no evidence of a spillover response in terms of  $Specificity$  or  $NetPositiveTone$  as the  $Post$

coefficient is insignificant. My analysis suggests that AIM firms focus more on the long term; *Post* loads positively (negatively) at the 1% level when *LongTerm* and *NetLongTerm* (*ShortTerm*) are the dependent variables. The shift in focus to the long term appears economically meaningful; I find an increase in *LongTerm* of 8.9% and a reduction in *ShortTerm* of 25% following the 2013 CA revisions. Together with earlier results, my analysis suggests Main Market firms increase insights into the long term incrementally more than AIM firms but do not reduce focus on the short term to the same extent.

I check the sensitivity of my analysis of both mandates to various research design choices. Results similar if using the full sample of control firms (without entropy balancing), albeit the marginally significant negative interaction coefficient when *Specificity* is the dependent variable loses significance and I find Main Market firms provide incrementally more balanced commentary. Relying on industry (rather than firm) fixed effects or using alternative modelling specifications yields qualitatively similar results.

#### 4.5.1.5. Summary

Overall, my results reject  $H_01$  which provides the null hypothesis that on average mandating disclosures of strategy and business model yields a muted response by Main Market firms in terms of qualitative disclosure characteristics. Rather, I find evidence consistent with Main Market firms adapting qualitative characteristics of SBM commentary in response to regulatory mandates, albeit with effects centring on the 2013 CA mandate. Indeed, I fail to find consistent evidence to lead to the rejection of  $H_02A$  which states that on average comply or explain provisions yields a muted response by Main Market firms. I find no incremental response on average to the comply or explain provision in terms of disclosure volume, topic coverage and effectiveness. However, I do find an incremental response by Main Market firms in terms of presenting SBM commentary in separate, clearly demarcated sections.

I do not interpret my results as being inconsistent with Athanasakou et al. (2022) who find a material jump in SBM disclosure among Main Market firms relative to AIM firms after the introduction of the comply-or-explain provision. In their analysis, they construct a composite SBM score which draws on the presence of a distinct section discussing SBM, SBM word counts, and counts of named entities in SBM disclosure. While I find no significant increase in volume nor specificity in my main tests, I do find an incremental increase in the propensity to provide a one-off section. It is not clear from Athanasakou et al.'s (2022) analysis the extent to which the provision of a separate SBM section is driving their observed results. Further, as discussed in footnote 59, I find an incremental response in terms of volume in some sensitivity tests, namely when regressions are estimated with OLS.

In contrast, the evidence rejects the null hypothesis  $H_{02B}$  which states transitioning from a comply or explain provision to a legal requirement yields a muted response by Main Market firms. I find strong evidence consistent with a substantial response by Main Market firms in terms of disclosure volume and content. I also find a shift towards commentary in a separate section, although the response is not incremental to AIM firms. However, I generally fail to find evidence that Main Market firms are on average incrementally more likely to display the hallmarks of best practice reporting. Therefore, the mandate is only partially successful.

#### **4.5.2. Comparing responses to different forms of mandate**

$H_{02A}$  and  $H_{02B}$  make null predictions about how firms respond to different forms of mandate. My preceding analysis tests these predictions by identifying the incremental response of Main Market firms relative to a control group of AIM firms. My results generally suggest that Main Market firms seemingly respond substantively to the comply or explain provision by adapting presentation while such firms react materially to enacting disclosure requirements in law by increasing volume, topic coverage and some properties of effective reporting. However,



the analysis does not allow me to directly compare the magnitude of responses to the two mandates, which is necessary to understanding whether the form of the mandate matters more broadly. I test this directly by estimating equation (4.2) using my full sample period.

Results for estimations of equation (4.2) are presented in Table 4.7 for volume measures, Table 4.8 for presentation measures, and Table 4.9 for best practice properties. In terms of volume, I find an incremental effect for Main Market firms only for the CA (and not the CGC) revisions. Here, I find positive  $Post2013*MainMarket$  coefficients ( $p < 0.01$ ) but insignificant  $Post2010Pre2013*MainMarket$  coefficients for all volume measures. Wald tests confirm a significant ( $p < 0.05$ ) difference in interaction coefficients for all volume dependent variables. As expected, I see a significant ( $p < 0.05$ ) difference in the total effect for Main Market firms ( $Post2013 + Post2013*MainMarket > Post2010Pre2013 + Post2010Pre2013*MainMarket$ ). These results point to Main Market firms responding significantly more strongly to enacting disclosure requirements in law than when taking the form of comply or explain provisions. Further, when disaggregating by topics, untabulated analyses find a significant difference in the total effect for Main Market firms for the legal requirement above and beyond the comply or explain amendment for 15 out of 25 topics. For AIM firms, I find positive ( $p < 0.01$ ) coefficients for the  $Post2010Pre2013$  and  $Post2013$  variables, consistent with the volume of SBM disclosures by AIM firms being higher after both regulatory interventions relative to the pre-2010 period. Wald tests confirm the  $Post2013$  coefficient is significantly (often  $p < 0.01$  or  $p < 0.05$ ) greater than the  $Post2010Pre2013$  coefficient, suggesting stronger spillover effects from the legal requirement than the comply or explain provisions.

In terms of presentation in Table 4.8, for Main Market firms I find the  $Post2010Pre2013*MainMarket$  coefficient is positive ( $p < 0.05$ ) for all presentation variables (except for the count of SBM sections which is insignificant). Therefore, relative to AIM firms, Main Market firms respond to the comply or explain provision by incrementally concentrating

disclosure in separate sections. While I find a positive  $Post2013*MainMarket$  coefficient ( $p < 0.05$ ) for the BM indicator variable, the coefficient is negative ( $p < 0.01$ ) when the dependent variable is the count of SBM sections. Other  $Post*MainMarket$  coefficients are insignificant, suggesting no incremental response to enacting disclosure requirements in law. Interestingly, Wald tests confirm a difference in interaction terms ( $p < 0.01$ ) in response to the mandates only when the dependent variable is the count of SBM sections. However, Wald tests show the total effect of the legal requirement is significantly ( $p < 0.05$ ) greater for the legal requirement relative to the comply or explain provision ( $Post2013 + Post2013*MainMarket > Post2010Pre2013 + Post2010Pre2013*MainMarket$ ), but only when the dependent variable is the indicator or count of SBM sections. Therefore, after accounting for spillover effects to AIM firms, these results point to Main Market firms being substantially more likely to concentrate disclosure in a separate SBM section(s) following enacting disclosure requirements in law than in the comply or explain regime. I also find a positive  $Post2010Pre2013$  and  $Post2013$  coefficients ( $p < 0.01$ ) when the dependent variable is an indicator or count of SBM sections, but the effect becomes insignificant for  $Post2010Pre2013$  when I restrict to the analysis of sections containing references to business models or KPIs.

Finally, Table 4.9 presents results for best practice properties. I fail to find significant main or interaction coefficients or Wald tests when the dependent variable is *Specificity*, consistent with no significant response on average to either regulatory intervention for Main Market or AIM firms. For time horizon, while interaction coefficients are insignificant when ShortTerm is the dependent variable, I find positive  $Post2010Pre2013*MainMarket$  and  $Post2013*MainMarket$  coefficients ( $p < 0.01$ ) when LongTerm or NetLongTerm are the dependent variable. It follows that Main Market firms respond to both interventions by incrementally shifting the focus towards the long term. Wald tests suggest a stronger response ( $p < 0.05$ ) to the legal requirement relative to the comply or explain provision when LongTerm

or NetLongTerm are the dependent variables, for both the marginal and total effects. I do not see a response by AIM firms to the 2010 CGC intervention, but *Post2013* is positive (negative) and significant at the 5% level when the dependent variable is LongTerm or NetLongTerm (ShortTerm). Moving to tone, both interaction terms are insignificant meaning Main Market firms do not adapt the tone of SBM commentary incremental to AIM firms. Wald tests confirm the marginal and total effects are indistinguishable. I also find *Post2010Pre2013* loads insignificantly while the *Post2013* coefficient is negative ( $p < 0.1$ ) when *NetPositiveTone* is the dependent variable consistent with AIM firms providing more balanced commentary after the 2013 CA revisions.

Overall, my full sample analysis confirms significant differences in the response of Main Market firms to the disclosure mandates. Relative to the comply or explain provision, I find Main Market firms respond significantly more strongly to the enactment of the same disclosure requirements into law in terms of disclosure volume, topic coverage, presentation and long-term focus. Further, spillover effects to AIM firms arising from the legal requirement appear to be substantially greater than to the comply or explain provision in terms of volume, presentation and long-term focus. My results therefore suggest that the form of the regulatory mandate matters.

### **4.5.3. The importance of pre-intervention disclosure policy**

#### *4.5.3.1. Volume*

In the next step of my analysis, I assess whether and how pre-intervention disclosure policy plays a role in firms' response to disclosure mandates. Volume and presentation results for the DiD analysis comparing Reluctant and Enthusiastic firms using the PCA partitioning approach are presented in Table 4.10 with economic effects in Table 4.11. I present analogous tables in Appendix 4.4 and Appendix 4.5 using the disclosure of a separate SBM section as the

partitioning variable. Results for the CGC (CA) period are presented in Panel A (B). Beginning with the CGC period in Panel A, I do not find evidence that Reluctant firms increased disclosure volume incremental to Enthusiastic firms.  $Post \times Reluctant^{2010}$  does not load significantly for any volume measure except *ExternalSentences*, where the coefficient is marginally positive ( $p < 0.1$ ).<sup>60</sup> Repeating the analysis the SBM section approach to measuring pre-intervention disclosure strategy yields the same results, with the exception that the marginally positive interaction coefficient when *ExternalSentences* is the dependent variable loses significance. Evidence fails to reject null hypothesis  $H_03$  and instead suggests introducing a comply or explain provision yields a similar response by Main Market firms already providing substantive disclosures to Main Market firms previously remaining silent. Nevertheless, I find positive  $Post$  coefficients ( $p < 0.01$ ) for all volume variables, consistent with Enthusiastic firms increasing disclosure volume after the comply or explain provision. Panel A of Table 4.11 confirms the increase in disclosure volume is economically meaningful; Enthusiastic firms increase total SBM disclosure by 46 sentences, with 27 (22) more external environment (internal resources) sentences.<sup>61</sup>

Panel B of Table 4.10 focuses on the CA period. I again find  $Post \times Reluctant^{2013}$  does not load for any measure of SBM volume, confirming that the 2013 CA mandate did not change the relative SBM disclosure gap between Reluctant and Enthusiastic firms. Nevertheless, I find clear evidence that Enthusiastic firms increase the volume of SBM disclosure following the mandate.  $Post$  loads positively ( $p < 0.01$ ) for all measures of volume, including on both external environment and internal environment themes. Estimates of economic effects confirm the

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<sup>60</sup> In untabulated analyses, I replace my measures of disclosure volume with word counts using the word lists of Athanasakou et al. (2022) and Hanley and Hoberg (2010). With my baseline partitioning approach, I find positive interaction coefficients when using the count of Hanley and Hoberg (2010)'s word list ( $p < 0.05$ ) and when using the count of Athanasakou et al. (2022)'s word list ( $p < 0.1$ ). This provides some support that Reluctant firms increased SBM commentary relative to Enthusiastic firms.

<sup>61</sup> Recall, however, results in Section 4.5.1.1. suggest that Main Market firms do not increase disclosure volume incrementally to AIM firms not subject to the regulations. Therefore, it is not possible to attribute the increase in disclosure volume directly to the introduction of the comply or explain provision.

increase in disclosure is meaningful; SBM commentary increases by 93 sentences for Enthusiastic firms with an increase of 59 (33) sentences for external environment (internal resources) topics. Collectively, these results point to the enacting of disclosure requirements into law prompting both Enthusiastic and Reluctant firms to increase the volume of commentary with no substantive narrowing of the disclosure gap.

However, results for the CA period are sensitive to how I define pre-intervention disclosure policy. As shown by Appendix 4.4, if I partition firms on the presentation of SBM commentary prior to the regulatory intervention, I find  $Post \times Reluctant^{2013}$  loads positively when the dependent variable is *StrategySentences* ( $p < 0.1$ ), *GeneralSentences*, *ExternalSentences* and *InternalSentences* ( $p < 0.05$ ). In other words, firms that didn't present SBM commentary in a clear, concentrated section pre-2013 were more likely to increase the level of SBM commentary in response to the mandate. The incremental effect is substantial. Relative to Enthusiastic firms, I find in Appendix 4.5 that Reluctant firms increase total SBM disclosure by 47 sentences, commentary on the external environment by 37 sentences and on internal resources by 20 sentences. Therefore, I find the regulatory intervention successfully closes the gap between Reluctant and Enthusiastic disclosers. Results for Enthusiastic firms are similar using the section approach, both in terms of the sign and significance of coefficients in Panel B of Appendix 4.4 and in terms of marginal effects in Panel B of Appendix 4.5.

#### 4.5.3.2. Topics and themes

While I find no incremental difference in disclosure volume between types of firms using my baseline partitioning approach, there may be divergent responses in coverage of specific topics. Panel A of Figure 4.4 plots the mean number of sentences for Reluctant firms (red) and Enthusiastic firms (blue) in the pre-CGC period (circles) and post-CGC period (triangles). To understand whether shifts in topic coverage are significant, I rerun estimations of equation 4.3

with the count of the number of sentences discussing each topic as the dependent variable. Topics are ordered by disclosure volume for Enthusiastic Main Market firms in the pre-CGC period. Topic labels are suffixed by ‡ when  $Post \times Reluctant^{2010}$  loads positively at the 5% significance level. Results reveal no incremental increase for Reluctant firms beyond Enthusiastic firms for any SBM topics except in the case of the *Platform* topic. I reach similar conclusions in Panel A of Figure 4.5 when I rerun the analysis using the section approach to partitioning firms, albeit only the *Competition*, *Drilling* and *Mining* topics yield a positive  $Post \times Reluctant^{2010}$  coefficient ( $p < 0.05$ ). Together, these results point to there being little substantive difference in how Reluctant and Enthusiastic firms respond to the comply or explain provision in terms of topic coverage. The evidence therefore fails to reject null hypothesis H<sub>03</sub>.

Moving to the CA period, in Panel B of Figure 4.4 I partition firms using my baseline PCA approach and plot the mean number of sentences for Reluctant firms (red) and Enthusiastic firms (blue) in the pre-CA period (circles) and post-CA period (triangles). Panel B of Figure 4.5 repeats the analysis after partitioning using the section approach. Topics are ordered by disclosure volume of Enthusiastic Main Market firms in the pre-CA period. Topic labels are again suffixed by ‡ when  $Post \times Reluctant^{2013}$  loads positively at the 5% significance level. I find the increase in commentary is statistically indistinguishable across all topics between Reluctant and Enthusiastic firms when partitioning using the baseline approach in Panel B of Figure 4.4. However, the plot suggests that the post-intervention volume of Reluctant firms catches up to the pre-intervention volume of Enthusiastic firms. In Panel B of Figure 4.5, I repeat the analysis after applying the section partition. Here, results show that the  $Post \times Reluctant^{2013}$  coefficient is positive ( $p < 0.05$ ) for 10 out of 25 topics, consistent with Reluctant firms closing the disclosure gap. However, there are two important observations. First, I find Reluctant firms close the gap for only one internal resources topic (*Network*). This

could reflect (a) that Enthusiastic firms use discussion of high proprietary cost internal topics to differentiate disclosures and/or (b) that Reluctant firms reduce compliance costs by avoiding topics where proprietary costs are likely to be higher. Second, the plot in Panel B of Figure 4.5 suggests that the coverage of topics provided by Reluctant firms after the regulatory intervention falls short of the coverage provided by Enthusiastic before the 2013 CA mandate. Therefore, while there appears to be a closing of the coverage gap, Reluctant firms remain substantially below the coverage of Enthusiastic firms.

#### 4.5.3.3. Presentation

The rightmost columns of Panel A of Table 4.10 present results for measures of disclosure presentation for the CGC period. Economic effects are tabulated in Panel A of Table 4.11.  $Post \times Reluctant^{2010}$  coefficients are largely insignificant with the only exception being the marginally negative coefficient ( $p < 0.1$ ) when *BM\_Count* is the dependent variable. This evidence fails to reject null hypothesis  $H_03$  as I find Reluctant firms are no more or less likely to concentrate disclosure in separate sections following the disclosure mandate relative to Enthusiastic firms. Results in Panel A of Table 4.10 present positive *Post* coefficients ( $p < 0.01$ ) for both count and indicator measures of SBM and BM sections. Panel A of Table 4.11 confirms the difference is economically meaningful; I find odds ratios of 7.0 and 96.6 for SBM and BM sections respectively.<sup>62</sup> Therefore, my evidence is consistent with Enthusiastic firms concentrating disclosure in separate sections. Repeating the analysis using the section partitioning approach in Panel A of Appendix 4.4 reveals a positive coefficient ( $p < 0.01$ ) for  $Post \times Reluctant^{2010}$ , suggesting that the propensity for firms to provide a separate SBM or BM

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<sup>62</sup> Note this is likely a top estimate of economic effects. The reason is that the firm fixed effects structure subsumes observations from firms where the decision to provide an SBM or BM section is fixed (i.e., firms that always or never provide a separate SBM section drop out of the analysis). Re-estimating the analysis with industry (Datastream level 4) fixed effects yields *Post* and *Post\*Reluctant* coefficients in the same direction with the same significance. However, the magnitude of the *Post* coefficients reduces with industry fixed effects. The odds ratio drops (but remains meaningful) at 2.9 and 24.9 for SBM and BM indicators respectively.

section increases materially following the 2010 CGC provision for the subset of Reluctant pre-intervention disclosers.

Results for the CA period are presented in Panel B of Table 4.10 and Table 4.11 using baseline partitions. I find no incremental response by Reluctant firms as the coefficient estimate for  $Post \times Reluctant^{2013}$  is not significant for all presentation variables. The exception is  $BM\_Count$  which loads negatively ( $p < 0.1$ ). Therefore, my evidence fails to reject null hypothesis  $H_03$  as I find no incremental difference in the response to the legal requirement by Reluctant firms in terms of disclosure presentation. Nevertheless, I find positive  $Post$  coefficients ( $p < 0.01$ ) for both indicators and counts of SBM and BM sections. Therefore, Enthusiastic firms respond to the enacting of disclosure requirements into law by concentrating discussion in clearly defined sections. Results when using the SBM word list appear stronger in economic terms; with covariates set to their mean, the post period is associated with an increase in  $SBM\_Count$  of 0.62 and  $BM\_Count$  of 0.00.<sup>63</sup> As expected, results are predictably different when partitioning using the section approach. Here, I find  $Post \times Reluctant^{2013}$  loads positively ( $p < 0.01$ ) for all presentation variables, consistent with such firms beginning to provide (at least) one SBM or BM section.

#### 4.5.3.4. Effectiveness

Finally, I examine how different types of firms respond to regulatory mandates in terms of best practice properties. Panel A of Table 4.12 presents results for best practice properties in the CGC period with corresponding economic effects tabulated in Panel A of Table 4.13.  $Post * Reluctant^{2010}$  loads insignificantly for all dependent variables, suggesting no incremental change in best practice reporting features for Reluctant firms relative to Enthusiastic firms. My

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<sup>63</sup> This result is consistent with firms using section headers containing only inflections of the lemma “strateg#”. This may not be surprising given the requirements in the revisions to the Companies Act in 2013 requiring Main Market firms to provide a Strategic Report.



evidence therefore fails to reject null hypothesis H<sub>03</sub>. I fail to find evidence that Enthusiastic firms adapt the specificity or net tone of disclosures following the 2010 CGC provision. However, results reveal that Enthusiastic firms increase their focus on the long term; *Post* loads positively at the 5% (1%) level when *LongTerm* (*NetLongTerm*) is the dependent variable while I find marginal evidence ( $p < 0.1$ ) of a decrease in attention paid to the short term. Economic effects tabulated in Panel A of Table 4.13 confirm the shift towards the long term is meaningful. I find the proportion of sentences discussing the long term (short term) increases by 4.2% (decreases by 5.8%). Results are similar when applying the section partitioning approach in Appendix 4.6, although the positive *Post* coefficient when *LongTerm* is the dependent variable loses significance. I continue to find no incremental response by Reluctant firms beyond Enthusiastic firms, except a positive *Post\*Reluctant*<sup>2010</sup> coefficient ( $p < 0.05$ ) when *ShortTerm* is the dependent variable. This implies a more modest shift away from discussion of the short term for firms not previously disclosing a SBM section.

Results for the CA period using the baseline PCA partition are presented in Panel B of Table 4.12 with economic effects tabulated in Panel B of Table 4.13. Again, I find that *Post\*Reluctant*<sup>2013</sup> loads insignificantly for all dependent variables, suggesting no incremental change in best practice reporting features for Reluctant firms relative to Enthusiastic firms. For the main effect, counter to best practice guidance I find Enthusiastic firms do not adapt the degree of specific information or net tone of SBM commentary. However, such firms focus incrementally on the long term. I find positive (negative) *Post* coefficients when the dependent variable is *LongTerm* at the 5% significant level and *NetLongTerm* at the 1% significance level (*ShortTerm* at the 10% significance level). Panel B in Table 4.13 shows results are economically meaningful; the average Enthusiastic firm increases the proportion of sentences focusing on the long term by 11% and reduces the proportion of sentences discussing the short term by 10%, culminating in a net shift towards the long term of 19%. Together, these results point to

both Enthusiastic and Reluctant firms focusing more on the long term, but no substantive difference in the response of the two types of firms. Results are similar when using the section partitioning approach in Appendix 4.6 with economic effects in Appendix 4.7. The key difference is that I find Enthusiastic firms reduce the specificity of SBM commentary following the regulatory intervention (*Post* loads negatively at the 1% level) whereas Reluctant firms maintain the level of specific information (*Post\*Reluctant* loads positively at the 1% level).

#### 4.5.3.5. Summary

Overall, I find mixed results with respect to my null H3 hypothesis. For the introduction of the comply or explain provision, partitioning firms using a composite disclosure score yields no incremental response to the regulatory mandate for Reluctant firms relative to Enthusiastic firms. However, partitioning firms based on pre-disclosure presentation choice yields Reluctant firms modestly increasing disclosure volume (across a minority of measures), improving coverage of SBM topics under the umbrella of the external environment, and incrementally concentrating disclosure in separate sections. Nevertheless, I find little evidence that Reluctant firms respond to the comply or explain by increasing the propensity to display best practice properties relative to Enthusiastic firms. I therefore conclude that introducing a comply or explain provision prompts a modestly more pronounced response for Reluctant firms to say something about SBM but such commentary lacks improvement in detail and substance.

For the enactment of disclosure requirements in law, I again find partitioning firms using a composite disclosure score yields no incremental response to the regulatory mandate for Reluctant firms relative to Enthusiastic firms. However, partitioning firms on pre-intervention disclosure policy yields Reluctant firms incrementally increasing disclosure volume (across all measures) and focusing disclosure within clearly defined sections. However, results are also consistent with Reluctant firms limiting disclosure costs by avoiding high proprietary cost

topics. Interestingly, I find Enthusiastic firms respond to the regulatory intervention by substantially increasing disclosure volume, improving coverage across a broad range of topics, concentrating disclosure in separate sections, and focusing more on the long term. These results are more consistent with the arguments that Enthusiastic firms seek differentiation following the introduction of a legal requirement (Versano, 2021). However, some results point to reducing the degree of entity-specific information.

#### **4.5.4. Comparing responses to different forms of mandate by firm type**

In the next set of analyses, I check whether the response to different forms of disclosure mandate is the same for different types of firms. As discussed in Section 4.3.3, my approach to partitioning firms across the full sample period is to partition firms once in the voluntary period using the disclosure score from the PCA analysis. I then use this partition in my estimates of equation (4.4) to track how each group of firms then respond to the two disclosure mandates. Sensitivity to this choice of partitioning approach is discussed at the end of this section. Results for estimations of equation (4.4) are presented in Table 4.14 for volume measures, Table 4.15 for presentation measures, and Table 4.16 for best practice properties.

In terms of volume in Table 4.14, I find no *Post2010Pre2013\*Reluctant* coefficients are significant while *Post2013\*Reluctant* is positive ( $p < 0.1$ ) only when *ExternalSentences* or *InternalSentences* are the dependent variables, confirming little incremental increase in disclosure volume for Reluctant firms for either form of mandate. Nevertheless, Wald tests of the total effects confirm volume is higher following the legal requirement relative to the comply or explain regime for Reluctant firms. I find positive coefficients ( $p < 0.01$ ) for the *Post2010Pre2013* and *Post2013* variables, consistent with the volume of SBM disclosures by Enthusiastic firms being higher after both regulatory interventions relative to the pre-2010 period. Wald tests confirm the *Post2013* coefficient is significantly ( $p < 0.01$ ) greater than the

*Post2010Pre2013* coefficient, suggesting a stronger response to the legal requirement than to the comply or explain provision. Untabulated analyses confirm the increase in topic coverage is greater (at the 5% level) following the 2013 CA amendments relative to the comply or explain provisions for 25 (22) out of 25 topics for Enthusiastic (Reluctant) firms.

Moving to measures of presentation in Table 4.15, I fail to find clear evidence of an incremental effect for Reluctant firms as both interaction coefficients are insignificant, except *Post2013\*Reluctant* is positive ( $p < 0.05$ ) when *SBM\_Count* is the dependent variable. Therefore, firms with below-median disclosure scores in the period before the intervention are generally not more incrementally likely to adapt presentation. Nevertheless, Wald tests suggest the total effect of the 2013 CA mandate is significantly higher than the response to the 2010 CGC mandate when the dependent variable is *SBM\_Indicator* or *SBM\_Count*, suggesting a stronger response to the legal requirement for Reluctant firms. I find positive *Post2010Pre2013* and *Post2013* coefficients ( $p < 0.01$ ) for indicators and counts of both SBM and BM sections, consistent with Enthusiastic firms concentrating disclosure in separate sections. Wald tests confirm coefficients for *Post2013* are significantly higher than *Post2010Pre2013* coefficients ( $p < 0.01$ ) when relying on SBM (but not BM) sections.

Table 4.16 presents results for best practice properties. Interaction coefficients are insignificant, meaning Reluctant firms respond similar to Enthusiastic firms for both regulatory mandates. I find Enthusiastic firms do not respond to the comply or explain provision by adapting *Specificity* but reduce ( $p < 0.05$ ) the degree of entity-specific information following the legal requirement. However, Wald tests suggest no difference in the total effect for either Enthusiastic or Reluctant firms. In terms of time horizon, interaction coefficients are insignificant implying similar disclosure choices by Reluctant firms. Results point to Enthusiastic firms focusing more on the long term with *Post2010Pre2013* and *Post2013* both loading positively (negatively) at the 1% level when the dependent variable is *LongTerm* or

*NetLongTerm (ShortTerm)*. Again, Wald tests confirm the shift towards the long term is greater ( $p < 0.01$ ) for both Enthusiastic and Reluctant firms. Finally, in terms of disclosure balance, I find *Post2010Pre2013xReluctant* and *Post2013xReluctant* load insignificantly, implying Reluctant firms do not incrementally adapt disclosure balance beyond any response by Enthusiastic firms. Results point to Enthusiastic firms not substantively adapting the balance of disclosure, as both *Post2010Pre2013* and *Post2013* load insignificantly. However, Wald tests provide marginal evidence that coefficients are marginally different ( $p < 0.1$ ); I find *Post2010Pre2013* is marginally more net positive than *Post2013* which implies Enthusiastic disclosers are more balanced following the enactment of disclosure requirements in law relative to the comply or explain provision. Wald tests confirm no difference in response in terms of SBM disclosure tone for Reluctant firms.

Overall, my results point to both Enthusiastic and Reluctant firms responding more strongly to the legal requirements enacted in law relative to when the same disclosure requirements are mandated in the form of a comply or explain provision. Specifically, I find both types of firms adapt volume, topic coverage, presentation and long-term focus more to the legal requirement, albeit with a lower degree of entity-specific information. I examine how my results change to alternative partitioning approaches. In Appendix 4.8, Appendix 4.9 and Appendix 4.10, I present results using the section partition during the voluntary period. In Appendix 4.11, Appendix 4.12 and Appendix 4.13, I partition firms using the section approach prior to the comply or explain provision and again prior to the legal requirement. Finally, I partition firms using the PCA approach prior to the comply or explain provision and again prior to the legal requirement in Appendix 4.14, Appendix 4.15 and Appendix 4.16. In all cases, I continue to find a stronger response to the legal mandate across volume, presentation and long-term focus for both Reluctant and Enthusiastic firms.

#### **4.5.5. Further analysis comparing Reluctant firms to AIM firms**

I supplement my earlier analyses with a closer look at Reluctant firms' responses. I re-estimate equation (4.3) but replace observations from Enthusiastic Main Market firms with observations from AIM firms. In other words, I directly compare the response of Reluctant firms to AIM firms not subject to the same mandates. This further analysis adds value for several reasons. First, firms previously providing little disclosure on SBM matters are arguably the target of regulatory interventions. It therefore provides a natural test to understand whether such interventions successfully promoted meaningful SBM disclosure. Second, as discussed in Section 4.3.3, DID analyses assume that the treatment effect for any given unit (or individual) is not influenced by the treatments assigned to other units (Rubin, 1978). In other words, the potential outcomes for a unit depend only on the treatment that unit receives and are not affected by the treatments received by other units. The assumption may be violated in my setting if Enthusiastic firms' response to the regulatory interventions is partially conditioned by the (anticipated) disclosure decision of reluctant firms. Given the discussion of competing theories which predict either Enthusiastic firms improve disclosures (Arena et al., 2021) or reduce the meaningfulness of commentary (Versano, 2021), such effects may mask the response of Reluctant firms to the regulatory mandates. AIM firms offer an alternative counterfactual to assess how Reluctant firms adapt disclosure relative to firms not subject to the regulatory mandates. Note in the discussion below, I limit discussion of economic effects to the incremental response of Reluctant firms given the economic magnitude of spillover effects to AIM firms are discussed in Section 4.5.1.

##### *4.5.5.1. Volume and topic coverage*

I present DiD results for volume and presentation measures in Table 4.17 with economic effects tabulated in Table 4.18. Panel A (B) presents results for the CGC (CA) sample period. I

repeat the analysis in Appendix 4.17 and Appendix 4.18 where I define Reluctant firms using the section partition. Beginning with the CGC sample period in Panel A,  $Post*Reluctant^{2010}$  loads insignificantly for all volume measures. Conclusions are the same in Panel A of Appendix 4.17 where I define Reluctant firms using the section partitioning approach. In untabulated analyses, I continue to find no incremental increase in volume when using the word lists of Athanasakou et al. (2022) and Hanley and Hoberg (2010). As in Section 4.5.1,  $Post$  loads positively ( $p < 0.01$ ) for all volume measures. Together, these results point to Reluctant Main Market firms increasing disclosure volume following the comply or explain provision but did not increase disclosure volume incrementally beyond firms not subject to the regulations.

Next, I contrast these results with an analysis of how Reluctant firms respond relative to AIM firms to the enactment of the same disclosure rules in law. My results reveal positive  $Post*Reluctant^{2013}$  coefficients ( $p < 0.01$ ) for all volume measures. The incremental increase in disclosure volume is economically meaningful, with Reluctant firms increasing disclosure more than AIM firms by 42 sentences in total and 25 (11) more sentences discussing the external environment (internal environment). Conclusions are the same in Panel B of Appendix 4.17 where I use the section partitioning approach. These results are consistent with Reluctant firms responding to the legal requirement by substantively increasing the volume of SBM commentary. In untabulated analyses, disaggregating volume by topic shows incremental increases in disclosure for six topics from the external environment (e.g., *Competition* and *Supplier*) and two internal resources (*Innovation* and *Expertise*) themes. That Reluctant firms seemingly increase coverage of more external topics by than internal topics is further evidence consistent with Reluctant firms reducing costs by avoiding disclosure of high-cost topics.

#### 4.5.5.2. Presentation

In terms of SBM presentation, results in the four rightmost columns Panel A (B) of Table 4.17 present results for the CGC (CA) period with corresponding economic effects tabulated in Table 4.18. I repeat the analysis in Appendix 4.17 and Appendix 4.18 where I define Reluctant firms using the section partition. Results in Panel A of Table 4.17 confirm insignificant  $Post*Reluctant^{2010}$  coefficients, suggesting Reluctant firms show no incremental increase in the number of or propensity to provide SBM or BM sections. As expected, results are different when instead defining Reluctant using the section approach in Appendix 4.17; here, I find Main Market firms not previously providing an SBM section incrementally increase the count and propensity of both SBM and BM sections following the comply or explain provisions. I also find a positive  $Post$  coefficient ( $p < 0.05$ ) when the dependent variable is  $SBM\_Count$  or  $SBM\_Indicator$  and insignificant otherwise. Together, these results point towards Reluctant firms being more likely to concentrate SBM commentary in a clearly defined section after the comply or explain provision, but the effect is only incremental when partitioning on pre-intervention presentation choice and not on overall pre-intervention disclosure score.

Moving to enactment of disclosure requirements in law in Panel B of Table 4.17, I find insignificant  $Post*Reluctant^{2013}$  coefficients which suggest Reluctant firms are not incrementally more likely to present SBM commentary in SBM sections. The exception is that Reluctant firms do not increase the number of SBM sections by as many as AIM firms ( $Post*Reluctant^{2013}$  is negative and significant at the 0.01 level). As expected, when defining Reluctant firms using the section partition, I find the  $Post*Reluctant^{2013}$  coefficient loads positively ( $p < 0.01$ ) for all measures of presentation. I continue to find AIM firms concentrate disclosure in separate SBM or BM sections. Together, the results point to Reluctant firms adapting the presentation of SBM commentary following the legal requirements. As with the comply or explain mandate, my evidence suggests Reluctant firms being more likely to



concentrate SBM commentary in a clearly defined section after the legal requirement, but the effect is only incremental when partitioning on pre-intervention presentation choice and not on overall pre-intervention disclosure score.

#### 4.5.5.3. Effectiveness

Finally, Panel A (B) of Table 4.19 present results for best practice properties with economic effects tabulated in Panel A (B) of Table 4.20 for the CGC (CA) period. Results are repeated in Appendix 4.19 and Appendix 4.20 after applying the section approach to partitioning firms. Beginning with the comply or explain provision, I find  $Post*Reluctant^{2010}$  interaction coefficients load insignificantly for all measures. Results are the same when using the section partitioning approach in Appendix 4.19. Results suggest no response by AIM firms in terms of best practice properties as  $Post$  loads insignificantly for specificity, time horizon and tone properties. Together, my results point towards a muted response by Reluctant Main Market firms to the introduction of a comply or explain provision in terms of the properties of effective reporting.

Moving to enacting disclosure requirements in law in Panel B, results show no incremental change in  $Specificity$  as  $Post*Reluctant^{2013}$  is statistically insignificant at conventional levels. It follows Reluctant firms do not increase or reduce the degree of entity-specific information in response to the enacting of disclosure requirements in law. While  $Post$  loads positively (negatively) when  $LongTerm$  and  $NetLongTerm$  ( $ShortTerm$ ) are the dependent variables, I find  $Post*Reluctant$  remains insignificant. Therefore, Reluctant firms show a shift in focus towards the long term to a similar degree (but not incrementally more) than AIM firms not subject to the same regulatory requirements. Likewise, I find  $Post*Reluctant^{2013}$  is statistically insignificant when  $NetPositiveTone$  is the dependent variable, meaning Reluctant firms did not adapt the balance of SBM commentary incremental to AIM firms.  $Post$  loads

insignificantly when *NetPositiveTone* is the dependent variable. Together, these results point to no substantial change in the balance of Reluctant firms' SBM commentary. Results in Panel B of Appendix 4.19 where I use the section partition are very similar.

#### 4.5.5.4. *Summary*

Overall, results in this section question the substantiveness of Reluctant firms' response to the introduction of a comply or explain provision. While results in Section 4.5.1 suggest a modestly stronger response by Reluctant firms relative to Enthusiastic firms, I find the response is not incremental to firms not subject to the same regulations. Specifically, I find no incremental increase in disclosure volume or effective reporting properties. Further, I find only an incremental response in terms of presentation when I limit my sample of Main Market firms to those not previously providing an SBM sections. Together, these results are not consistent with prior literature investigating SBM disclosures (e.g., Athanasakou et al., 2022) but provide evidence to suggest disclosures of firms with the lowest pre-intervention disclosure scores fail to substantially adapt commentary across several dimensions in response to the disclosure mandate. In contrast, I find that firms with low disclosure scores prior to the enactment of disclosure requirements in law respond substantially to the legal mandate. Here, Reluctant firms materially increase disclosure volume and topic coverage. However, I fail to find evidence consistent with Reluctant firms substantially increasing discussion of high-cost topics nor being more likely to display properties of effective reporting, consistent with such firms continuing to limit proprietary and other costs.

## 4.6. Robustness tests

### 4.6.1. Subperiod analyses

In my main tests, I employ entropy balancing (EB) to account for systematic structural differences between Main Market and AIM firms which may confound my DiD analysis. As discussed in Section 4.3.1, EB can be limited when applied to a panel dataset with multiple pre- and post-treatment periods. In such settings, EB may systematically overweight observations in either the pre- or post-treatment periods. One option proposed by McMullin and Schonberger (2022) is to apply EB in each year of the sample period, which has the advantage of allowing observation weights to vary over time. However, if covariates are correlated with post-treatment variation, there is the risk that such an approach would balance away (some of) the treatment effect. I instead follow the recommendation of McMullin and Schonberger (2022) and focus exclusively on the year immediately prior to the regulatory intervention. The problem with this approach is that it assumes that control weights remain consistent in the post-treatment period. This could be problematic if there are changes to (relative) fundamentals when moving across periods.

To check the robustness of my findings, I rerun the analysis using only data from annual reports published in the year before and after the regulatory change for each sample. I complete this robustness check both for my estimations of equation (4.1) where I compare Main Market and AIM firms and equation (4.3) where I compare Enthusiastic and Reluctant Main Market firms. Untabulated results confirm my conclusions are not sensitive to this sampling approach. Specifically, I continue to find no incremental increase in volume, propensity to provide a standalone section, or best practice properties among Main Market firms relative to AIM firms following the CGC mandate. I also continue to find an incremental increase in disclosure volume for Main Market firms following the CA mandate. In terms of best practice properties,

I find a positive interaction coefficient at the 0.05 (0.1) significance level when *LongTerm* (*NetLongTerm*) is the dependent variable while the marginal negative interaction coefficient when *Specificity* is the dependent variable loses significance.

For my analysis of the importance of pre-intervention disclosure policy, I first rerun the analysis using the PCA partition. I continue to find the interaction coefficient is insignificant for all volume measures for both sample periods. Results for measures of presentation are generally the same. I also find the same results under the new specification for all best practice properties for both sample periods. The only exception is a negative ( $p < 0.05$ ) interaction coefficient when *NetPositiveTone* is the dependent variable in the CA period, implying Reluctant firms provide incrementally more balanced SBM commentary following the introduction of the legal requirement. When repeating the analysis using the SBM section partition while restricting observations to annual reports published in the year before and after the regulatory change, my results are almost universally the same. Overall, my results appear robust to focusing only on the years immediately prior to and following the regulatory change.

#### **4.6.2. Endogeneity of pre-intervention disclosure policy**

One of the methodological challenges to comparing the response of Enthusiastic and Reluctant firms to regulatory mandates is the classification of firms into such groups is not exogenous. Rather, it is a firm choice whether and to what extent to provide SBM commentary in the pre-treatment period. This poses an identification challenge if observable and/or unobservable firm characteristics drive the selection into the Enthusiastic versus Reluctant classification and also the response to the regulatory mandates. I test the robustness of my analysis to alternative econometric specifications which address this endogeneity concern. I follow the approach taken by Costello (2020). To overcome the problem caused by selection into treatment and control groups, they use time-invariant controls interacted with the Post

indicator variable. This absorbs the treatment effect that would be attributable to factors that are expected to generate a selection problem. In this way, I directly address the problems arising from the endogeneity of classification of firms into Enthusiastic and Reluctant disclosure groups. I implement this approach by estimating a modified version of equation (4.3):

$$Property_{zi} = \gamma_{0z} + \gamma_{1z}Post^Y_i + \gamma_{2z}Post^Y_i \times Reluctant_i + \sum_{j=1}^J \vartheta_j Post \times Control_{jx} + \emptyset + \epsilon_{zi}, \quad (4.5)$$

where  $Control_{jx}$  is the average of  $Control_j$  of firm  $x$  in the pre-treatment period and all other variables are as defined in Section 4.3.3. I use all observations from each sample period as defined in Section 4.4.

When estimating equation (4.5) using the PCA partition approach, results are the same in terms of sign and significance for all volume and presentation measures in both the CGC and CA sample periods. Similarly, all results are the same for all best practice measures in both the CGC and CA sample. The only exception is a negative interaction coefficient ( $p < 0.05$ ) when *NetPositiveTone* is the dependent variable in the CA period, implying Reluctant firms provide incrementally more balanced SBM commentary following the introduction of the legal requirement. When estimating equation (4.5) using the SBM section partition, results for the presentation variables and best practice properties are the same as the main analysis. However, volume measures are somewhat more sensitive; in the CGC period, I now find positive interaction coefficients (either  $p < 0.05$  or  $p < 0.1$ ) for all volume measures. Conversely, the positive interaction coefficients ( $p < 0.05$ ) for volume measures lose significance in the CA period. Overall, my results are generally robust to the approach taken by Costello (2020) to address endogeneity concerns in the selection of firms into treatment and control groups. While there are some exceptions, conclusions from my analysis remain intact.

## 4.7. Conclusions

Understanding how a firm creates value is fundamental to analysing financial information and assessing future prospects (IASB, 2010; Palepu et al., 2013; Verrecchia, 1980). Despite clear demand from investors and other stakeholders (e.g., CFA Institute, 2006), a significant proportion of firms choose to remain silent in voluntary regimes. At a time where a range of policymakers and interest groups are considering (e.g., IASB, 2021; SEC, 2016; 2019; 2020) or have already (European Union, 2014) mandated disclosure of strategy and business model, I investigate how SBM reporting properties change in response to a disclosure mandate and assess whether the form of the mandate matters.

I collect and analyse commentary on strategy and business model disclosed in UK annual reports. I leverage a series of novel regulatory developments to understand first how reporting properties change in response to the introduction of a comply or explain provision to provide information on strategy and business model. My initial results suggest a muted response to such a reporting mandate. Specifically, I find that firms already providing substantive disclosure on SBM matters do not adapt disclosures beyond general year-to-year changes. I also find firms previously saying very little about SBM topics begin to say something about SBM, but such commentary continues to lack detail relative to more willing firms.

Second, I assess how firms adapt SBM disclosure to the enactment of the same disclosure requirements into law. I find firms already providing substantive disclosure on SBM matters further increase the detail and comprehensiveness of commentary, consistent with attempts to differentiate SBM disclosure. Despite proprietary and other costs which forced some firms to remain silent in a voluntary regime, I find the legal requirement successfully prompts such firms to substantially increase the level and detail of disclosure. Indeed, I find some evidence that such firms begin to close the gap on enthusiastic disclosers.

My findings in this chapter contribute to our understanding of a central topic in corporate reporting that has received little attention in the literature, despite increasing regulatory pressure for more disclosure. Prior research investigating SBM disclosures primarily focus on manual analysis of small samples (e.g., Bini et al., 2016; Bowman, 1984; Santema et al., 2005) or empirical analysis of capital market implications (Athanasakou et al., 2022; Simoni et al., 2022; Wang et al., 2023). I complement these studies in several ways. First, I answer calls by prior research to investigate the response of firms across reporting themes and the qualitative characteristics predicted by regulators to influence disclosures usefulness (Beattie and Smith, 2013; Wang et al., 2023). I complement concurrent studies by going beyond an analysis of disclosure volume and providing large scale evidence on the response of firms across reporting themes and qualitative characteristics predicted by regulators to influence disclosures usefulness. Despite substantial proprietary and other costs, my results contribute evidence consistent with disclosure mandates successfully prompting firms to adapt disclosure in terms of volume, presentation, topic coverage and time horizon.

More broadly, I contribute to the non-financial disclosure literature. Recent literature advocates going beyond viewing regulation of non-financial information as a simple, binary voluntary-mandatory choice to instead consider the form of the regulation (e.g., Christensen et al., 2021). Current debates are unclear whether soft-touch regulation may be a more effective form of regulation than legal requirements. Empirical evidence comparing company decisions (such as disclosure choice) over time and across jurisdictions is rare (Ho, 2017). I complement prior studies by extending the literature to the central topic in non-financial reporting of SBM commentary and going beyond simple volume measures. Further, my novel institutional setting facilitates direct comparison of firm responses to different forms of regulatory mandate, holding the disclosure requirements constant. While I find an incremental response to the

comply or explain provisions in some qualitative characteristics, my evidence suggests a substantially stronger response to legal requirements in the area of SBM commentary.



## Appendix 4.1 – Variable definitions

### Volume properties

StrategySentences	StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources.
GeneralSentences	GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary.
ExternalSentences	External Sentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment.
InternalSentences	InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources.
Strategy_Sentences_ExSBM	Strategy_Sentences_ExSBM is the total number of sentences classified as being strategy-related in the annual report (excluding sections identified by managers as being strategy-related – see below). Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources.
Strategy_Sentences_Words_ExSBM	Strategy_Sentences_Words_ExSBM is the total number of words in sentences classified as being strategy-related in the annual report (excluding sections identified by managers as being strategy-related).
StrategySectionWords	Strategy_Section_Words is the total number of words in annual report sections identified by managers as being related to strategy.
StrategySentencesWords	Strategy_Sentences_Words is the total number of words in sentences classified as being strategy-related in the annual report.
NumUniqueStrategyKeyWords	NumUniqueStrategyKeyWords is the number of unique strategy keywords in the front half of the annual report.

### Presentation properties

SBM_Indicator	SBM_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”.
SBM_Count	SBM_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”.
BM_Indicator	BM_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”.

BM_Count	BM_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”.
NumSectionsWithStrategyIncSBM	NumSectionsWithStrategyIncSBM is the number of sections in the annual report containing one or more top ten keywords from topics salient to SBM sections and related to the external environment or internal resources.
<u>Best practice properties</u>	
Specificity	Specificity is the total number of named entities scaled by the total number of words.
LongTerm	LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences.
ShortTerm	ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences.
NetLongTerm	NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences.
NetPositiveTone	NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences.
<u>Partitions</u>	
MainMarket	MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise.
Reluctant(PCA)	Reluctant(PCA) is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy_Sentences_ExSBM, Strategy_Sentences_Words_ExSBM and SBM_Indicator.
Reluctant(Section)	Reluctant(Section) is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise.
Post	Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise.
Post2010Pre2013	Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise.
Post2013	Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law.
<u>Control variables</u>	
RD_Binary	RD_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise.
Loss_Binary	Loss_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations.
NSEG	NSEG is the natural log of the number of business segments.
ROA	ROA is operating income scaled by lagged total assets.

$\Delta$ ROA	$\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets.
Returns	Returns is the 12-month return for the period ending in the month of the financial year end.
Size	Size is natural logarithm of market capitalization at financial year end.
FinStatWords	FinStatWords is the (log) word count of the financial statements.
MarketToBook	MarketToBook is market value of equity scaled by the book value of equity.
NewEquity	NewEquity is net proceeds from new equity issuance.
GenericStrategy	Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.2 - Covariate balance statistics after entropy balancing with Main Market (treatment) and AIM (control) observations**

	Main Market			AIM			Balance statistics
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std. Diff.
Panel A: Corporate Governance Code Amendment							
RD_Binary	0.273	0.199	1.017	0.333	1.441	7.321	-0.066
Loss_Binary	0.217	0.170	1.370	0.303	1.104	7.912	-0.108 *
NSEG	1.183	0.177	0.226	1.277	9.432	5.509	-0.043
ROA	0.045	0.041	-3.938	0.026	0.379	-4.357	0.042
Delta_ROA	0.032	1.867	-0.616	-0.034	16.316	-2.745	0.022
Returns	0.085	0.292	0.998	0.181	2.775	6.995	-0.077
Size	11.559	4.266	-0.430	12.707	850.173	4.572	-0.056
FinStatNumWords	9.949	0.269	-2.017	11.048	566.535	4.491	-0.065
MarketToBook	2.150	32.991	0.807	3.125	112.468	7.183	-0.114 *
NewEquity	4327.859	546227379.518	10.320	4110.040	755315107.241	13.581	0.009
GenericStrategy	15.213	8.385	-0.281	17.135	1437.026	4.892	-0.072
NumObs	3909						
NumFirms	768						
MatchRatio	0.247						
MaxWeight	20.606						
Panel B: Companies Act Amendment							
RD_Binary	0.241	0.183	1.207	0.294	2.163	13.168	-0.049
Loss_Binary	0.207	0.164	1.444	0.257	0.899	7.272	-0.068
NSEG	1.299	0.199	-0.128	1.445	15.290	7.890	-0.053
ROA	0.083	0.010	-0.664	0.082	0.202	5.650	0.003
Delta_ROA	0.038	1.188	0.066	-0.034	2.674	-2.400	0.052
Returns	0.128	0.168	0.685	0.207	1.408	5.561	-0.089
Size	12.447	2.809	-1.055	13.528	1232.497	6.972	-0.044
FinStatNumWords	10.050	0.318	-8.241	11.079	772.734	7.154	-0.052
MarketToBook	2.852	18.576	2.993	3.078	99.404	5.965	-0.029

NewEquity	7377.921	1011808980.884	6.273	5151.154	774110617.321	10.895	0.075
GenericStrategy	15.339	8.651	-0.288	17.024	1927.218	7.293	-0.054
NumObs	2468						
NumFirms	565						
MatchRatio	0.247						
MaxWeight	32.155						

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Appendix 4.2 presents summary statistics and covariate distributions for Main Market (treatment) and AIM (control) observations. Standardized differences (Std Diff) are presented to assess covariate balance on the first moment (means) between treatment and control samples, computed as the difference in means between the treatment and control samples divided by the square root of the average variance in the treatment and control samples for each covariate (McMullin and Schonberger, 2022). \* indicates covariates with standardized differences outside of the +/-0.1 bounds suggested by Rubin (2001) as indicating a balanced covariate. MatchRatio is the number of firms with above equal weights in the entropy balance scaled by the total number of firms. MaxWeight is the maximum weight assigned to a single control sample observation by the entropy balance. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.3 – Covariate balance statistics after entropy balancing with Reluctant (treatment) and Enthusiastic (control) Main Market observations**

	Reluctant			Enthusiastic			Balance statistics	
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std. Diff.	
Panel A: Corporate Governance Code Amendment								
RD_Binary	0.256	0.191	1.115	0.219	0.318	4.845	0.073	
Loss_Binary	0.232	0.178	1.267	0.167	0.278	5.193	0.137	*
NSEG	1.141	0.170	0.317	0.960	0.925	3.467	0.244	*
ROA	0.029	0.053	-3.469	0.045	0.054	-1.895	-0.069	
Delta_ROA	0.004	2.127	-0.889	0.108	8.066	14.308	-0.046	
Returns	0.082	0.297	1.107	0.074	0.507	2.033	0.013	
Size	11.184	5.521	0.172	9.422	69.291	4.033	0.288	*
FinStatNumWords	9.900	0.268	0.116	8.170	91.841	6.009	0.255	*
MarketToBook	2.083	29.615	0.851	1.718	29.983	0.243	0.067	
NewEquity	5940.621	1049771153.009	8.672	5617.245	409438945.484	5.955	0.012	
GenericStrategy	15.093	8.733	-0.099	12.431	222.499	6.709	0.248	*
NumObs	2475							
NumFirms	478							
MatchRatio	0.244							
MaxWeight	13.167							
Panel B: Companies Act Amendment								
RD_Binary	0.261	0.193	1.086	0.214	0.220	2.514	0.105	*
Loss_Binary	0.207	0.165	1.441	0.163	0.179	3.117	0.106	*
NSEG	1.343	0.210	-0.161	1.071	0.385	1.176	0.500	*
ROA	0.087	0.010	-0.561	0.070	0.011	0.640	0.169	*
Delta_ROA	0.023	1.145	-0.025	-0.006	0.983	-1.673	0.028	
Returns	0.112	0.164	0.639	0.107	0.177	2.508	0.012	
Size	12.809	4.458	0.036	10.510	21.531	1.309	0.638	*
FinStatNumWords	10.158	0.231	0.130	8.331	20.034	1.484	0.574	*

MarketToBook	2.810	21.010	2.686	2.207	15.514	6.795	0.141	*
NewEquity	6539.408	672367078.013	6.887	6977.976	607208011.497	6.206	-0.017	
GenericStrategy	15.223	8.230	-0.156	12.578	41.329	1.345	0.531	*
NumObs	1694							
NumFirms	376							
MatchRatio	0.263							
MaxWeight	2.853							

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Appendix 4.3 presents summary statistics and covariate distributions for Reluctant (treatment) and Enthusiastic (control) Main Market observations. Standardized differences (Std Diff) are presented to assess covariate balance on the first moment (means) between treatment and control samples, computed as the difference in means between the treatment and control samples divided by the square root of the average variance in the treatment and control samples for each covariate (McMullin and Schonberger, 2022). \* indicates covariates with standardized differences outside of the +/-0.1 bounds suggested by Rubin (2001) as indicating a balanced covariate. MatchRatio is the number of firms with above equal weights in the entropy balance scaled by the total number of firms. MaxWeight is the maximum weight assigned to a single control sample observation by the entropy balance. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is roperating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.4 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using the SBM section partition) Main Market firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
<i>Panel A: Corporate Governance Code Amendment</i>								
Post	0.117 *** (0.018)	0.125 *** (0.017)	0.102 *** (0.018)	0.165 *** (0.019)	0.291 (0.303)	0.245 *** (0.078)	6.411 *** (1.709)	2.742 *** (0.639)
PostxReluctant	0.036 (0.026)	0.039 (0.026)	0.042 (0.027)	0.014 (0.030)	35.184 *** (0.353)	18.940 *** (0.080)	23.247 *** (2.542)	16.546 *** (0.580)
RD_Binary	-0.059 (0.059)	-0.065 (0.058)	-0.048 (0.056)	-0.038 (0.061)	-0.709 (0.795)	-0.256 (0.268)	-4.297 * (2.244)	-0.477 (0.414)
Loss_Binary	0.015 (0.021)	0.021 (0.020)	0.023 (0.022)	0.007 (0.024)	-0.401 (0.511)	-0.179 (0.155)	0.456 (1.127)	0.091 (0.455)
NSEG	0.119 *** (0.033)	0.129 *** (0.033)	0.121 *** (0.033)	0.128 *** (0.037)	0.632 (0.578)	0.189 (0.160)	3.533 * (2.085)	1.308 * (0.699)
ROA	-0.003 (0.105)	0.003 (0.111)	0.013 (0.098)	0.015 (0.136)	-0.782 (2.497)	-0.229 (0.283)	-3.133 (10.858)	-1.577 (4.549)
DeltaROA	-0.010 (0.007)	-0.010 (0.007)	-0.008 (0.007)	-0.011 (0.007)	-0.173 (0.141)	-0.072 (0.044)	0.195 (0.351)	0.125 (0.139)
Returns	0.008 (0.013)	0.010 (0.012)	0.012 (0.013)	0.014 (0.013)	0.470 * (0.266)	0.112 * (0.058)	-1.335 * (0.734)	-0.488 ** (0.237)
Size	0.014 (0.015)	0.020 (0.015)	0.009 (0.015)	0.020 (0.016)	0.040 (0.288)	-0.018 (0.062)	0.553 (0.696)	0.294 (0.374)
FinStatWords	0.307 *** (0.042)	0.314 *** (0.040)	0.282 *** (0.044)	0.276 *** (0.041)	1.934 *** (0.542)	0.508 *** (0.104)	0.870 (1.040)	0.151 (0.367)
MarketToBook	-0.002 (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.032 (0.026)	0.007 (0.012)	0.050 (0.084)	0.025 (0.038)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.001 (0.006)	0.002 (0.006)	0.002 (0.007)	0.004 (0.007)	0.189 (0.140)	0.038 (0.036)	0.506 (0.374)	0.210 (0.137)
N	2470	2470	2470	2470	1438	1820	465	465
(Psuedo) Adj. R2	0.113	0.121	0.119	0.135	0.144	0.241	0.083	-0.142



Model	NegBin		NegBin		NegBin		NegBin		Logit		Poisson		Logit		Poisson	
Firm FE	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
	Volume								Presentation							
	StrategySentences		GeneralSentences		ExternalSentences		InternalSentences		SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
<i>Panel B: Companies Act Amendment</i>																
Post	0.145 ***		0.158 ***		0.125 ***		0.139 ***		2.641 ***		0.496 ***		1.303 *		0.550 **	
	(0.019)		(0.018)		(0.019)		(0.020)		(0.544)		(0.063)		(0.682)		(0.267)	
PostxReluctant	0.072 *		0.077 **		0.081 **		0.086 **		41.404 ***		19.269 ***		34.950 ***		18.301 ***	
	(0.038)		(0.035)		(0.037)		(0.038)		(0.941)		(0.059)		(0.860)		(0.304)	
RD_Binary	0.014		0.015		0.010		0.029		-5.049 ***		-0.190		0.515		0.065	
	(0.052)		(0.047)		(0.054)		(0.052)		(1.783)		(0.140)		(1.117)		(0.412)	
Loss_Binary	0.053 **		0.049 **		0.052 **		0.045 *		0.179		-0.157 **		0.527		0.165	
	(0.025)		(0.024)		(0.025)		(0.027)		(0.657)		(0.064)		(0.762)		(0.291)	
NSEG	0.058		0.064		0.060		0.058		-2.762 *		0.047		0.857		0.296	
	(0.040)		(0.039)		(0.039)		(0.042)		(1.653)		(0.132)		(1.142)		(0.399)	
ROA	0.132		0.192		0.184		0.190		-10.521		0.071		-1.154		0.247	
	(0.174)		(0.165)		(0.179)		(0.178)		(8.668)		(0.451)		(6.677)		(2.135)	
DeltaROA	-0.004		-0.007		-0.006		-0.009		0.194		-0.034		-0.002		-0.022	
	(0.009)		(0.009)		(0.009)		(0.009)		(0.306)		(0.021)		(0.245)		(0.101)	
Returns	-0.038 **		-0.034 *		-0.045 **		-0.052 **		0.685		0.007		0.177		0.173	
	(0.019)		(0.018)		(0.019)		(0.020)		(0.888)		(0.066)		(0.568)		(0.221)	
Size	0.094 ***		0.094 ***		0.093 ***		0.123 ***		2.034 *		0.033		0.389		0.011	
	(0.021)		(0.020)		(0.021)		(0.023)		(1.145)		(0.068)		(0.747)		(0.246)	
FinStatWords	0.201 ***		0.207 ***		0.170 ***		0.153 ***		1.658 *		0.359 ***		1.498		0.565	
	(0.043)		(0.039)		(0.041)		(0.036)		(0.961)		(0.084)		(1.158)		(0.437)	
MarketToBook	-0.001		-0.001		-0.001		-0.003		-0.178 **		-0.007		-0.113		-0.026	
	(0.002)		(0.002)		(0.003)		(0.003)		(0.084)		(0.006)		(0.103)		(0.027)	
NewEquity	0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
GenericStrategy	-0.004		-0.005		-0.003		0.001		0.481		0.035		0.300		0.105	
	(0.008)		(0.008)		(0.008)		(0.008)		(0.303)		(0.023)		(0.231)		(0.080)	
N	1559		1559		1559		1559		728		1517		608		665	

(Psuedo) Adj. R2	0.114	0.126	0.123	0.142	0.344	0.549	-0.284	-0.526
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 4.4 presents regression results examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant and Enthusiastic (using the SBM section partition) Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.5 – Economic significance of regressions comparing the response of Reluctant and Enthusiastic (using the SBM section partition) Main Market firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Panel A: Corporate Governance Code Amendment								
Post	46.33	36.08	27.94	22.48	1.9829	0.0000	46.2553	0.0000
PostxReluctant	15.80	12.40	12.63	2.17	NA	4430.2187	NA	0.0000
Panel B: Companies Act Amendment								
Post	86.96	70.39	51.69	29.57	6.4530	0.0536	3.5552	0.0000
PostxReluctant	47.46	35.03	37.11	20.45	NA	1866772.5977	NA	4.0507

Appendix 4.5 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant and Enthusiastic (using the SBM section partition) Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable. Effects are estimated for the average firm. For count variables, the table presents the change in the number of sentences. For binary variables, the table presents the odds ratio.

**Appendix 4.6 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using SBM section partition) Main Market firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	0.433 (0.814)	2.234 (2.226)	-4.473 *** (1.466)	6.489 *** (2.397)	0.153 * (0.080)
PostxReluctant	-1.234 (0.930)	1.960 (2.836)	3.792 ** (1.721)	-1.120 (2.970)	-0.162 (0.101)
RD_Binary	4.125 ** (1.892)	-8.500 ** (3.506)	-4.124 (2.771)	-5.672 * (3.156)	0.038 (0.155)
Loss_Binary	1.472 * (0.791)	1.521 (2.047)	-1.163 (1.444)	2.330 (2.376)	-0.295 *** (0.066)
NSEG	2.187 ** (1.002)	-3.044 (2.582)	-1.599 (1.783)	-1.545 (2.684)	-0.295 *** (0.108)
ROA	-2.010 (2.973)	13.103 (8.526)	0.177 (5.760)	13.262 * (7.730)	0.303 (0.262)
DeltaROA	0.321 * (0.190)	-0.657 (0.542)	0.449 (0.734)	-1.177 (0.956)	0.060 *** (0.017)
Returns	0.492 (0.355)	0.719 (1.322)	1.854 ** (0.909)	-0.978 (1.413)	0.040 (0.041)
Size	1.450 *** (0.416)	3.071 ** (1.231)	-1.892 * (1.027)	5.010 *** (1.545)	0.131 *** (0.049)
FinStatWords	-2.298 ** (0.992)	-4.443 (3.009)	-1.560 (1.626)	-2.626 (2.821)	0.093 (0.084)
MarketToBook	-0.028 (0.026)	-0.090 (0.154)	-0.052 (0.090)	-0.111 (0.107)	0.010 (0.008)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.615 *** (0.221)	-0.421 (0.612)	-0.638 (0.560)	0.206 (0.857)	0.045 * (0.023)

N	2470	2470	2470	2470	2470
(Psuedo) Adj. R2	0.755	0.639	0.596	0.677	0.569
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel B: Companies Act Amendment					
Post	-1.733 *** (0.664)	13.698 *** (2.923)	-5.818 *** (1.425)	19.772 *** (2.972)	-0.104 (0.086)
PostxReluctant	2.450 ** (1.074)	-2.354 (4.248)	2.707 (2.307)	-6.171 (4.177)	-0.197 (0.125)
RD_Binary	0.527 (0.928)	15.580 * (8.366)	3.918 (3.305)	11.064 * (6.669)	-0.216 (0.198)
Loss_Binary	-0.349 (0.829)	0.501 (3.872)	0.850 (1.877)	0.449 (3.909)	-0.410 *** (0.120)
NSEG	-0.038 (1.511)	-0.830 (5.392)	-3.964 (2.673)	4.229 (5.901)	0.105 (0.170)
ROA	-14.233 ** (6.141)	-12.415 (17.027)	29.464 * (15.624)	-33.060 ** (15.943)	0.371 (0.648)
DeltaROA	-0.151 (0.245)	0.331 (0.854)	-0.334 (0.606)	0.237 (0.790)	0.016 (0.027)
Returns	-2.016 *** (0.623)	0.161 (2.480)	0.783 (1.398)	-0.564 (2.316)	0.031 (0.084)
Size	2.654 *** (0.863)	8.037 *** (2.636)	-3.282 (2.088)	10.015 *** (3.139)	-0.015 (0.091)
FinStatWords	-0.237 (1.197)	2.427 (3.960)	5.306 ** (2.689)	-2.547 (3.635)	0.254 ** (0.119)
MarketToBook	-0.177 ** (0.075)	-0.011 (0.245)	-0.112 (0.168)	0.121 (0.296)	-0.004 (0.009)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)

GenericStrategy	0.209 (0.272)	-1.296 (0.919)	-0.411 (0.543)	-0.537 (0.867)	0.013 (0.035)
N	1559	1559	1559	1559	1559
(Psuedo) Adj. R2	0.728	0.636	0.551	0.669	0.614
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

Appendix 4.6 presents regression results examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic (using SBM section partition) Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is roperating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Appendix 4.7 – Economic significance of regressions comparing the response of Reluctant and Enthusiastic (using SBM section partition) Main Market firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	0.49%	2.23%	-11.38%	10.67%	14.04%
PostxReluctant	-1.40%	1.96%	9.65%	-1.84%	-14.91%
Panel B: Companies Act Amendment					
Post	-1.95%	11.77%	-17.25%	23.92%	-10.41%
PostxReluctant	2.76%	-2.02%	8.03%	-7.47%	-19.70%

Appendix 4.7 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic (using SBM section partition) Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveToneForward is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable scaled by the unconditional mean of the dependent variable.

**Appendix 4.8 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms to two UK regulatory changes on the volume of disclosures on strategy and business model**

	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences
Post2010Pre2013	0.1262 *** (0.0182)	0.1351 *** (0.0180)	0.1038 *** (0.0186)	0.1809 *** (0.0210)
Post2013	0.3360 *** (0.0244)	0.3529 *** (0.0237)	0.2877 *** (0.0245)	0.3904 *** (0.0279)
Post2010Pre2013xReluctant	0.0450 (0.0295)	0.0482 (0.0293)	0.0586 ** (0.0297)	0.0271 (0.0341)
Post2013xReluctant	0.0726 * (0.0372)	0.0803 ** (0.0370)	0.0936 ** (0.0375)	0.0961 ** (0.0447)
RD_Binary	-0.0503 (0.0352)	-0.0495 (0.0331)	-0.0548 (0.0350)	-0.0145 (0.0378)
Loss_Binary	0.0364 ** (0.0184)	0.0377 ** (0.0180)	0.0425 ** (0.0185)	0.0291 (0.0231)
NSEG	0.0766 *** (0.0289)	0.0842 *** (0.0285)	0.0898 *** (0.0292)	0.0685 ** (0.0341)
ROA	-0.0210 (0.0861)	-0.0129 (0.0989)	-0.0347 (0.0874)	-0.0054 (0.1083)
DeltaROA	-0.0133 ** (0.0065)	-0.0138 ** (0.0065)	-0.0104 * (0.0062)	-0.0171 ** (0.0075)
Returns	-0.0074 (0.0130)	-0.0052 (0.0123)	-0.0049 (0.0130)	0.0011 (0.0128)
Size	0.0594 *** (0.0154)	0.0646 *** (0.0151)	0.0549 *** (0.0154)	0.0653 *** (0.0183)
FinStatWords	0.2128 *** (0.0379)	0.2248 *** (0.0350)	0.1848 *** (0.0378)	0.1881 *** (0.0347)
MarketToBook	-0.0029 ** (0.0013)	-0.0029 ** (0.0012)	-0.0028 ** (0.0014)	-0.0028 ** (0.0013)
NewEquity	0.0000	0.0000	0.0000	0.0000



	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.0054	0.0048	0.0062	0.0090
	(0.0049)	(0.0048)	(0.0049)	(0.0060)
N	2690	2690	2690	2690
(Psuedo) Adj. R2	0.101	0.109	0.105	0.121
Model		NegBin	NegBin	NegBin
Firm FE		Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-6.89	-7.32	-5.97	-5.99
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.58	-0.68	-0.73	-1.23
	<i>0.561</i>	<i>0.496</i>	<i>0.465</i>	<i>0.220</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-4.21	-4.48	-3.84	-4.20
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>

Appendix 4.8 presents regression results examining the impact of both regulatory changes on the volume of SBM disclosures for Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the firm provides (at least) one SBM section in (at least) one annual report prior to the comply or explain provision in 2010. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets.  $\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.9 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms to two UK regulatory changes on the presentation of disclosures on strategy and business model**

	SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
Post2010Pre2013	0.9454	***	0.3851	***	3.5741	***	2.6059	***
	(0.2265)		(0.0516)		(0.6559)		(0.4781)	
Post2013	3.2195	***	0.8698	***	4.9618	***	3.2260	***
	(0.3798)		(0.0588)		(0.7361)		(0.4969)	
Post2010Pre2013xReluctant	34.5724	***	17.2883	***	14.0316	***	15.1095	***
	(0.2413)		(0.0828)		(0.6743)		(0.4885)	
Post2013xReluctant	37.4072	***	18.0345	***	14.4517	***	15.3412	***
	(0.7894)		(0.0587)		(0.7891)		(0.4791)	
RD_Binary	-0.8762		0.0322		0.5502		0.2655	
	(0.6908)		(0.0986)		(0.7959)		(0.3552)	
Loss_Binary	0.5123		-0.0066		0.3632		0.1172	
	(0.3245)		(0.0503)		(0.3671)		(0.1563)	
NSEG	0.3668		0.0820		0.3994		0.2009	
	(0.4264)		(0.0861)		(0.5249)		(0.2542)	
ROA	-0.8939		0.0226		2.1362		1.4261	
	(1.7267)		(0.3774)		(4.6303)		(2.1081)	
DeltaROA	-0.0291		-0.0446	**	-0.0478		-0.0410	
	(0.0758)		(0.0203)		(0.1916)		(0.0907)	
Returns	0.4910	**	0.0779	**	-0.3473		-0.1401	
	(0.1955)		(0.0393)		(0.2933)		(0.1460)	
Size	0.0238		0.0135		-0.0490		-0.0525	
	(0.2114)		(0.0406)		(0.4344)		(0.2229)	
FinStatWords	1.1395	***	0.3607	***	0.0303		0.0441	
	(0.3007)		(0.0587)		(0.4787)		(0.1941)	
MarketToBook	-0.0199		-0.0076	**	-0.0086		-0.0054	
	(0.0220)		(0.0038)		(0.0298)		(0.0171)	
NewEquity	0.0000		0.0000		0.0000		0.0000	

	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.3269 ***	0.0409 **	0.2178 **	0.0837 *
	(0.1058)	(0.0163)	(0.1085)	(0.0502)
N	2199	2624	1241	1241
(Psuedo) Adj. R2	0.379	0.274	0.165	0.033
Model	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-5.14	-6.20	-1.41	-0.90
	<i>0.000</i>	<i>0.000</i>	<i>0.159</i>	<i>0.369</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-3.43	-7.35	-0.40	-0.34
	<i>0.001</i>	<i>0.000</i>	<i>0.686</i>	<i>0.735</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-5.46	-9.61	-1.26	-0.88
	<i>0.000</i>	<i>0.000</i>	<i>0.207</i>	<i>0.381</i>

Appendix 4.9 presents regression results examining the impact of both regulatory changes on the presentation of SBM disclosures for Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the firm provides (at least) one SBM section in (at least) one annual report prior to the comply or explain provision in 2010. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.10 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms to two UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Post2010Pre2013	-0.6270 (0.5312)	2.3798 * (1.4039)	-2.7913 *** (0.8841)	5.1960 *** (1.5507)	0.0463 (0.0603)
Post2013	-2.1389 *** (0.7279)	16.5438 *** (2.0967)	-5.5911 *** (1.1378)	22.1998 *** (2.2265)	-0.0878 (0.0775)
Post2010Pre2013xReluctant	0.1808 (0.8440)	2.5539 (2.3183)	1.6911 (1.3740)	1.5288 (2.4596)	-0.0693 (0.0910)
Post2013xReluctant	1.1248 (1.0803)	3.1895 (3.2371)	-0.1175 (1.5919)	3.2323 (3.4531)	-0.2431 ** (0.1104)
RD_Binary	-0.8589 (1.1465)	2.0163 (3.0043)	1.2092 (1.2793)	0.8259 (3.3769)	-0.1220 (0.1188)
Loss_Binary	-0.3175 (0.5422)	-0.5627 (1.6124)	0.4512 (0.7761)	-0.8905 (1.7143)	-0.3229 *** (0.0542)
NSEG	0.5481 (0.7855)	-0.2669 (2.1290)	-0.3791 (1.0646)	0.2994 (2.3064)	-0.2450 *** (0.0923)
ROA	-5.6470 ** (2.7977)	-16.9453 ** (8.5309)	-7.5846 * (4.1637)	-9.6947 (8.1053)	0.7244 ** (0.2804)
DeltaROA	0.1260 (0.1830)	0.0651 (0.5579)	0.5780 ** (0.2803)	-0.4097 (0.5888)	0.0467 *** (0.0165)
Returns	-0.1806 (0.3146)	0.5214 (0.9751)	1.1333 * (0.6324)	-0.5832 (1.0031)	0.0829 ** (0.0364)
Size	1.2357 *** (0.4233)	3.1078 *** (1.1974)	-2.3819 *** (0.7185)	5.4088 *** (1.3213)	0.0516 (0.0464)
FinStatWords	-1.0800 (0.7086)	1.0370 (2.2072)	-1.0384 (1.2129)	1.6852 (1.9383)	0.1584 ** (0.0658)
MarketToBook	-0.0231 (0.0274)	0.1395 ** (0.0700)	-0.0029 (0.0681)	0.1428 (0.1092)	-0.0040 * (0.0024)

NewEquity	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)
GenericStrategy	0.4105 ** (0.1663)	-0.1982 (0.5155)	0.0254 (0.2896)	-0.1993 (0.5636)	0.0144 (0.0174)
N	2690	2690	2690	2690	2690
(Psuedo) Adj. R2	0.666	0.502	0.525	0.549	0.514
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes
Wald tests (p-values in italics):					
<u>Post2010Pre2013 == Post2013</u>	1.68 <i>0.093</i>	-5.61 <i>0.000</i>	1.94 <i>0.052</i>	-6.27 <i>0.000</i>	2.35 <i>0.019</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.69 <i>0.491</i>	-0.16 <i>0.873</i>	0.86 <i>0.390</i>	-0.40 <i>0.688</i>	0.52 <i>0.606</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	0.35 <i>0.729</i>	-3.14 <i>0.002</i>	1.81 <i>0.071</i>	-3.72 <i>0.000</i>	1.76 <i>0.079</i>

Appendix 4.10 presents regression results examining the impact of both regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic (using SBM section pre-2010 partition) Main Market firms. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-comply or explain period is above median, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Appendix 4.11 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms to two UK regulatory changes on the volume of disclosures on strategy and business model**

	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences
Post2010Pre2013	0.1337 *** (0.0182)	0.1411 *** (0.0182)	0.1109 *** (0.0188)	0.1791 *** (0.0214)
Post2013	0.3461 *** (0.0261)	0.3631 *** (0.0257)	0.2995 *** (0.0261)	0.4141 *** (0.0290)
Post2010Pre2013xReluctant	0.0297 (0.0292)	0.0369 (0.0289)	0.0457 (0.0295)	0.0342 (0.0341)
Post2013xReluctant	0.0534 (0.0460)	0.0619 (0.0463)	0.0727 (0.0471)	0.0470 (0.0585)
Reluctant	-0.0469 (0.0383)	-0.0595 (0.0382)	-0.0695 * (0.0385)	-0.0819 * (0.0466)
RD_Binary	-0.0494 (0.0361)	-0.0486 (0.0338)	-0.0541 (0.0363)	-0.0145 (0.0375)
Loss_Binary	0.0375 ** (0.0184)	0.0387 ** (0.0180)	0.0435 ** (0.0186)	0.0307 (0.0234)
NSEG	0.0768 *** (0.0291)	0.0848 *** (0.0288)	0.0906 *** (0.0296)	0.0701 ** (0.0343)
ROA	-0.0217 (0.0849)	-0.0140 (0.0972)	-0.0368 (0.0867)	-0.0053 (0.1094)
DeltaROA	-0.0135 ** (0.0066)	-0.0140 ** (0.0066)	-0.0106 * (0.0063)	-0.0172 ** (0.0075)
Returns	-0.0063 (0.0130)	-0.0040 (0.0122)	-0.0034 (0.0129)	0.0024 (0.0128)
Size	0.0594 *** (0.0154)	0.0644 *** (0.0151)	0.0547 *** (0.0155)	0.0653 *** (0.0184)
FinStatWords	0.2147 *** (0.0377)	0.2268 *** (0.0349)	0.1871 *** (0.0377)	0.1886 *** (0.0347)
MarketToBook	-0.0031 **	-0.0031 **	-0.0030 **	-0.0029 **

	(0.0013)	(0.0012)	(0.0014)	(0.0013)
NewEquity	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.0062	0.0057	0.0073	0.0099
	(0.0050)	(0.0049)	(0.0050)	(0.0061)
N	2690	2690	2690	2690
(Psuedo) Adj. R2	0.100	0.109	0.105	0.121
Model		NegBin	NegBin	NegBin
Firm FE		Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-6.68	-7.05	-5.86	-6.52
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.43	-0.46	-0.48	-0.19
	<i>0.664</i>	<i>0.647</i>	<i>0.628</i>	<i>0.850</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-3.74	-3.92	-3.36	-3.23
	<i>0.000</i>	<i>0.000</i>	<i>0.001</i>	<i>0.001</i>

Appendix 4.11 presents regression results examining the impact of both regulatory changes on the volume of SBM disclosures for Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the period immediately prior to the corresponding regulatory intervention is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.12 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms to two UK regulatory changes on the presentation of disclosures on strategy and business model**

	SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
Post2010Pre2013	1.9630	***	0.6042	***	4.3292	***	3.2373	***
	(0.2672)		(0.0658)		(0.8921)		(0.5962)	
Post2013	5.6640	***	1.2249	***	5.7827	***	3.8400	***
	(0.6903)		(0.0852)		(1.0323)		(0.6241)	
Post2010Pre2013xReluctant	-0.3096		0.0568		-1.1514		-0.8121	
	(0.4316)		(0.1324)		(1.1299)		(0.9258)	
Post2013xReluctant	-0.1974		0.3021		-1.0278		-0.5746	
	(1.0816)		(0.1853)		(1.3569)		(0.9772)	
Reluctant	-0.5421		-0.3243	**	1.1986		0.7856	
	(0.6724)		(0.1654)		(1.1798)		(0.9280)	
RD_Binary	-0.7057		0.0757		0.5660		0.2558	
	(0.6105)		(0.1235)		(0.8040)		(0.3499)	
Loss_Binary	0.5315	*	0.0471		0.3716		0.1273	
	(0.3108)		(0.0555)		(0.3647)		(0.1565)	
NSEG	0.4949		0.0315		0.3777		0.1730	
	(0.3874)		(0.0958)		(0.5159)		(0.2561)	
ROA	-1.4009		0.1023		2.2745		1.4210	
	(1.5235)		(0.3731)		(4.4298)		(1.9987)	
DeltaROA	-0.0402		-0.0498	**	-0.0567		-0.0449	
	(0.0779)		(0.0213)		(0.1912)		(0.0903)	
Returns	0.3234	*	0.0934	**	-0.3508		-0.1370	
	(0.1689)		(0.0408)		(0.2948)		(0.1473)	
Size	0.1243		0.0506		-0.0132		-0.0380	
	(0.2104)		(0.0459)		(0.4190)		(0.2147)	
FinStatWords	1.2133	***	0.3797	***	0.0497		0.0417	
	(0.2716)		(0.0645)		(0.4611)		(0.1965)	
MarketToBook	-0.0190		-0.0099	**	-0.0078		-0.0053	



	(0.0206)	(0.0040)	(0.0269)	(0.0161)
NewEquity	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.3223 ***	0.0514 ***	0.2287 **	0.0886 *
	(0.1094)	(0.0194)	(0.1091)	(0.0514)
N	2199	2624	1241	1241
(Psuedo) Adj. R2	0.324	0.226	0.161	0.030
Model	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-5.00	-5.77	-1.07	-0.70
	<i>0.000</i>	<i>0.000</i>	<i>0.287</i>	<i>0.485</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.10	-1.08	-0.07	-0.18
	<i>0.923</i>	<i>0.281</i>	<i>0.944</i>	<i>0.860</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-2.76	-3.44	-0.71	-0.53
	<i>0.006</i>	<i>0.001</i>	<i>0.480</i>	<i>0.599</i>

Appendix 4.12 presents regression results examining the impact of both regulatory changes on the presentation of SBM disclosures for Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the period immediately prior to the corresponding regulatory intervention is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.13 – Coefficients estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms to two UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity		LongTerm		ShortTerm		NetLongTerm		NetPositiveTone	
Post2010Pre2013	-0.6897 (0.5156)		4.5445 (1.3851)	***	-2.4184 (0.7867)	***	7.1238 (1.4884)	***	0.0126 (0.0609)	
Post2013	-2.0522 (0.7512)	***	16.8261 (2.1968)	***	-5.7228 (1.1220)	***	22.6699 (2.3124)	***	-0.1367 (0.0789)	*
Post2010Pre2013xReluctant	0.3529 (0.8728)		-2.6287 (2.4203)		0.9201 (1.3877)		-3.1622 (2.5418)		0.0096 (0.0896)	
Post2013xReluctant	0.9107 (1.2288)		2.6128 (3.9462)		0.2259 (2.0365)		2.2135 (4.2010)		-0.1319 (0.1311)	
Reluctant	0.0411 (1.0973)		-0.0879 (3.2908)		0.0853 (1.6352)		-0.4367 (3.5138)		0.0573 (0.1101)	
RD_Binary	-0.8136 (1.1338)		2.1388 (2.9864)		1.2658 (1.2876)		0.9007 (3.3469)		-0.1283 (0.1207)	
Loss_Binary	-0.2882 (0.5402)		-0.4405 (1.6019)		0.4313 (0.7782)		-0.7597 (1.7072)		-0.3298 (0.0548)	***
NSEG	0.4890 (0.7884)		-0.4338 (2.1064)		-0.3421 (1.0693)		0.1430 (2.2871)		-0.2389 (0.0938)	**
ROA	-5.4661 (2.8753)	*	-16.8683 (8.2475)	**	-7.8271 (4.1469)	*	-9.5381 (7.9419)		0.7066 (0.2914)	**
DeltaROA	0.1208 (0.1815)		0.0237 (0.5604)		0.5855 (0.2831)	**	-0.4533 (0.5929)		0.0480 (0.0167)	***
Returns	-0.1660 (0.3131)		0.5666 (0.9644)		1.1406 (0.6299)	*	-0.5446 (0.9962)		0.0801 (0.0363)	**
Size	1.2652 (0.4185)	***	3.1608 (1.1956)	***	-2.4069 (0.7174)	***	5.4682 (1.3188)	***	0.0474 (0.0469)	
FinStatWords	-1.0868 (0.7094)		1.2097 (2.1905)		-0.9849 (1.2116)		1.8240 (1.9351)		0.1565 (0.0660)	**

MarketToBook	-0.0258 (0.0276)	0.1306 * (0.0696)	-0.0045 (0.0674)	0.1354 (0.1085)	-0.0036 (0.0024)
NewEquity	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)
GenericStrategy	0.4264 ** (0.1657)	-0.1790 (0.5130)	0.0286 (0.2879)	-0.1850 (0.5568)	0.0122 (0.0173)
N	2690	2690	2690	2690	2690
(Psuedo) Adj. R2	0.666	0.502	0.525	0.549	0.512
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>					
Post2010Pre2013 == Post2013	1.50 <i>0.135</i>	-4.73 <i>0.000</i>	2.41 <i>0.016</i>	-5.65 <i>0.000</i>	1.50 <i>0.134</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.37 <i>0.711</i>	-1.13 <i>0.258</i>	0.28 <i>0.778</i>	-1.09 <i>0.274</i>	0.89 <i>0.373</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	0.46 <i>0.648</i>	-3.30 <i>0.001</i>	1.42 <i>0.156</i>	-3.72 <i>0.000</i>	1.55 <i>0.121</i>

Appendix 4.13 presents regression results examining the impact of both regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic (using dynamic PCA partition) Main Market firms. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the period immediately prior to the corresponding regulatory intervention is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Appendix 4.14 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms to two UK regulatory changes on the volume of disclosures on strategy and business model**

	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences
Post2010Pre2013	0.1328 *** (0.0182)	0.1419 *** (0.0179)	0.1095 *** (0.0186)	0.1877 *** (0.0209)
Post2013	0.3324 *** (0.0243)	0.3504 *** (0.0235)	0.2835 *** (0.0245)	0.3895 *** (0.0275)
Post2010Pre2013xReluctant	0.0280 (0.0296)	0.0305 (0.0293)	0.0435 (0.0298)	0.0082 (0.0341)
Post2013xReluctant	0.0758 (0.0486)	0.0776 (0.0482)	0.1022 ** (0.0487)	0.0867 (0.0590)
Reluctant	-0.0941 *** (0.0359)	-0.1044 *** (0.0355)	-0.1094 *** (0.0361)	-0.1210 *** (0.0434)
RD_Binary	-0.0530 (0.0350)	-0.0530 (0.0328)	-0.0566 (0.0348)	-0.0190 (0.0374)
Loss_Binary	0.0349 * (0.0183)	0.0358 ** (0.0178)	0.0414 ** (0.0184)	0.0266 (0.0228)
NSEG	0.0783 *** (0.0289)	0.0862 *** (0.0286)	0.0909 *** (0.0292)	0.0709 ** (0.0342)
ROA	-0.0294 (0.0880)	-0.0216 (0.1019)	-0.0416 (0.0883)	-0.0164 (0.1107)
DeltaROA	-0.0131 ** (0.0065)	-0.0136 ** (0.0065)	-0.0101 (0.0062)	-0.0167 ** (0.0074)
Returns	-0.0079 (0.0130)	-0.0057 (0.0123)	-0.0054 (0.0130)	0.0003 (0.0127)
Size	0.0582 *** (0.0153)	0.0632 *** (0.0150)	0.0539 *** (0.0153)	0.0637 *** (0.0182)
FinStatWords	0.2129 *** (0.0378)	0.2247 *** (0.0350)	0.1852 *** (0.0377)	0.1875 *** (0.0347)
MarketToBook	-0.0029 **	-0.0029 **	-0.0028 **	-0.0028 **

	(0.0013)	(0.0012)	(0.0014)	(0.0013)
NewEquity	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.0051	0.0045	0.0060	0.0086
	(0.0049)	(0.0048)	(0.0049)	(0.0059)
N	2690	2690	2690	2690
(Psuedo) Adj. R2	0.101	0.109	0.105	0.121
Model		NegBin		NegBin
Firm FE		Yes		Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-6.58	-7.05	-5.65	-5.85
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.84	-0.84	-1.03	-1.15
	<i>0.401</i>	<i>0.404</i>	<i>0.303</i>	<i>0.249</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-3.84	-4.01	-3.59	-3.67
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>

Appendix 4.14 presents regression results examining the impact of both regulatory changes on the volume of SBM disclosures for Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the firm in the period immediately prior to the corresponding regulatory intervention discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.15 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms to two UK regulatory changes on the presentation of disclosures on strategy and business model**

	SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
Post2010Pre2013	1.0578	***	0.3874	***	3.5917	***	2.5898	***
	(0.2350)		(0.0521)		(0.6506)		(0.4747)	
Post2013	2.4906	***	0.7995	***	4.7876	***	3.1170	***
	(0.3281)		(0.0610)		(0.7221)		(0.4913)	
Post2010Pre2013xReluctant	34.3760	***	18.0572	***	14.9752	***	14.9339	***
	(0.2443)		(0.0763)		(0.6794)		(0.4876)	
Post2013xReluctant	39.5376	***	20.0096	***	48.2546	***	32.2271	***
	(0.6545)		(0.1691)		(0.8040)		(0.5168)	
Reluctant	-37.3962	***	-18.7637	***	-15.1909	***	-15.0452	***
	(0.7870)		(0.0616)		(0.7616)		(0.4784)	
RD_Binary	-0.8038		0.0612		0.6915		0.3487	
	(0.6593)		(0.0945)		(0.7959)		(0.3517)	
Loss_Binary	0.5069		0.0002		0.3425		0.1028	
	(0.3198)		(0.0516)		(0.3827)		(0.1618)	
NSEG	0.3705		0.0594		0.1948		0.0967	
	(0.4348)		(0.0862)		(0.5335)		(0.2563)	
ROA	-1.5127		-0.0767		0.9073		0.6069	
	(1.6363)		(0.3315)		(3.9664)		(1.8718)	
DeltaROA	-0.0395		-0.0454	**	-0.0231		-0.0200	
	(0.0793)		(0.0200)		(0.1770)		(0.0811)	
Returns	0.4860	**	0.0734	*	-0.3781		-0.1577	
	(0.2007)		(0.0393)		(0.3026)		(0.1472)	
Size	-0.0178		0.0026		0.0162		-0.0177	
	(0.2065)		(0.0403)		(0.4272)		(0.2192)	
FinStatWords	1.3228	***	0.3774	***	0.0762		0.0623	
	(0.3226)		(0.0577)		(0.4715)		(0.1889)	
MarketToBook	-0.0181		-0.0068	*	-0.0044		-0.0024	

	(0.0219)	(0.0041)	(0.0338)	(0.0190)
NewEquity	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.3311 ***	0.0448 ***	0.2438 **	0.0993 *
	(0.1055)	(0.0162)	(0.1152)	(0.0523)
N	2199	2624	1241	1241
(Psuedo) Adj. R2	0.397	0.286	0.183	0.047
Model	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-3.55	-5.14	-1.23	-0.77
	<i>0.000</i>	<i>0.000</i>	<i>0.219</i>	<i>0.440</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-7.39	-10.52	-31.62	-24.34
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-8.17	-11.70	-24.06	-18.08
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>

Appendix 4.15 presents regression results examining the impact of both regulatory changes on the presentation of SBM disclosures for Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the firm in the period immediately prior to the corresponding regulatory intervention discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.16 – Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms to two UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Post2010Pre2013	-0.7160 (0.5257)	2.5488 * (1.4041)	-2.8265 *** (0.8660)	5.4633 *** (1.5461)	0.0465 (0.0602)
Post2013	-2.2626 *** (0.7080)	17.3052 *** (2.0400)	-5.7415 *** (1.1175)	23.0698 *** (2.1991)	-0.0785 (0.0771)
Post2010Pre2013xReluctant	0.3698 (0.8418)	2.1236 (2.3273)	1.8286 (1.3356)	0.8297 (2.4452)	-0.0649 (0.0919)
Post2013xReluctant	2.0629 * (1.2327)	-1.2251 (4.1004)	0.6783 (2.0144)	-1.9693 (4.3348)	-0.3011 ** (0.1253)
Reluctant	-0.3492 (1.1423)	-5.7406 * (3.3090)	0.5382 (1.7696)	-6.4594 * (3.4388)	0.2109 * (0.1155)
RD_Binary	-0.7249 (1.1257)	1.4231 (3.0508)	1.3369 (1.3024)	0.0905 (3.3949)	-0.1270 (0.1186)
Loss_Binary	-0.2540 (0.5419)	-0.8248 (1.6033)	0.5076 (0.7810)	-1.2204 (1.7056)	-0.3250 *** (0.0545)
NSEG	0.4764 (0.7855)	0.0029 (2.1176)	-0.4269 (1.0725)	0.6331 (2.2935)	-0.2417 *** (0.0930)
ROA	-5.4743 * (2.8967)	-17.6507 * (8.9936)	-7.3884 * (4.1451)	-10.6427 (8.5749)	0.7243 ** (0.2852)
DeltaROA	0.1163 (0.1824)	0.1070 (0.5676)	0.5685 ** (0.2825)	-0.3569 (0.6020)	0.0470 *** (0.0164)
Returns	-0.1946 (0.3144)	0.5555 (0.9743)	1.1396 * (0.6307)	-0.5515 (0.9940)	0.0847 ** (0.0365)
Size	1.2648 *** (0.4248)	2.9943 ** (1.1994)	-2.3546 *** (0.7179)	5.2603 *** (1.3122)	0.0511 (0.0462)
FinStatWords	-1.0326 (0.7033)	0.8118 (2.1991)	-0.9974 (1.1980)	1.4199 (1.9221)	0.1554 ** (0.0658)



MarketToBook	-0.0221 (0.0272)	0.1349 * (0.0697)	-0.0020 (0.0680)	0.1373 (0.1086)	-0.0041 * (0.0024)
NewEquity	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)	0.0000 ** (0.0000)	0.0000 (0.0000)
GenericStrategy	0.4160 ** (0.1651)	-0.2232 (0.5104)	0.0331 (0.2882)	-0.2331 (0.5555)	0.0144 (0.0174)
N	2690	2690	2690	2690	2690
(Psuedo) Adj. R2	0.666	0.504	0.526	0.551	0.514
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>					
Post2010Pre2013 == Post2013	1.75 <i>0.079</i>	-5.96 <i>0.000</i>	2.06 <i>0.039</i>	-6.55 <i>0.000</i>	1.28 <i>0.201</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-1.13 <i>0.257</i>	0.71 <i>0.478</i>	0.48 <i>0.634</i>	0.56 <i>0.574</i>	1.52 <i>0.128</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-0.08 <i>0.933</i>	-2.14 <i>0.032</i>	1.45 <i>0.147</i>	-2.62 <i>0.009</i>	1.97 <i>0.049</i>

Appendix 4.16 presents regression results examining the impact of both regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic (using dynamic SBM section partition) Main Market firms. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the period immediately prior to the corresponding regulatory intervention discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Appendix 4.17 – Coefficient estimates of regressions comparing the response of Reluctant (using the SBM section partition) Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume								Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count				
<i>Panel A: Corporate Governance Code Amendment</i>												
Post	0.116 *** (0.019)	0.127 *** (0.019)	0.115 *** (0.020)	0.135 *** (0.021)	1.140 *** (0.442)	0.504 *** (0.188)	3.820 *** (1.478)	2.128 ** (1.042)				
PostxReluctant	0.011 (0.028)	0.017 (0.027)	0.003 (0.028)	0.016 (0.031)	7.430 *** (1.847)	18.484 *** (0.202)	73.523 *** (27.624)	19.563 *** (1.205)				
RD_Binary	0.054 (0.045)	0.054 (0.043)	0.053 (0.045)	0.061 (0.048)	-1.369 ** (0.680)	-0.649 ** (0.263)	-40.802 *** (2.610)	-19.715 *** (0.367)				
Loss_Binary	0.009 (0.021)	0.003 (0.020)	0.011 (0.022)	0.004 (0.023)	-0.395 (0.600)	-0.500 * (0.258)	-7.320 *** (2.391)	-1.619 (1.256)				
NSEG	0.089 ** (0.035)	0.096 *** (0.036)	0.092 ** (0.036)	0.107 *** (0.039)	-0.321 (0.601)	-0.261 (0.215)	5.528 (3.859)	0.218 (1.076)				
ROA	0.064 (0.053)	0.052 (0.055)	0.062 (0.055)	0.026 (0.061)	-1.563 (1.377)	-0.899 (0.771)	-45.097 ** (19.897)	-16.799 ** (6.636)				
DeltaROA	-0.007 ** (0.003)	-0.006 * (0.003)	-0.007 * (0.004)	-0.006 * (0.004)	0.023 (0.054)	0.008 (0.028)	1.083 (0.716)	0.675 ** (0.330)				
Returns	-0.005 (0.012)	-0.002 (0.011)	-0.006 (0.012)	-0.017 (0.013)	-0.159 (0.325)	-0.032 (0.110)	-4.409 ** (1.897)	-2.165 *** (0.826)				
Size	0.069 *** (0.018)	0.067 *** (0.018)	0.077 *** (0.019)	0.117 *** (0.020)	0.497 (0.448)	0.024 (0.206)	1.566 (1.528)	1.729 *** (0.667)				
FinStatWords	0.499 *** (0.040)	0.497 *** (0.039)	0.472 *** (0.041)	0.417 *** (0.037)	3.039 *** (0.710)	1.048 *** (0.223)	-0.061 (1.577)	-1.483 *** (0.558)				
MarketToBook	-0.001 (0.002)	-0.001 (0.002)	0.000 (0.002)	-0.001 (0.002)	0.016 (0.029)	0.012 (0.014)	1.370 * (0.805)	0.151 *** (0.045)				
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)				
GenericStrategy	-0.001	-0.001	-0.001	-0.002	-0.019	-0.033	1.814 *	0.840 *				

	(0.006)	(0.006)	(0.006)	(0.007)	(0.176)	(0.067)	(0.927)	(0.459)
N	2957	2957	2957	2957	1368	1181	192	132
(Psuedo) Adj. R2	0.093	0.106	0.099	0.115	0.088	0.029	0.162	-0.155
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Volume				Presentation				BM_Count
	strategySentences	generalSentences	externalSentences	internalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count	
<i>Panel B: Companies Act Amendment</i>									
Post	0.044 ** (0.020)	0.060 *** (0.020)	0.038 * (0.020)	0.063 *** (0.022)	4.701 *** (0.761)	1.103 *** (0.111)	3.350 ** (1.670)	1.536 *** (0.591)	
PostxReluctant	0.196 *** (0.038)	0.186 *** (0.037)	0.186 *** (0.038)	0.170 *** (0.041)	35.792 *** (0.824)	18.609 *** (0.101)	35.344 *** (1.704)	17.458 *** (0.863)	
RD_Binary	-0.052 (0.053)	-0.046 (0.052)	-0.073 (0.056)	-0.077 (0.056)	-3.261 *** (1.164)	-0.551 ** (0.267)	-5.526 *** (2.048)	-1.303 ** (0.605)	
Loss_Binary	-0.013 (0.029)	-0.020 (0.029)	-0.003 (0.029)	0.001 (0.032)	1.076 (0.744)	-0.110 (0.150)	-0.138 (2.860)	-1.406 (0.960)	
NSEG	0.027 (0.043)	0.042 (0.040)	0.036 (0.044)	0.040 (0.049)	1.916 (2.225)	0.032 (0.196)	-4.128 (4.402)	-1.795 (1.300)	
ROA	0.039 (0.092)	0.031 (0.100)	0.065 (0.099)	0.055 (0.113)	-1.381 (3.202)	-0.269 (0.708)	-22.547 * (12.036)	-6.978 (4.405)	
DeltaROA	-0.002 (0.006)	-0.002 (0.006)	-0.004 (0.006)	-0.002 (0.007)	0.034 (0.206)	-0.027 (0.027)	1.022 (0.735)	0.361 (0.284)	
Returns	-0.069 *** (0.018)	-0.074 *** (0.018)	-0.066 *** (0.019)	-0.081 *** (0.021)	-0.129 (0.457)	-0.093 (0.080)	-1.872 (1.629)	-0.986 * (0.567)	
Size	0.074 *** (0.024)	0.084 *** (0.024)	0.083 *** (0.025)	0.117 *** (0.030)	0.543 (0.637)	0.065 (0.096)	2.707 ** (1.278)	1.078 * (0.578)	
FinStatWords	0.491 *** (0.066)	0.500 *** (0.065)	0.468 *** (0.066)	0.447 *** (0.066)	0.788 (1.265)	0.612 *** (0.201)	-2.331 (2.897)	-0.930 (1.233)	
MarketToBook	-0.002	-0.001	-0.002	-0.002	-0.012	-0.013	-0.588	-0.146	

	(0.002)	(0.002)	(0.002)	(0.003)	(0.021)	(0.009)	(0.390)	(0.162)
NewEquity	0.000	0.000	0.000	0.000	0.000	0.000	0.000 **	0.000 **
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GenericStrategy	0.000	-0.001	-0.001	-0.009	-0.127	-0.027	0.318	0.014
	(0.009)	(0.008)	(0.009)	(0.009)	(0.276)	(0.041)	(0.648)	(0.244)
N	1587	1587	1587	1587	1267	1301	211	171
(Psuedo) Adj. R2	0.096	0.107	0.101	0.117	0.194	0.194	0.139	-0.261
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 4.17 presents regression results examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant (using the SBM section partition) Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Appendix 4.18 – Economic significance of regressions comparing the response of Reluctant (using the SBM section partition) Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Panel A: Corporate Governance Code Amendment								
Post	25.44	19.47	17.85	10.40	3.0997	0.0000	1.8082	0.0000
PostxReluctant	0.28	0.92	-1.22	0.59	2443.5023	1.6406	NA	0.0000
Panel B: Companies Act Amendment								
Post	92.72	10.29	5.55	5.37	258.4226	0.0016	4.3912	0.0000
PostxReluctant	12.60	32.33	33.85	16.07	NA	NA	NA	0.0034

Appendix 4.18 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant (using the SBM section partition) Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable. Effects are estimated for the average firm. For count variables, the table presents the change in the number of sentences. For binary variables, the table presents the odds ratio.

**Appendix 4.19 – Coefficient estimates of regressions comparing the response of Reluctant (using SBM section partition) Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.349 (0.718)	3.452 * (1.996)	0.352 (1.661)	2.637 (2.503)	0.010 (0.080)
PostxReluctant	-0.286 (0.926)	0.925 (2.670)	-1.026 (1.876)	3.022 (2.965)	-0.039 (0.103)
RD_Binary	0.518 (1.434)	-3.592 (3.413)	-1.641 (3.095)	-2.374 (3.683)	0.026 (0.101)
Loss_Binary	0.799 (0.646)	-0.822 (1.979)	3.261 ** (1.490)	-4.240 * (2.258)	-0.246 *** (0.075)
NSEG	2.234 * (1.237)	1.363 (3.950)	-1.678 (1.994)	2.644 (3.711)	-0.095 (0.126)
ROA	0.080 (2.652)	5.304 (6.820)	5.189 (7.537)	0.920 (8.015)	0.476 ** (0.192)
DeltaROA	0.049 (0.122)	0.025 (0.259)	0.118 (0.222)	-0.150 (0.323)	0.040 *** (0.009)
Returns	0.654 * (0.384)	-1.615 (1.380)	1.122 (0.844)	-2.248 (1.583)	0.099 ** (0.042)
Size	1.336 *** (0.514)	3.542 ** (1.641)	-3.252 *** (1.106)	6.570 *** (1.928)	0.146 *** (0.054)
FinStatWords	-3.225 *** (0.949)	-5.990 ** (2.353)	0.978 (1.886)	-6.445 *** (2.474)	0.024 (0.088)
MarketToBook	-0.060 (0.039)	-0.076 (0.105)	-0.038 (0.060)	-0.047 (0.101)	0.002 (0.003)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.158 (0.205)	-0.768 (0.628)	-0.399 (0.439)	-0.420 (0.624)	0.036 (0.022)

N	2944	2944	2944	2944	2944
(Psuedo) Adj. R2	0.695	0.602	0.541	0.622	0.600
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel B: Companies Act Amendment					
Post	0.583 (1.216)	7.036 *** (2.616)	-6.555 *** (1.498)	13.771 *** (2.953)	-0.170 * (0.100)
PostxReluctant	0.512 (1.328)	3.772 (3.824)	2.066 (2.314)	0.688 (3.981)	-0.193 (0.133)
RD_Binary	0.233 (1.098)	-0.328 (4.551)	-5.917 (3.607)	5.480 (6.140)	-0.474 *** (0.163)
Loss_Binary	-0.021 (1.217)	2.012 (3.840)	3.053 (2.101)	-0.985 (3.869)	-0.184 (0.119)
NSEG	1.209 (1.326)	13.339 *** (4.570)	-3.826 (2.340)	17.370 *** (4.830)	0.150 (0.152)
ROA	-2.080 (6.312)	-9.159 (14.422)	17.996 (11.956)	-20.719 (15.362)	1.036 ** (0.450)
DeltaROA	-0.374 (0.241)	0.433 (0.678)	0.038 (0.395)	0.326 (0.778)	-0.004 (0.024)
Returns	-0.237 (0.828)	-2.547 (2.016)	-0.855 (1.361)	-1.915 (2.363)	0.076 (0.078)
Size	0.647 (1.223)	6.016 ** (2.797)	-0.735 (2.270)	5.738 (3.805)	0.044 (0.066)
FinStatWords	-2.206 (1.597)	-2.529 (3.621)	2.003 (2.822)	-3.898 (3.480)	0.029 (0.141)
MarketToBook	0.063 (0.098)	0.407 * (0.226)	0.118 (0.130)	0.327 * (0.174)	0.032 *** (0.005)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)

GenericStrategy	0.111 (0.334)	1.122 (0.894)	0.797 * (0.459)	0.392 (0.862)	-0.003 (0.034)
N	1580	1580	1580	1580	1580
(Psuedo) Adj. R2	0.753	0.650	0.558	0.652	0.661
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

Appendix 4.19 presents regression results examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant (using SBM section partition) Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets.  $\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

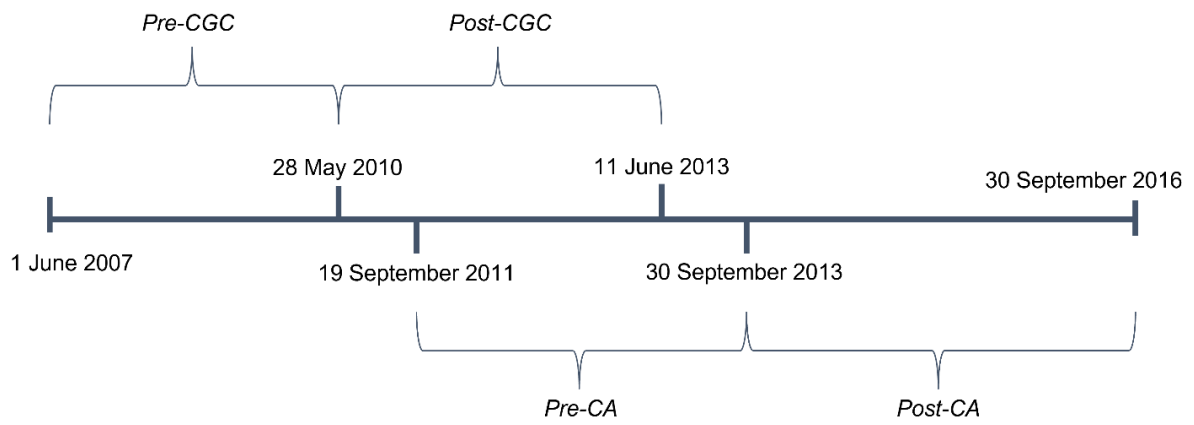


**Appendix 4.20 – Economic significance of regressions comparing the response of Reluctant (using SBM section partition) Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.40%	4.17%	0.83%	6.53%	1.07%
PostxReluctant	-0.33%	1.12%	-2.42%	7.48%	-4.17%
Panel B: Companies Act Amendment					
Post	0.66%	8.00%	-17.65%	26.94%	-19.78%
PostxReluctant	0.58%	4.29%	5.56%	1.35%	-22.43%

Appendix 4.20 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant (using SBM section partition) Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveToneForward is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the firm in the pre-intervention period discloses (at least) one SBM section in (at least) one annual report, and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable scaled by the unconditional mean of the dependent variable.

**Figure 4.1 - Timeline of regulatory interventions and sample periods**



**Figure 4.2 - Grouped bar chart of the mean volume of commentary on strategy and business model for standardized sections in UK annual reports by regulatory regime**

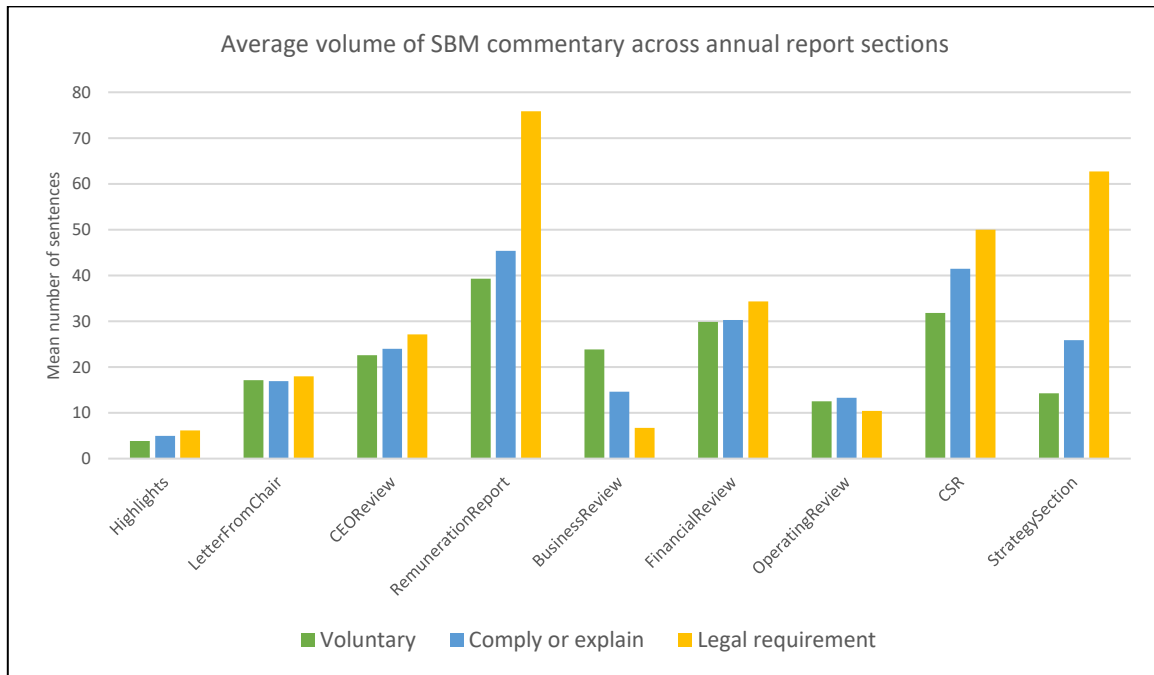


Figure 4.2 plots the mean number of sentences containing discussion on strategy and business model in standardized sections by regulatory regime. ‘Voluntary’ refers to the voluntary period before the introduction of the comply or explain provision in the revisions to the Corporate Governance Code in 2010. ‘Comply or explain’ refers to the introduction of the comply or explain provision in the revisions to the Corporate Governance Code in 2010 until the enacting of disclosure requirements in law through the amendments to the Companies Act in 2013. ‘Legal requirement’ refers to the period following the enacting of disclosure requirements in law through the amendments to the Companies Act in 2013.

**Figure 4.3 - Mean number of sentences discussing each topic prior to and after each regulatory mandate for Main Market and AIM firms**

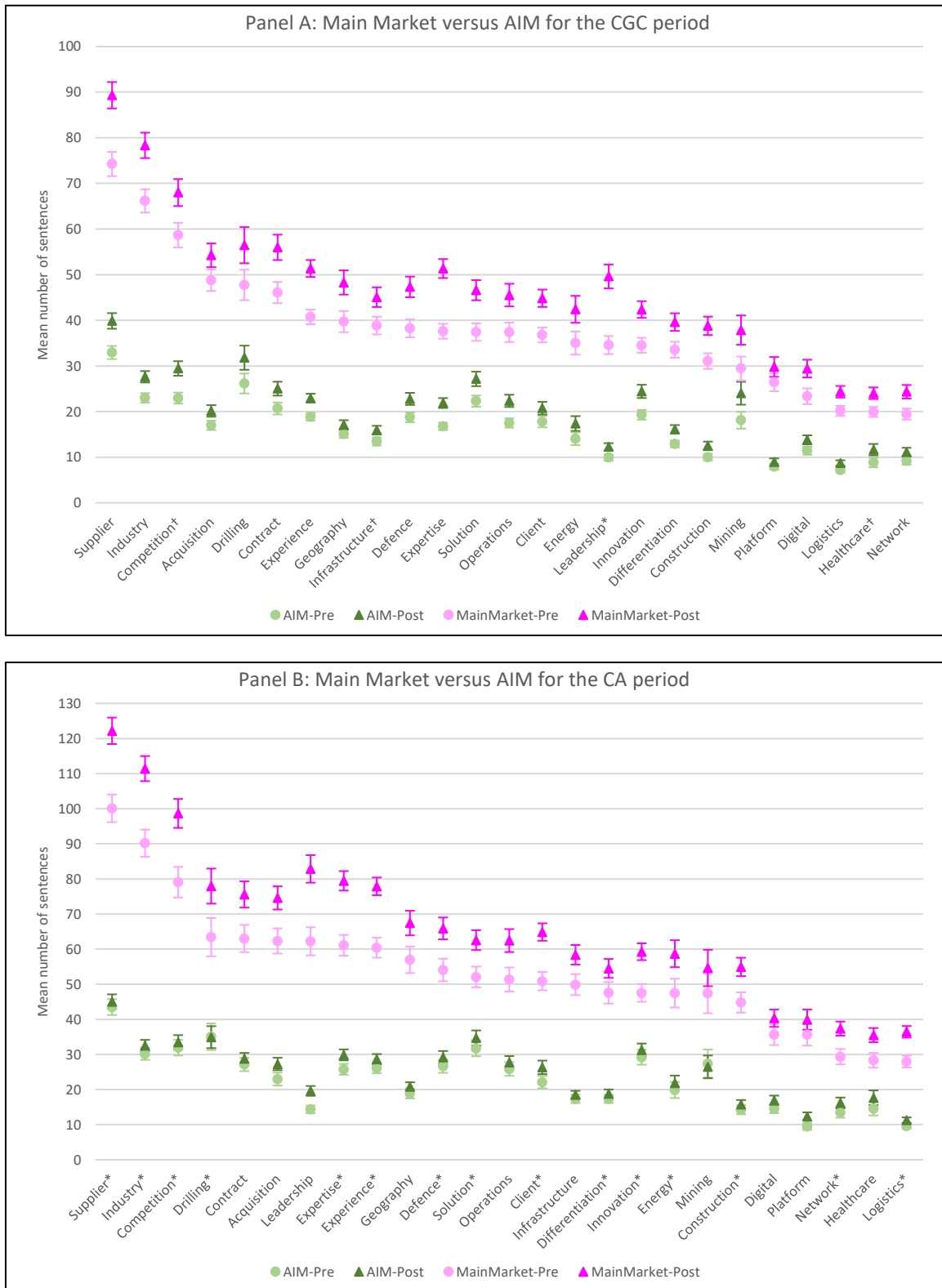


Figure 4.3 plots the mean number (and 95% confidence intervals) of the number of sentences discussing each topic for Main Market and AIM firms. Panel A presents results for before and after the introduction of the comply or explain provision in the amendments to the Corporate Governance Code in 2010. Panel B presents results for before and after the enactment of disclosure requirements in law in 2018. In all panels, circles (triangles) represent the mean number prior to (following) the regulatory intervention.

**Figure 4.4 - Mean number of sentences discussing each topic for only Main Market firms after disaggregating between Reluctant and Enthusiastic firms using the PCA approach**

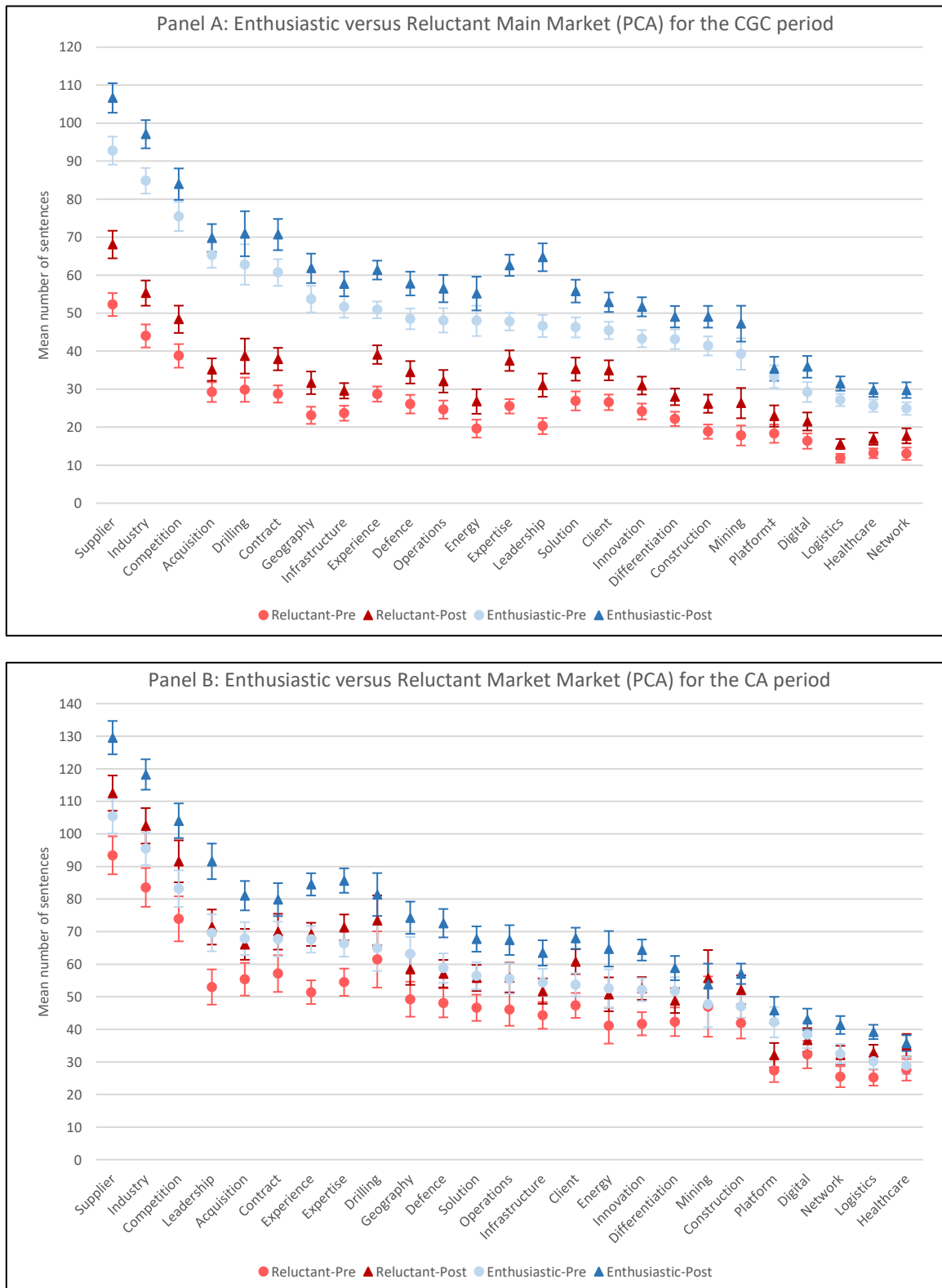


Figure 4.4 plots the mean number (and 95% confidence intervals) of the number of sentences discussing each topic for only Main Market firms after disaggregating between Reluctant and Enthusiastic firms using the PCA approach. Panel A presents results for before and after the introduction of the comply or explain provision in the amendments to the Corporate Governance

Code in 2010. Panel B presents results for before and after the enactment of disclosure requirements in law in 2018. In all panels, circles (triangles) represent the mean number prior to (following) the regulatory intervention.

**Figure 4.5 - Mean number of sentences discussing each topic for only Main Market firms after disaggregating between Reluctant and Enthusiastic firms using the Section approach**

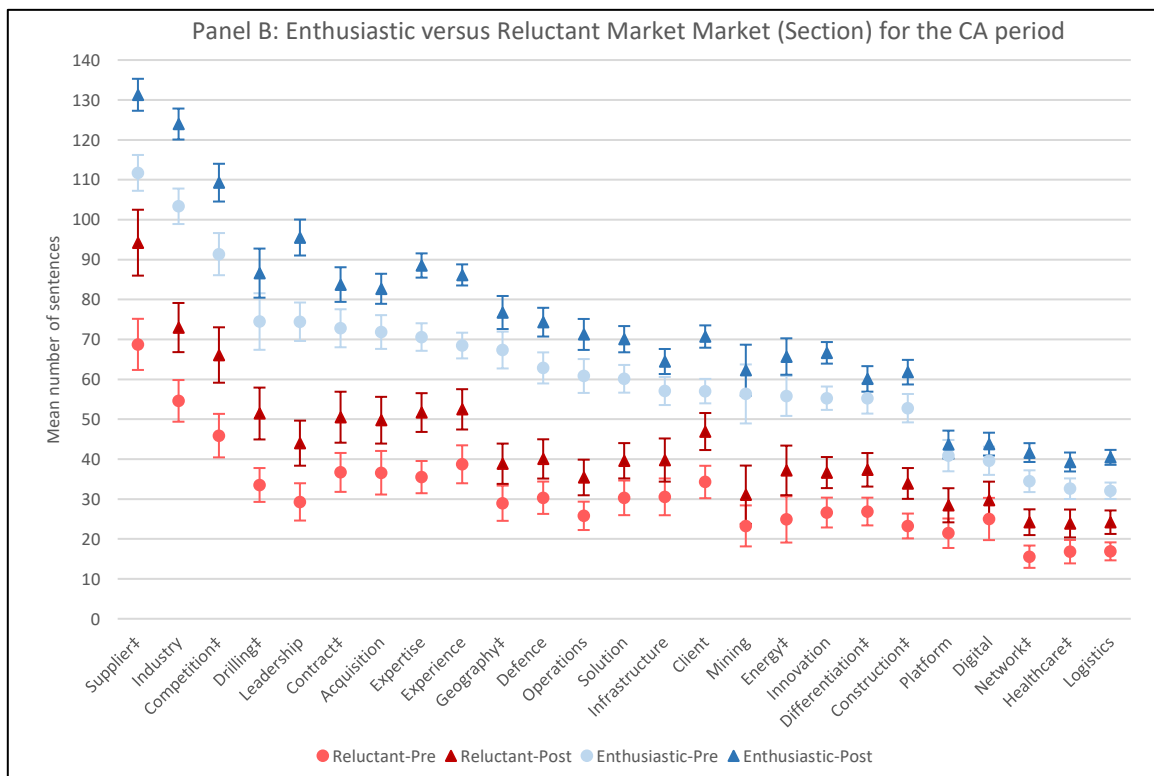
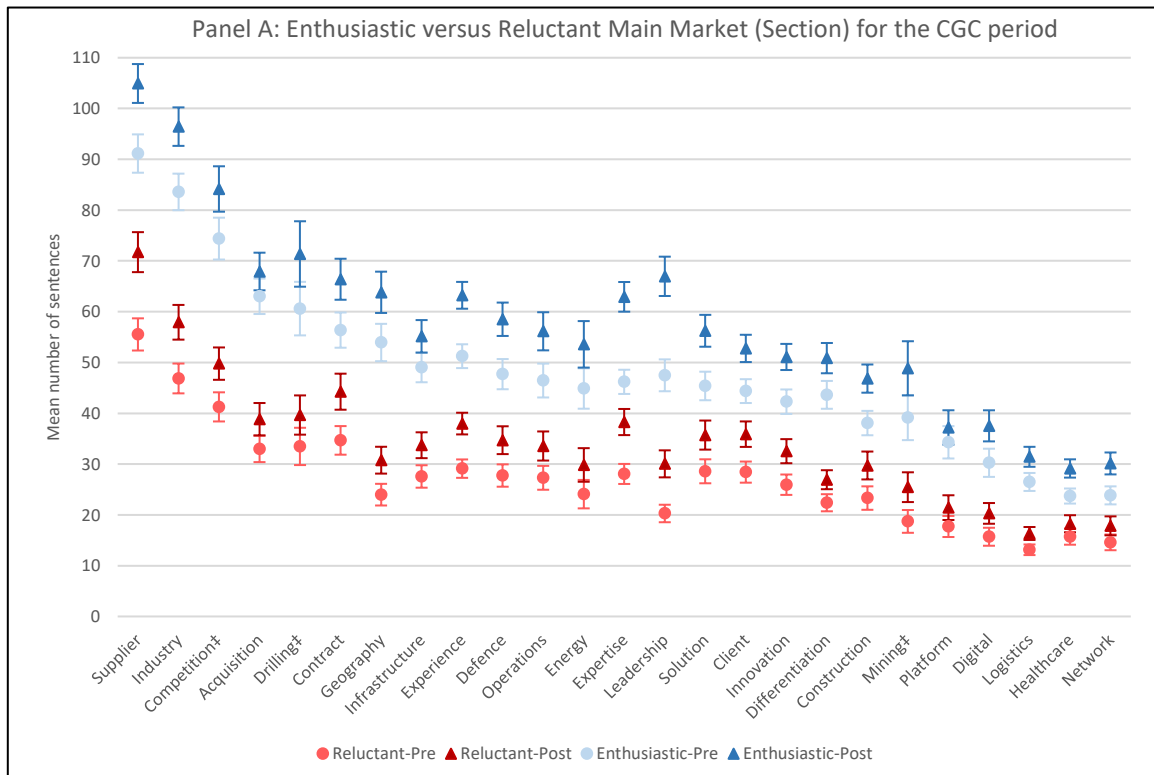


Figure 4.5 plots the mean number (and 95% confidence intervals) of the number of sentences discussing each topic for only Main Market firms after disaggregating between Reluctant and Enthusiastic firms using the Section approach. Panel A presents results for before and after the introduction of the comply or explain provision in the amendments to the Corporate Governance

Code in 2010. Panel B presents results for before and after the enactment of disclosure requirements in law in 2018. In all panels, circles (triangles) represent the mean number prior to (following) the regulatory intervention.



**Table 4.1 - Principal component analysis to partition firms**

<i>Panel A: Principal component (PC) factors for pre-Corporate Governance Code period (01/06/2007 to 28/05/2010)</i>			
	PC1	PC2	PC3
<i>Strategy_Sentences_ExSBM</i>	0.567	0.799	0.198
<i>Strategy_Sentences_Words_ExSBM</i>	0.579	-0.558	0.594
<i>Strategy_Section</i>	-0.585	0.222	0.780
% total variation explained	0.999	0.001	0.000
Bartlett's test of sphericity	6863.58	(p < 0.01)	
KMO criterion	0.532		
<i>Panel B: Principal component (PC) factors for pre-Companies Act period (19/09/2011 to 30/09/2013)</i>			
	PC1	PC2	PC3
<i>Strategy_Sentences_ExSBM</i>	0.569	0.744	0.352
<i>Strategy_Sentences_Words_ExSBM</i>	0.574	-0.665	0.477
<i>Strategy_Section</i>	-0.589	0.069	0.805
% total variation explained	0.998	0.002	0.000
Bartlett's test of sphericity	3765.36	(p < 0.01)	
KMO criterion	0.560		

Table 4.1 contains factor loadings from the principal components analysis used to partition firms in the pre-periods of the two regulatory changes. Panel A focuses on the sample period before the change to the Corporate Governance Code. Panel B focuses on the sample period before the revisions to the Companies Act. *Strategy\_Sentences\_ExSBM* is the total number of sentences classified as being strategy-related in the annual report (excluding sections identified by managers as being strategy-related – see below). A sentence is classified as being strategy-related if it contains one or more of the top ten words associated with salient internal resource or external environment strategy topics. *Strategy\_Sentences\_Words\_ExSBM* is the total number of words in sentences classified as being strategy-related in the annual report (excluding sections identified by managers as being strategy-related). *Strategy\_Section* is an indicator variable taking a value of 1 (0) if the report contains at least one section identified by managers as being strategy related. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. Count variables are winsorized at the 99th percentile in each pre-sample period. We use the first component to compute an index of strategic commentary at the report level. I find the mean index in the pre-period for each firm. I classify firms with mean index in the pre-period above median as “Enthusiastic”, and “Reluctant” otherwise.

**Table 4.2 - Descriptive statistics of strategy commentary properties**

	Strategy_Section	StrategySectionWords	StrategySentences	StrategySentencesWords	NumUniqueStrategyKeyWords	ExternalSentences	InternalSentences	NumSectionsWithStrategyIncSBM	Specificity	NetLongTerm	NetPositiveTone
<i>Panel A: Corporate Governance Code Amendment</i>											
<u>All observations</u>											
N	4343	1499	4343	4343	4343	4343	4343	4343	4343	4343	4343
Mean	0.35	1598.99	283.42	11402.95	106.32	261.87	133.68	4.27	0.0875	0.0454	0.0010
St Dev	0.48	1730.41	213.50	9072.56	34.89	198.73	107.32	1.88	0.0152	0.0431	0.0013
Min	0	2	0	0	0	0	0	0	0.0000	-0.0856	-0.0021
Q1	0	455	126	4654	81	116	56	3	0.0786	0.0206	0.0001
Median	0	938	222	8511	108	205	102	4	0.0882	0.0494	0.0009
Q3	1	2086	387	15881	135	356	180	6	0.0970	0.0748	0.0018
Max	1	9005	1098	44632	169	1024	535	8	0.1232	0.1402	0.0050
<u>AIM firms only</u>											
N	1849	374	1849	1849	1849	1849	1849	1849	1849	1849	1849
Mean	0.20	772.50	161.54	6045.89	86.72	148.83	77.23	3.43	0.0876	0.0307	0.0008
St Dev	0.40	685.89	91.52	3521.44	25.73	85.87	46.60	1.60	0.0170	0.0433	0.0015
<u>Main Market firms only</u>											
N	2494	1125	2494	2494	2494	2494	2494	2494	2494	2494	2494
Mean	0.45	1873.75	373.78	15374.57	120.84	345.68	175.53	4.89	0.0875	0.0563	0.0012
St Dev	0.50	1879.27	232.37	9854.07	33.67	216.37	119.72	1.83	0.0137	0.0396	0.0012
<u>Tests of difference</u>											
T-test p-val	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.842	0.000	0.000
Wilcox p-val	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.607	0.000	0.000

	Strategy_Section	StrategySectionWords	StrategySentences	StrategySentencesWords	NumUniqueStrategyKeyWords	ExternalSentences	InternalSentences	NumSectionsWithStrategyIncSBM	Specificity	NetLongTerm	NetPositiveTone
<i>Panel B: Companies Act Amendment</i>											
<u>All observations</u>											
N	3031	2197	3031	3031	3031	3031	3031	3031	3031	3031	3031
Mean	0.72	2376.25	387.85	15834.67	120.89	355.93	193.18	4.94	0.0879	0.0611	0.0010
St Dev	0.45	2184.65	272.79	11558.52	33.16	250.94	143.69	1.83	0.0136	0.0389	0.0013
Min	0	2	0	0	0	0	0	0	0.0000	-0.0494	-0.0021
Q1	0	850	170	6473	97	155	83	4	0.0802	0.0375	0.0001
Median	1	1723	318	12735	125	293	155	5	0.0881	0.0638	0.0009
Q3	1	3122	546	22488	148	498	275	6	0.0961	0.0868	0.0018
Max	1	10942	1356	54793	175	1244	722	8	0.1211	0.1488	0.0047
<u>AIM firms only</u>											
N	1335	840	1335	1335	1335	1335	1335	1335	1335	1335	1335
Mean	0.63	1623.90	203.65	7833.51	98.98	187.33	103.46	3.99	0.0879	0.0430	0.0009
St Dev	0.48	1483.11	111.89	4474.99	25.76	104.45	60.95	1.65	0.0154	0.0379	0.0015
<u>Main Market firms only</u>											
N	1696	1357	1696	1696	1696	1696	1696	1696	1696	1696	1696
Mean	0.80	2841.96	532.85	22132.75	138.14	488.65	263.80	5.69	0.0879	0.0753	0.0011
St Dev	0.40	2408.44	274.61	11530.49	27.70	252.92	150.52	1.61	0.0119	0.0333	0.0011
<u>Tests of difference</u>											
T-test p-val	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.977	0.000	0.000
Wilcox p-val	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.554	0.000	0.000

Panel A presents statistics for the sample period of the Corporate Governance Code amendment. Panel B presents descriptive statistics for the sample period of the Companies Act amendment. The first set of statistics cover all firms in the balanced sample. Remaining columns present statistics separately between the Main Market and AIM firms as well as p-values from two-sided t-tests and Wilcoxon tests in the difference between the two groups. Strategy\_Section is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. StrategySectionWords is the total number of words in annual report sections identified by managers as being related to strategy. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. StrategySentencesWords is the total number of words in sentences classified as being strategy-related in the annual report. NumUniqueStrategyKeyWords is the number of unique strategy keywords in the front half of the annual report. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. NumSectionsWithStrategyIncSBM is the number of sections in the annual report containing one or more top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. Specificity is the total number of named entities in strategy sentences scaled by the total number of words in strategy sentences. NetLongTerm is the number of strategy sentences containing long-term n-grams less the number of strategy sentences containing short-term n-grams (as defined by the adjusted word list of Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in strategy sentences identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2021), scaled by the total number of words in strategy sentences. Count variables are winsorized at the 99th percentile in each sample period. Continuous variables are winsorized at the 1st and 99th percentiles in each sample period.

**Table 4.3 - Coefficient estimates of regressions comparing the response of Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
<i>Panel A: Corporate Governance Code Amendment</i>								
Post	0.128 *** (0.019)	0.138 *** (0.018)	0.128 *** (0.019)	0.146 *** (0.021)	0.907 ** (0.371)	0.362 ** (0.161)	2.602 * (1.342)	1.465 * (0.805)
PostxMainMarket	-0.012 (0.023)	-0.011 (0.023)	-0.026 (0.024)	0.002 (0.026)	0.759 * (0.425)	0.204 (0.162)	3.154 * (1.678)	1.589 * (0.938)
RD_Binary	0.008 (0.043)	0.007 (0.042)	0.011 (0.043)	0.013 (0.046)	-0.686 (0.607)	-0.055 (0.209)	-1.703 (2.005)	-0.639 (0.705)
Loss_Binary	0.007 (0.018)	0.004 (0.017)	0.012 (0.019)	-0.001 (0.019)	-0.141 (0.396)	-0.334 *** (0.126)	-2.534 * (1.472)	-1.436 * (0.797)
NSEG	0.077 ** (0.030)	0.083 *** (0.030)	0.077 ** (0.030)	0.096 *** (0.033)	0.280 (0.391)	0.076 (0.133)	0.823 (1.292)	0.654 (0.828)
ROA	0.044 (0.053)	0.030 (0.055)	0.047 (0.053)	0.004 (0.061)	-1.304 (1.230)	-0.637 (0.588)	-6.798 * (3.939)	-3.539 * (1.940)
DeltaROA	-0.007 ** (0.003)	-0.006 * (0.003)	-0.007 ** (0.003)	-0.007 * (0.004)	0.050 (0.056)	0.012 (0.024)	0.020 (0.333)	-0.022 (0.147)
Returns	0.002 (0.011)	0.005 (0.010)	0.003 (0.011)	-0.006 (0.011)	-0.039 (0.235)	0.001 (0.058)	-1.075 * (0.604)	-0.445 * (0.237)
Size	0.051 *** (0.015)	0.051 *** (0.015)	0.055 *** (0.015)	0.089 *** (0.017)	0.229 (0.285)	-0.021 (0.103)	-0.244 (0.686)	-0.117 (0.399)
FinStatWords	0.452 *** (0.035)	0.453 *** (0.034)	0.425 *** (0.036)	0.381 *** (0.033)	2.678 *** (0.585)	0.862 *** (0.156)	0.201 (0.918)	0.080 (0.408)
MarketToBook	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.002 (0.016)	-0.007 (0.006)	0.030 (0.060)	0.020 (0.031)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.001	0.001	0.001	0.001	-0.054	-0.040	0.968 **	0.498 ***

	(0.006)	(0.006)	(0.006)	(0.006)	(0.137)	(0.044)	(0.404)	(0.190)
N	3909	3909	3909	3909	2064	2381	390	390
(Psuedo) Adj. R2	0.104	0.117	0.110	0.125	0.045	0.068	0.085	-0.068
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
<i>Panel B: Companies Act Amendment</i>								
Post	0.036 *	0.052 ***	0.031	0.057 ***	5.003 ***	1.077 ***	1.824	0.921 **
	(0.019)	(0.020)	(0.020)	(0.022)	(0.912)	(0.138)	(1.270)	(0.462)
PostxMainMarket	0.137 ***	0.134 ***	0.123 ***	0.107 ***	-0.757	-0.427 ***	-0.728	-0.544
	(0.026)	(0.025)	(0.026)	(0.029)	(1.056)	(0.151)	(1.369)	(0.515)
RD_Binary	-0.030	-0.024	-0.042	-0.044	-4.206 ***	-0.456 **	-1.449	-0.740 *
	(0.042)	(0.040)	(0.045)	(0.046)	(0.931)	(0.221)	(0.991)	(0.415)
Loss_Binary	0.004	-0.001	0.010	0.008	0.780	-0.074	0.218	0.072
	(0.020)	(0.020)	(0.020)	(0.023)	(0.655)	(0.068)	(0.537)	(0.178)
NSEG	0.043	0.053	0.053	0.058	0.226	0.044	-0.389	-0.276
	(0.034)	(0.033)	(0.034)	(0.039)	(1.317)	(0.120)	(1.662)	(0.603)
ROA	0.055	0.059	0.094	0.083	-2.264	0.725	-0.270	-0.635
	(0.081)	(0.090)	(0.088)	(0.099)	(3.612)	(0.557)	(5.387)	(2.040)
DeltaROA	-0.002	-0.002	-0.003	-0.002	-0.002	-0.061 **	-0.155	-0.055
	(0.006)	(0.006)	(0.006)	(0.006)	(0.149)	(0.024)	(0.284)	(0.098)
Returns	-0.052 ***	-0.054 ***	-0.052 ***	-0.067 ***	-0.255	-0.035	-0.815	-0.333
	(0.014)	(0.014)	(0.014)	(0.016)	(0.353)	(0.044)	(0.679)	(0.271)
Size	0.080 ***	0.087 ***	0.083 ***	0.120 ***	0.749	0.055	1.068 **	0.514 **
	(0.018)	(0.018)	(0.018)	(0.022)	(0.571)	(0.057)	(0.531)	(0.225)
FinStatWords	0.385 ***	0.388 ***	0.355 ***	0.325 ***	0.444	0.479 ***	0.863	0.338
	(0.048)	(0.046)	(0.048)	(0.047)	(0.772)	(0.091)	(0.993)	(0.428)
MarketToBook	-0.001	0.000	-0.001	-0.002	-0.135 *	-0.014 ***	-0.124	-0.041
	(0.002)	(0.002)	(0.002)	(0.002)	(0.074)	(0.005)	(0.092)	(0.028)

NewEquity	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GenericStrategy	0.004	0.003	0.004	0.000	0.060	0.006	0.027	-0.011	
	(0.007)	(0.006)	(0.007)	(0.007)	(0.246)	(0.022)	(0.254)	(0.103)	
N	2468	2468	2468	2468	1518	2369	610	659	
(Psuedo) Adj. R2	0.120	0.132	0.122	0.135	0.250	0.105	0.006	-0.096	
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 4.3 presents regression results examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.4 - Economic significance of regressions comparing the response of Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Panel A: Corporate Governance Code Amendment								
Post	37.26	28.56	26.37	14.98	2.8595	0.0003	1.8344	0.0000
PostxMainMarket	-4.29	-2.75	-5.92	0.35	2.0151	0.0000	34.9779	0.0000
Panel B: Companies Act Amendment								
Post	12.21	14.43	7.13	7.80	216.7803	0.6577	4.8384	0.0000
PostxMainMarket	49.76	33.42	30.79	13.49	0.2900	-0.3045	0.7378	0.0000

Table 4.4 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable. Effects are estimated for the average firm. For count variables, the table presents the change in the number of sentences. For binary variables, the table presents the odds ratio.



**Table 4.5 - Coefficient estimates of regressions comparing the response of Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.366 (0.819)	3.722 (2.479)	1.524 (2.681)	1.768 (3.204)	0.060 (0.108)
PostxMainMarket	0.099 (0.936)	-0.170 (2.851)	-2.977 (2.734)	3.625 (3.470)	-0.032 (0.119)
RD_Binary	2.133 (1.385)	-7.583 ** (3.741)	-3.413 (3.978)	-4.202 (4.516)	0.116 (0.077)
Loss_Binary	1.088 (0.715)	0.743 (2.043)	4.063 ** (1.868)	-3.226 (2.435)	-0.213 ** (0.085)
NSEG	0.770 (1.336)	-0.300 (4.579)	-1.987 (2.206)	1.373 (4.411)	-0.079 (0.123)
ROA	2.087 (3.566)	2.564 (9.351)	11.713 (10.293)	-6.055 (9.915)	0.528 ** (0.220)
DeltaROA	-0.004 (0.155)	0.041 (0.298)	0.114 (0.259)	-0.151 (0.360)	0.043 *** (0.011)
Returns	0.782 * (0.445)	-0.745 (1.707)	1.303 * (0.744)	-1.617 (1.830)	0.060 (0.041)
Size	1.360 ** (0.568)	2.819 (1.798)	-2.940 ** (1.154)	5.516 *** (1.940)	0.185 *** (0.052)
FinStatWords	-3.542 *** (0.873)	-5.743 *** (2.215)	-0.033 (1.944)	-5.407 ** (2.584)	0.037 (0.102)
MarketToBook	-0.021 (0.032)	-0.063 (0.096)	-0.099 (0.074)	0.013 (0.099)	0.005 * (0.003)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.408 * (0.234)	-0.695 (0.662)	-0.538 (0.506)	-0.231 (0.646)	0.052 * (0.030)

N	3896	3896	3896	3896	3896
(Psuedo) Adj. R2	0.725	0.613	0.557	0.627	0.607
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel B: Companies Act Amendment					
Post	1.891 (1.280)	9.037 *** (2.583)	-9.037 *** (1.741)	18.069 *** (3.080)	-0.081 (0.113)
PostxMainMarket	-2.169 * (1.241)	5.564 * (3.063)	4.098 ** (1.834)	1.127 (3.488)	-0.131 (0.121)
RD_Binary	-0.330 (0.775)	3.745 (3.040)	-7.407 ** (3.573)	10.992 *** (4.191)	-0.308 * (0.164)
Loss_Binary	0.375 (1.146)	-0.620 (2.650)	1.623 (1.604)	-2.151 (2.853)	-0.283 *** (0.105)
NSEG	0.582 (1.645)	5.680 (3.774)	-3.884 * (2.003)	9.965 ** (4.076)	-0.028 (0.118)
ROA	5.924 (5.504)	-5.421 (14.004)	6.053 (8.443)	-9.283 (13.167)	1.606 *** (0.581)
DeltaROA	-0.350 * (0.201)	0.097 (0.619)	0.096 (0.341)	-0.109 (0.652)	0.022 (0.026)
Returns	-0.319 (0.848)	0.112 (1.622)	-0.218 (1.160)	0.486 (2.067)	0.099 (0.072)
Size	0.291 (1.067)	3.803 ** (1.742)	0.819 (1.844)	2.736 (2.548)	0.137 ** (0.067)
FinStatWords	-2.342 (1.587)	-0.768 (3.230)	3.121 (1.931)	-3.789 (2.705)	-0.059 (0.158)
MarketToBook	-0.024 (0.101)	0.215 (0.213)	0.014 (0.142)	0.194 (0.241)	-0.009 (0.010)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)

GenericStrategy	0.341 (0.315)	0.355 (0.745)	0.620 * (0.370)	-0.210 (0.718)	-0.052 (0.032)
N	2463	2463	2463	2463	2463
(Psuedo) Adj. R2	0.724	0.682	0.611	0.678	0.642
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

Table 4.5 presents regression results examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Table 4.6 - Economic significance of regressions comparing the response of Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.41%	4.16%	3.70%	3.65%	3.48%
PostxMainMarket	0.11%	-0.19%	-7.23%	7.49%	-4.34%
Panel B: Companies Act Amendment					
Post	2.13%	8.95%	-25.47%	27.54%	-8.62%
PostxMainMarket	-2.44%	5.51%	11.55%	1.72%	-13.96%

Table 4.6 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveToneForward is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. Economic effects are calculated as the change in the dependent variable for a one unit change in the independent variable scaled by the unconditional mean of the dependent variable.

**Table 4.7 - Coefficient estimates of regressions comparing the response of Main Market and AIM firms to two UK regulatory changes on the volume of disclosures on strategy and business model**

	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences
Post2010Pre2013	0.1295 *** (0.0231)	0.1415 *** (0.0227)	0.1336 *** (0.0237)	0.1747 *** (0.0259)
Post2013	0.2064 *** (0.0281)	0.2346 *** (0.0279)	0.2035 *** (0.0286)	0.2819 *** (0.0329)
Post2010Pre2013xMainMarket	-0.0011 (0.0268)	-0.0013 (0.0265)	-0.0229 (0.0274)	-0.0043 (0.0303)
Post2013xMainMarket	0.1315 *** (0.0340)	0.1259 *** (0.0334)	0.0915 *** (0.0345)	0.1074 *** (0.0390)
RD_Binary	-0.0166 (0.0349)	-0.0201 (0.0340)	-0.0225 (0.0361)	-0.0031 (0.0375)
Loss_Binary	0.0195 (0.0159)	0.0180 (0.0157)	0.0248 (0.0161)	0.0180 (0.0183)
NSEG	0.0763 *** (0.0250)	0.0819 *** (0.0251)	0.0850 *** (0.0255)	0.0864 *** (0.0288)
ROA	0.0229 (0.0489)	0.0287 (0.0504)	0.0351 (0.0508)	0.0200 (0.0544)
DeltaROA	-0.0019 (0.0035)	-0.0024 (0.0034)	-0.0020 (0.0035)	-0.0003 (0.0036)
Returns	-0.0189 * (0.0100)	-0.0179 * (0.0097)	-0.0176 * (0.0101)	-0.0204 ** (0.0102)
Size	0.0744 *** (0.0137)	0.0775 *** (0.0136)	0.0766 *** (0.0138)	0.1002 *** (0.0154)
FinStatWords	0.3395 *** (0.0339)	0.3452 *** (0.0322)	0.3135 *** (0.0341)	0.2946 *** (0.0319)
MarketToBook	0.0000 (0.0014)	-0.0001 (0.0014)	-0.0003 (0.0014)	-0.0006 (0.0014)
NewEquity	0.0000	0.0000	0.0000	0.0000

	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.0055	0.0058	0.0057	0.0070
	(0.0042)	(0.0041)	(0.0041)	(0.0049)
N	4469	4469	4469	4469
(Psuedo) Adj. R2	0.120	0.132	0.123	0.134
Model	NegBin	NegBin	NegBin	NegBin
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-2.11	-2.59	-1.88	-2.56
	<i>0.035</i>	<i>0.010</i>	<i>0.060</i>	<i>0.011</i>
Post2010Pre2013xMM == Post2013xMM	-3.06	-2.99	-2.60	-2.26
	<i>0.002</i>	<i>0.003</i>	<i>0.009</i>	<i>0.024</i>
Post2010Pre2013+Post2010Pre2013xMM == Post2013+Post2013xMM	-3.70	-3.95	-3.20	-3.38
	<i>0.000</i>	<i>0.000</i>	<i>0.001</i>	<i>0.001</i>

Table 4.7 presents regression results examining the impact of both regulatory changes on the volume of SBM disclosures for Main Market and AIM firms. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets.  $\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.8 - Coefficient estimates of regressions comparing the response of Main Market and AIM firms to two UK regulatory changes on the presentation of disclosures on strategy and business model**

	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Post2010Pre2013	1.0461 *** (0.2739)	0.5673 *** (0.1262)	1.2676 * (0.7395)	1.0063 (0.6402)
Post2013	5.9001 *** (0.5566)	1.7937 *** (0.1347)	2.7170 *** (0.8596)	1.9700 *** (0.6514)
Post2010Pre2013xMainMarket	0.7172 ** (0.3406)	0.0306 (0.1373)	2.3918 ** (0.9330)	1.8109 ** (0.7870)
Post2013xMainMarket	-0.5413 (0.6961)	-0.5266 *** (0.1489)	2.2343 ** (1.0349)	1.4082 * (0.7844)
RD_Binary	-0.8965 ** (0.3765)	-0.0223 (0.1016)	-0.2158 (0.6484)	-0.0689 (0.3163)
Loss_Binary	0.0401 (0.2319)	-0.0317 (0.0488)	0.0553 (0.3486)	-0.0041 (0.1617)
NSEG	0.2225 (0.3265)	-0.0178 (0.0848)	0.2585 (0.4561)	0.1018 (0.2363)
ROA	-1.4112 *** (0.5009)	-0.2511 (0.1647)	-0.7383 (1.5424)	-0.4460 (1.0292)
DeltaROA	-0.0106 (0.0423)	-0.0111 (0.0136)	0.0258 (0.1482)	0.0158 (0.0811)
Returns	0.0643 (0.1176)	0.0351 (0.0328)	-0.5157 * (0.2634)	-0.2654 * (0.1397)
Size	0.3471 ** (0.1675)	0.0868 ** (0.0405)	0.5441 (0.3420)	0.3086 (0.1930)
FinStatWords	1.6567 *** (0.2427)	0.4762 *** (0.0613)	0.2315 (0.4047)	0.1235 (0.1847)
MarketToBook	0.0070 (0.0131)	-0.0036 (0.0034)	0.0004 (0.0207)	0.0002 (0.0133)
NewEquity	0.0000	0.0000	0.0000	0.0000

	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.1246 (0.0773)	0.0280 * (0.0169)	0.1803 ** (0.0918)	0.0774 * (0.0470)
N	3836	4316	1475	1475
(Psuedo) Adj. R2	0.355	0.256	0.138	0.018
Model	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-7.82 <i>0.000</i>	-6.65 <i>0.000</i>	-1.28 <i>0.201</i>	-1.06 <i>0.291</i>
Post2010Pre2013xMM == Post2013xMM	1.62 <i>0.104</i>	2.75 <i>0.006</i>	0.11 <i>0.910</i>	0.36 <i>0.717</i>
Post2010Pre2013+Post2010Pre2013xMM == Post2013+Post2013xMM	-3.62 <i>0.000</i>	-2.44 <i>0.015</i>	-0.72 <i>0.472</i>	-0.39 <i>0.697</i>

Table 4.8 presents regression results examining the impact of both regulatory changes on the presentation of SBM disclosures for Main Market and AIM firms. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.



**Table 4.9 - Coefficient estimates of regressions comparing the response of Main Market and AIM firms to two UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Post2010Pre2013	-0.5557 (0.5409)	-0.4006 (1.4728)	-1.0101 (1.2352)	0.4739 (1.8300)	0.0054 (0.0633)
Post2013	-0.5624 (0.7480)	4.0691 ** (1.9457)	-6.9420 *** (1.3541)	10.6881 *** (2.3284)	-0.1452 * (0.0798)
Post2010Pre2013xMainMarket	0.2082 (0.6729)	4.2753 ** (1.8176)	-0.9735 (1.3749)	5.6710 *** (2.1542)	-0.0137 (0.0764)
Post2013xMainMarket	-0.7599 (0.8879)	14.4747 *** (2.4699)	0.9598 (1.5028)	13.8329 *** (2.8300)	-0.1005 (0.0931)
RD_Binary	-0.9956 (0.8761)	-0.6634 (2.2336)	-1.1881 (1.3233)	0.7608 (2.4641)	-0.1397 * (0.0753)
Loss_Binary	-0.0792 (0.4411)	-0.7856 (1.2504)	1.2629 * (0.7385)	-2.1625 (1.3958)	-0.3816 *** (0.0513)
NSEG	0.2633 (0.6457)	1.3397 (1.7760)	-0.6169 (1.0204)	2.1272 (1.9044)	-0.0758 (0.0742)
ROA	-0.4198 (1.7072)	0.9646 (3.9783)	-1.6509 (2.4064)	2.9080 (4.5895)	0.3499 ** (0.1479)
DeltaROA	-0.0087 (0.0874)	0.1549 (0.2767)	0.0138 (0.1681)	0.1542 (0.3362)	0.0394 *** (0.0082)
Returns	-0.0060 (0.2528)	0.0697 (0.7337)	0.6917 (0.5230)	-0.4670 (0.7378)	0.0603 ** (0.0263)
Size	0.8355 ** (0.3346)	2.7396 *** (0.8929)	-2.0287 *** (0.6439)	4.6620 *** (1.0647)	0.1138 *** (0.0325)
FinStatWords	-1.7493 *** (0.5775)	-2.8867 * (1.6336)	0.0495 (0.9736)	-3.0228 * (1.6044)	0.0899 (0.0546)
MarketToBook	-0.0411 * (0.0231)	0.1038 * (0.0618)	0.0011 (0.0478)	0.1080 (0.0829)	-0.0009 (0.0024)
NewEquity	0.0000	0.0000 *	0.0000	0.0000 **	0.0000

	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.2149 *	-0.2426	-0.2035	-0.0995	0.0099
	(0.1238)	(0.3314)	(0.2306)	(0.3894)	(0.0137)
N	4461	4461	4461	4461	4461
(Psuedo) Adj. R2	0.653	0.609	0.512	0.633	0.539
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>					
Post2010Pre2013 == Post2013	0.01	-1.83	3.24	-3.45	1.48
	<i>0.994</i>	<i>0.067</i>	<i>0.001</i>	<i>0.001</i>	<i>0.139</i>
Post2010Pre2013xMainMarket == Post2013xMainMarket	0.87	-3.33	-0.95	-2.29	0.72
	<i>0.385</i>	<i>0.001</i>	<i>0.343</i>	<i>0.022</i>	<i>0.471</i>
Post2010Pre2013+Post2010Pre2013xMainMarket == Post2013+Post2013xMainMarket	0.67	-3.74	1.46	-3.97	1.51
	<i>0.500</i>	<i>0.000</i>	<i>0.144</i>	<i>0.000</i>	<i>0.132</i>

Table 4.9 presents regression results examining the impact of both regulatory changes on the best practice properties of SBM disclosures for Main Market and AIM firms. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. MainMarket is an indicator variable taking a value of one if the firm is listed on the LSE Main Market and zero otherwise. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Table 4.10 - Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume								Presentation							
	StrategySentences		GeneralSentences		ExternalSentences		InternalSentences		SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
<i>Panel A: Corporate Governance Code Amendment</i>																
Post	0.119	***	0.128	***	0.102	***	0.164	***	1.781	***	0.542	***	6.404	***	3.632	***
	(0.017)		(0.017)		(0.017)		(0.019)		(0.350)		(0.076)		(1.679)		(0.616)	
PostxReluctant	0.038		0.039		0.048	*	0.024		-0.364		-0.056		-2.642		-1.416	*
	(0.026)		(0.026)		(0.026)		(0.029)		(0.482)		(0.122)		(1.803)		(0.842)	
RD_Binary	-0.056		-0.061		-0.045		-0.036		-1.286	*	-0.036		-3.812	*	-0.679	
	(0.059)		(0.058)		(0.056)		(0.061)		(0.766)		(0.255)		(2.289)		(0.649)	
Loss_Binary	0.012		0.018		0.020		0.005		0.016		-0.076		0.441		0.313	
	(0.021)		(0.020)		(0.022)		(0.024)		(0.408)		(0.099)		(0.921)		(0.480)	
NSEG	0.118	***	0.127	***	0.119	***	0.126	***	0.695		0.275	*	2.973	**	1.444	**
	(0.033)		(0.033)		(0.033)		(0.037)		(0.494)		(0.142)		(1.516)		(0.660)	
ROA	0.001		0.007		0.018		0.020		0.600		-0.163		-1.011		0.015	
	(0.104)		(0.110)		(0.097)		(0.135)		(1.963)		(0.420)		(8.582)		(4.649)	
DeltaROA	-0.010		-0.010		-0.008		-0.011		-0.102		-0.035		0.105		0.032	
	(0.007)		(0.007)		(0.007)		(0.007)		(0.118)		(0.035)		(0.309)		(0.134)	
Returns	0.010		0.012		0.014		0.016		0.356	*	0.109	**	-0.984	*	-0.383	*
	(0.013)		(0.012)		(0.013)		(0.013)		(0.197)		(0.046)		(0.566)		(0.224)	
Size	0.011		0.017		0.007		0.017		0.169		0.051		0.180		0.120	
	(0.015)		(0.014)		(0.015)		(0.016)		(0.253)		(0.068)		(0.692)		(0.416)	
FinStatWords	0.311	***	0.318	***	0.286	***	0.279	***	2.760	***	0.774	***	0.737		0.187	
	(0.042)		(0.040)		(0.043)		(0.040)		(0.505)		(0.114)		(0.803)		(0.319)	
MarketToBook	-0.002		-0.002		-0.001		-0.001		-0.003		-0.006		0.033		0.026	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.018)		(0.006)		(0.039)		(0.022)	
NewEquity	0.000		0.000		0.000		0.000		0.000		0.000	*	0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
GenericStrategy	0.002		0.003		0.003		0.005		0.189		0.020		0.306		0.182	

N	(0.006)	(0.006)	(0.007)	(0.008)	(0.123)	(0.033)	(0.309)	(0.143)
2475	2475	2475	2475	1437	1825	477	477	
(Psuedo) Adj. R2	0.115	0.124	0.122	0.138	0.045	0.216	0.029	-0.207
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Volume								Presentation							
	StrategySentences		GeneralSentences		ExternalSentences		InternalSentences		SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
<i>Panel B: Companies Act Amendment</i>																
Post	0.152	***	0.166	***	0.140	***	0.152	***	5.235	***	0.650	***	1.956	***	0.683	***
	(0.020)		(0.019)		(0.019)		(0.020)		(0.828)		(0.062)		(0.450)		(0.154)	
PostxReluctant	0.020		0.018		0.009		0.011		-1.222		-0.062		-0.090		0.071	
	(0.028)		(0.027)		(0.028)		(0.030)		(1.101)		(0.096)		(0.590)		(0.237)	
RD_Binary	0.008		0.010		0.001		0.023		-2.083	**	-0.109		0.783		0.216	
	(0.047)		(0.042)		(0.048)		(0.047)		(1.026)		(0.097)		(0.796)		(0.268)	
Loss_Binary	0.043	*	0.041	*	0.043	*	0.037		-0.195		-0.038		0.274		0.122	
	(0.024)		(0.023)		(0.024)		(0.027)		(0.506)		(0.061)		(0.462)		(0.159)	
NSEG	0.063	*	0.065	*	0.067	*	0.068	*	-1.099		0.002		0.803		0.335	
	(0.036)		(0.036)		(0.036)		(0.038)		(0.889)		(0.119)		(0.818)		(0.319)	
ROA	0.238		0.303	*	0.295	*	0.306	*	0.637		0.969	**	10.031	**	3.973	**
	(0.169)		(0.162)		(0.176)		(0.178)		(3.278)		(0.489)		(4.270)		(1.728)	
DeltaROA	-0.007		-0.009		-0.007		-0.011		-0.061		-0.074	***	-0.429	**	-0.188	***
	(0.009)		(0.009)		(0.009)		(0.009)		(0.129)		(0.026)		(0.177)		(0.072)	
Returns	-0.034	*	-0.030	*	-0.041	**	-0.047	**	0.126		-0.010		0.516		0.264	*
	(0.018)		(0.018)		(0.018)		(0.020)		(0.524)		(0.054)		(0.382)		(0.155)	
Size	0.086	***	0.086	***	0.082	***	0.114	***	0.350		0.011		-1.313	***	-0.537	***
	(0.019)		(0.018)		(0.019)		(0.021)		(0.611)		(0.065)		(0.494)		(0.208)	
FinStatWords	0.202	***	0.209	***	0.172	***	0.156	***	0.871		0.255	***	0.720		0.316	
	(0.042)		(0.038)		(0.041)		(0.036)		(0.541)		(0.072)		(0.582)		(0.232)	
MarketToBook	-0.002		-0.002		-0.002		-0.004		-0.118		-0.012	**	-0.025		-0.010	
	(0.002)		(0.002)		(0.002)		(0.002)		(0.073)		(0.005)		(0.045)		(0.022)	

NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	-0.001 (0.007)	-0.003 (0.007)	-0.001 (0.007)	0.003 (0.008)	0.212 (0.209)	0.023 (0.021)	0.334 ** (0.137)	0.117 ** (0.052)	
N	1694	1694	1694	1694	763	1652	696	761	
(Psuedo) Adj. R2	0.109	0.119	0.117	0.136	0.105	0.224	-0.184	-0.218	
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 4.10 presents regression results examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant and Enthusiastic Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.11 - Economic significance of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Panel A: Corporate Governance Code Amendment								
Post	46.24	36.15	27.42	21.73	6.9791	0.0000	96.5894	0.0000
PostxReluctant	16.56	12.67	14.29	4.02	0.5691	0.0000	0.3168	0.0000
Panel B: Companies Act Amendment								
Post	92.72	74.84	58.52	33.06	159.3271	0.6164	4.7764	0.0000
PostxReluctant	12.60	8.54	4.17	2.46	0.3240	0.0266	1.0638	0.0000

Table 4.11 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant and Enthusiastic Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. Economic effects are calculated as the change in the dependent variable for a one unit change in the independent variable. Effects are estimated for the average firm. For count variables, the table presents the change in the number of sentences. For binary variables, the table presents the odds ratio.

**Table 4.12 - Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.493 (0.644)	4.211 ** (1.716)	-2.308 * (1.299)	6.629 *** (1.694)	-0.030 (0.056)
PostxReluctant	0.180 (0.840)	-2.516 (2.341)	0.727 (1.666)	-2.740 (2.367)	0.069 (0.073)
RD_Binary	2.710 (1.702)	-7.934 ** (3.865)	-4.584 (3.039)	-4.548 (3.125)	-0.122 (0.117)
Loss_Binary	1.061 (0.741)	-1.165 (1.767)	-0.372 (1.486)	-1.316 (2.144)	-0.145 (0.055)
NSEG	2.005 ** (1.015)	-1.491 (2.431)	-0.028 (2.002)	-1.127 (2.588)	-0.206 (0.090)
ROA	-0.919 (2.904)	4.720 (7.536)	-12.650 * (6.943)	15.821 *** (6.033)	0.563 (0.257)
DeltaROA	0.234 (0.168)	-0.484 (0.446)	0.445 (0.320)	-0.919 * (0.526)	0.021 (0.016)
Returns	0.219 (0.410)	-0.677 (1.397)	1.242 (0.952)	-1.647 (1.218)	-0.007 (0.034)
Size	1.301 *** (0.438)	1.816 (1.202)	-1.450 * (0.798)	3.234 ** (1.306)	0.061 (0.039)
FinStatWords	-2.806 *** (0.992)	-4.799 * (2.502)	-1.173 (1.653)	-3.338 (2.156)	0.031 (0.078)
MarketToBook	-0.004 (0.026)	0.015 (0.085)	-0.002 (0.064)	-0.002 (0.085)	0.001 (0.004)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.645 *** (0.240)	0.224 (0.657)	-0.012 (0.490)	0.185 (0.601)	0.070 (0.022)

N	2475	2475	2475	2475	2475
(Psuedo) Adj. R2	0.780	0.690	0.582	0.702	0.622
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel B: Companies Act Amendment					
Post	-0.847 (0.549)	12.269 *** (2.166)	-3.265 *** (1.205)	15.840 *** (2.045)	-0.075 (0.058)
PostxReluctant	-0.078 (0.807)	2.591 (2.854)	-0.018 (1.637)	1.601 (2.868)	-0.199 (0.084)
RD_Binary	-0.286 (0.992)	8.464 ** (3.871)	1.335 (1.867)	7.105 * (3.882)	-0.105 (0.138)
Loss_Binary	-0.085 (0.615)	-0.598 (2.309)	0.551 (1.411)	-0.872 (2.227)	-0.286 (0.073)
NSEG	0.587 (1.077)	-2.486 (3.630)	-3.121 * (1.643)	1.098 (3.554)	-0.034 (0.109)
ROA	-8.885 * (4.767)	-14.630 (13.793)	28.591 ** (12.066)	-38.194 *** (13.240)	0.259 (0.490)
DeltaROA	-0.223 (0.250)	-0.132 (0.795)	-0.249 (0.530)	-0.086 (0.882)	0.025 (0.026)
Returns	-0.779 * (0.455)	1.465 (2.001)	-0.177 (1.095)	1.775 (1.860)	0.057 (0.062)
Size	1.504 ** (0.614)	4.619 * (2.726)	-4.184 *** (1.515)	8.255 *** (2.435)	0.052 (0.068)
FinStatWords	0.342 (0.998)	-0.216 (2.960)	1.970 (2.064)	-2.153 (2.826)	0.224 (0.099)
MarketToBook	-0.038 (0.059)	0.156 (0.161)	-0.140 (0.113)	0.284 (0.195)	-0.015 (0.006)
NewEquity	0.000 (0.000)	0.000 *** (0.000)	0.000 (0.000)	0.000 *** (0.000)	0.000 (0.000)



GenericStrategy	0.352 *	-0.536	-0.097	-0.272	0.018
	(0.201)	(0.737)	(0.422)	(0.719)	(0.027)
N	1694	1694	1694	1694	1694
(Psuedo) Adj. R2	0.732	0.578	0.552	0.637	0.634
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

Table 4.12 presents regression results examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Table 4.13 - Economic significance of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.56%	4.21%	-5.87%	10.90%	-3.28%
PostxReluctant	0.20%	-2.51%	1.85%	-4.50%	11.66%
Panel B: Companies Act Amendment					
Post	-0.95%	10.54%	-9.68%	19.16%	-7.52%
PostxReluctant	-0.09%	2.23%	-0.05%	1.94%	-19.91%

Table 4.13 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic Main Market firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveToneForward is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable scaled by the unconditional mean of the dependent variable.

**Table 4.14 - Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to two UK regulatory changes on the volume of disclosures on strategy and business model**

	StrategySentences		GeneralSentences		ExternalSentences		InternalSentences	
Post2010Pre2013	0.1347	***	0.1417	***	0.1117	***	0.1801	***
	(0.0183)		(0.0183)		(0.0189)		(0.0216)	
Post2013	0.3470	***	0.3628	***	0.2991	***	0.3988	***
	(0.0235)		(0.0235)		(0.0236)		(0.0268)	
Post2010Pre2013xReluctant	0.0274		0.0355		0.0438		0.0317	
	(0.0298)		(0.0296)		(0.0299)		(0.0346)	
Post2013xReluctant	0.0515		0.0630		0.0737	*	0.0843	*
	(0.0391)		(0.0387)		(0.0396)		(0.0482)	
RD_Binary	-0.0501		-0.0492		-0.0548		-0.0152	
	(0.0361)		(0.0339)		(0.0363)		(0.0379)	
Loss_Binary	0.0376	**	0.0388	**	0.0436	**	0.0306	
	(0.0184)		(0.0180)		(0.0186)		(0.0232)	
NSEG	0.0773	***	0.0852	***	0.0910	***	0.0689	**
	(0.0291)		(0.0287)		(0.0296)		(0.0341)	
ROA	-0.0226		-0.0145		-0.0377		-0.0036	
	(0.0854)		(0.0976)		(0.0870)		(0.1086)	
DeltaROA	-0.0135	**	-0.0140	**	-0.0105	*	-0.0174	**
	(0.0066)		(0.0066)		(0.0063)		(0.0075)	
Returns	-0.0062		-0.0039		-0.0033		0.0027	
	(0.0130)		(0.0122)		(0.0129)		(0.0128)	
Size	0.0593	***	0.0644	***	0.0546	***	0.0654	***
	(0.0155)		(0.0151)		(0.0155)		(0.0185)	
FinStatWords	0.2147	***	0.2269	***	0.1872	***	0.1895	***
	(0.0377)		(0.0349)		(0.0376)		(0.0345)	
MarketToBook	-0.0031	**	-0.0030	**	-0.0030	**	-0.0029	**
	(0.0013)		(0.0012)		(0.0014)		(0.0013)	
NewEquity	0.0000		0.0000		0.0000		0.0000	

	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
GenericStrategy	0.0061	0.0056	0.0072	0.0101	*
	(0.0050)	(0.0049)	(0.0050)	(0.0061)	
N	2690	2690	2690	2690	
(Psuedo) Adj. R2	0.101	0.109	0.105	0.121	
Model	NegBin	NegBin	NegBin	NegBin	
Firm FE	Yes	Yes	Yes	Yes	
<u>Wald tests (p-values in italics):</u>					
Post2010Pre2013 == Post2013	-7.12	-7.42	-6.19	-6.36	
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	
Post2010Pre2013xReluctant == Post2013xReluctant	-0.49	-0.56	-0.60	-0.89	
	<i>0.624</i>	<i>0.573</i>	<i>0.546</i>	<i>0.375</i>	
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-4.11	-4.35	-3.74	-3.95	
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	

Table 4.14 presents regression results examining the impact of both regulatory changes on the volume of SBM disclosures for Reluctant and Enthusiastic Main Market firms. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-comply or explain period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.15 - Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to two UK regulatory changes on the presentation of disclosures on strategy and business model**

	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Post2010Pre2013	1.9584 *** (0.2657)	0.6171 *** (0.0660)	4.2983 *** (0.8951)	3.2147 *** (0.5965)
Post2013	5.0388 *** (0.5542)	1.2059 *** (0.0789)	5.8882 *** (0.9973)	3.9144 *** (0.6121)
Post2010Pre2013xReluctant	-0.3110 (0.4270)	0.0103 (0.1316)	-1.0577 (1.1359)	-0.7453 (0.9288)
Post2013xReluctant	1.0135 (0.8839)	0.3549 ** (0.1669)	-1.3240 (1.2021)	-0.8017 (0.9330)
RD_Binary	-0.7204 (0.6105)	0.0679 (0.1243)	0.5749 (0.8124)	0.2711 (0.3603)
Loss_Binary	0.5386 * (0.3062)	0.0482 (0.0557)	0.3824 (0.3660)	0.1295 (0.1576)
NSEG	0.4832 (0.3944)	0.0371 (0.0962)	0.3405 (0.5271)	0.1454 (0.2569)
ROA	-1.3798 (1.5455)	0.1033 (0.3794)	2.2465 (4.2832)	1.4713 (2.0174)
DeltaROA	-0.0338 (0.0764)	-0.0500 ** (0.0212)	-0.0553 (0.1907)	-0.0444 (0.0909)
Returns	0.3262 * (0.1694)	0.0935 ** (0.0407)	-0.3542 (0.2919)	-0.1411 (0.1461)
Size	0.1395 (0.2130)	0.0510 (0.0468)	0.0023 (0.4168)	-0.0259 (0.2166)
FinStatWords	1.2131 *** (0.2698)	0.3814 *** (0.0647)	0.0465 (0.4607)	0.0416 (0.1955)
MarketToBook	-0.0179 (0.0204)	-0.0099 ** (0.0039)	-0.0089 (0.0275)	-0.0061 (0.0165)
NewEquity	0.0000	0.0000	0.0000	0.0000

	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.3236 ***	0.0510 ***	0.2320 **	0.0916 *
	(0.1110)	(0.0194)	(0.1083)	(0.0513)
N	2199	2624	1241	1241
(Psuedo) Adj. R2	0.325	0.226	0.163	0.031
Model	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes
<u>Wald tests (p-values in italics):</u>				
Post2010Pre2013 == Post2013	-5.01	-5.73	-1.19	-0.82
	<i>0.000</i>	<i>0.000</i>	<i>0.235</i>	<i>0.413</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-1.35	-1.62	0.16	0.04
	<i>0.177</i>	<i>0.105</i>	<i>0.872</i>	<i>0.966</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	-3.80	-3.95	-0.62	-0.41
	<i>0.000</i>	<i>0.000</i>	<i>0.534</i>	<i>0.682</i>

Table 4.15 presents regression results examining the impact of both regulatory changes on the presentation of SBM disclosures for Reluctant and Enthusiastic Main Market firms. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post2010Pre2013 is an indicator variable taking the value of one for the period after the introduction of the comply or explain provision but before the enactment of disclosure requirements in law, and zero otherwise. Post2013 is an indicator variable taking the value of one for the period after the enactment of disclosure requirements in law. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-comply or explain period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.16 - Coefficient estimates of regressions comparing the response of Reluctant and Enthusiastic Main Market firms to two UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Post2010Pre2013	-0.5944 (0.5136)	4.1549 *** (1.3746)	-2.4677 *** (0.8022)	6.7262 *** (1.4875)	0.0141 (0.0610)
Post2013	-1.7949 ** (0.7061)	18.1440 *** (2.0035)	-5.5257 *** (1.0794)	23.6954 *** (2.1451)	-0.1646 (0.0745)
Post2010Pre2013xReluctant	0.1106 (0.8778)	-1.6537 (2.3605)	1.0376 (1.4181)	-2.1612 (2.5275)	0.0059 (0.0892)
Post2013xReluctant	0.3237 (1.1091)	-0.6626 (3.3686)	-0.2580 (1.6504)	-0.3664 (3.5798)	-0.0645 (0.1123)
RD_Binary	-0.8391 (1.1483)	2.1255 (2.9977)	1.2862 (1.2827)	0.8861 (3.3702)	-0.1263 (0.1205)
Loss_Binary	-0.2875 (0.5407)	-0.4494 (1.6090)	0.4262 (0.7783)	-0.7651 (1.7133)	-0.3298 (0.0548)
NSEG	0.5368 (0.7877)	-0.3303 (2.1192)	-0.3420 (1.0659)	0.2203 (2.3022)	-0.2427 (0.0933)
ROA	-5.5654 * (2.8365)	-16.9176 ** (8.2982)	-7.8263 * (4.1483)	-9.5363 (7.9399)	0.7116 (0.2861)
DeltaROA	0.1234 (0.1829)	0.0491 (0.5570)	0.5851 ** (0.2824)	-0.4293 (0.5904)	0.0474 (0.0167)
Returns	-0.1701 (0.3146)	0.5468 (0.9707)	1.1363 * (0.6304)	-0.5588 (0.9976)	0.0805 (0.0363)
Size	1.2548 *** (0.4215)	3.1647 *** (1.1968)	-2.4083 *** (0.7177)	5.4784 *** (1.3216)	0.0477 (0.0469)
FinStatWords	-1.0849 (0.7105)	1.1313 (2.1837)	-1.0002 (1.2119)	1.7567 (1.9285)	0.1573 (0.0657)
MarketToBook	-0.0249 (0.0274)	0.1328 * (0.0692)	-0.0049 (0.0672)	0.1373 (0.1084)	-0.0036 (0.0024)
NewEquity	0.0000	0.0000 **	0.0000	0.0000 **	0.0000

	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
GenericStrategy	0.4187 **	-0.2006	0.0274	-0.2015	0.0129
	(0.1658)	(0.5169)	(0.2880)	(0.5598)	(0.0174)
N	2690	2690	2690	2690	2690
(Psuedo) Adj. R2	0.665	0.502	0.525	0.549	0.512
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yesss
<u>Wald tests (p-values in italics):</u>					
Post2010Pre2013 == Post2013	1.37	-5.76	2.27	-6.50	1.86
	<i>0.169</i>	<i>0.000</i>	<i>0.023</i>	<i>0.000</i>	<i>0.063</i>
Post2010Pre2013xReluctant == Post2013xReluctant	-0.15	-0.24	0.60	-0.41	0.49
	<i>0.880</i>	<i>0.810</i>	<i>0.552</i>	<i>0.682</i>	<i>0.623</i>
Post2010Pre2013+Post2010Pre2013xReluctant == Post2013+Post2013xReluctant	0.59	-3.14	1.70	-3.68	1.44
	<i>0.552</i>	<i>0.002</i>	<i>0.089</i>	<i>0.000</i>	<i>0.149</i>

Table 4.16 presents regression results examining the impact of both regulatory changes on the best practice properties of SBM disclosures for Reluctant and Enthusiastic Main Market firms. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-comply or explain period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.



**Table 4.17 - Coefficient estimates of regressions comparing the response of Reluctant Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume								Presentation							
	StrategySentences		GeneralSentences		ExternalSentences		InternalSentences		SBM_Indicator		SBM_Count		BM_Indicator		BM_Count	
<i>Panel A: Corporate Governance Code Amendment</i>																
Post	0.114	***	0.124	***	0.112	***	0.132	***	0.995	**	0.384	**	1.828		1.153	
	(0.019)		(0.019)		(0.020)		(0.021)		(0.415)		(0.175)		(1.352)		(0.904)	
PostxReluctant	0.011		0.016		0.003		0.019		0.311		0.087		2.560		1.295	
	(0.028)		(0.027)		(0.028)		(0.031)		(0.527)		(0.188)		(1.885)		(1.047)	
RD_Binary	0.011		0.016		0.011		0.016		-1.448	**	-0.479	**	-31.726	***	-16.764	***
	(0.046)		(0.045)		(0.046)		(0.051)		(0.614)		(0.222)		(1.274)		(0.277)	
Loss_Binary	0.013		0.008		0.015		0.004		-0.250		-0.222		-1.743		-0.945	
	(0.021)		(0.020)		(0.021)		(0.022)		(0.454)		(0.151)		(1.546)		(1.024)	
NSEG	0.089	**	0.097	***	0.091	**	0.111	***	0.545		0.108		0.839		0.094	
	(0.036)		(0.037)		(0.037)		(0.039)		(0.465)		(0.195)		(1.488)		(0.830)	
ROA	0.063		0.046		0.065		0.000		-1.486		-0.434		-9.902		-5.590	
	(0.053)		(0.054)		(0.055)		(0.061)		(1.035)		(0.503)		(7.638)		(4.393)	
DeltaROA	-0.007	**	-0.006	*	-0.007	**	-0.006	*	0.021		0.001		0.317		0.117	
	(0.003)		(0.003)		(0.004)		(0.004)		(0.058)		(0.028)		(0.389)		(0.201)	
Returns	-0.002		0.000		-0.003		-0.015		-0.056		0.028		-1.567	**	-0.792	***
	(0.012)		(0.011)		(0.012)		(0.012)		(0.236)		(0.075)		(0.617)		(0.302)	
Size	0.068	***	0.067	***	0.077	***	0.117	***	0.482		0.138		0.049		0.056	
	(0.018)		(0.017)		(0.018)		(0.020)		(0.316)		(0.126)		(0.807)		(0.524)	
FinStatWords	0.531	***	0.528	***	0.507	***	0.450	***	2.912	***	1.035	***	-0.751		-0.481	
	(0.038)		(0.037)		(0.039)		(0.037)		(0.528)		(0.148)		(0.956)		(0.424)	
MarketToBook	0.000		0.000		0.000		-0.001		-0.005		-0.002		0.092		0.060	**
	(0.002)		(0.002)		(0.002)		(0.002)		(0.019)		(0.008)		(0.057)		(0.027)	
NewEquity	0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
GenericStrategy	0.001		0.001		0.001		0.000		0.024		-0.023		0.737		0.458	*

N	(0.006)	(0.006)	(0.006)	(0.007)	(0.137)	(0.046)	(0.479)	(0.277)
(Psuedo) Adj. R2	0.092	0.103	0.097	0.113	-0.029	0.054	-0.040	-0.176
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	internalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
<i>Panel B: Companies Act Amendment</i>								
Post	0.037 *	0.053 ***	0.031	0.054 **	4.893 ***	1.117 ***	2.432 *	1.143 **
	(0.020)	(0.020)	(0.020)	(0.022)	(0.975)	(0.140)	(1.327)	(0.481)
PostxReluctant	0.132 ***	0.126 ***	0.114 ***	0.097 ***	-1.316	-0.512 ***	-1.063	-0.583
	(0.031)	(0.031)	(0.032)	(0.035)	(1.150)	(0.166)	(1.535)	(0.574)
RD_Binary	-0.008	-0.009	-0.019	-0.031	-3.174 ***	-0.379	-0.105	-0.378
	(0.050)	(0.047)	(0.052)	(0.053)	(1.219)	(0.266)	(1.201)	(0.415)
Loss_Binary	0.014	0.008	0.018	0.012	1.224 *	0.006	-0.161	-0.059
	(0.027)	(0.027)	(0.027)	(0.030)	(0.670)	(0.107)	(0.879)	(0.328)
NSEG	0.060	0.075 **	0.069 *	0.083 **	-0.325	-0.017	-0.847	-0.406
	(0.036)	(0.036)	(0.037)	(0.041)	(1.192)	(0.149)	(2.083)	(0.678)
ROA	0.037	0.045	0.066	0.036	0.184	0.816	-2.894	-2.527
	(0.098)	(0.112)	(0.104)	(0.117)	(3.997)	(0.600)	(6.403)	(2.804)
DeltaROA	-0.003	-0.003	-0.004	-0.001	-0.007	-0.054 *	0.183	0.126
	(0.007)	(0.006)	(0.007)	(0.007)	(0.178)	(0.028)	(0.326)	(0.136)
Returns	-0.049 ***	-0.053 ***	-0.046 ***	-0.066 ***	-0.046	-0.003	-2.099 **	-0.856 **
	(0.016)	(0.016)	(0.017)	(0.018)	(0.450)	(0.062)	(1.060)	(0.429)
Size	0.076 ***	0.083 ***	0.081 ***	0.122 ***	0.927	0.056	1.546 *	0.718 **
	(0.021)	(0.022)	(0.022)	(0.027)	(0.577)	(0.082)	(0.807)	(0.339)
FinStatWords	0.402 ***	0.406 ***	0.371 ***	0.350 ***	0.619	0.411 ***	0.513	0.030
	(0.058)	(0.057)	(0.058)	(0.059)	(0.902)	(0.119)	(1.210)	(0.586)
MarketToBook	-0.001	0.000	-0.001	-0.002	-0.053	-0.012 **	-0.276	-0.125
	(0.002)	(0.002)	(0.002)	(0.002)	(0.052)	(0.006)	(0.247)	(0.078)

NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.002 (0.008)	0.001 (0.008)	0.002 (0.008)	-0.004 (0.009)	0.112 (0.278)	-0.006 (0.030)	-0.267 (0.355)	-0.106 (0.127)	
N	1794	1794	1794	1794	1195	1705	382	396	
(Psuedo) Adj. R2	0.115	0.126	0.118	0.130	0.059	0.104	0.014	-0.111	
Model	NegBin	NegBin	NegBin	NegBin	Logit	Poisson	Logit	Poisson	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 4.17 presents regression results examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets. ΔROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)’s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms.

**Table 4.18 - Economic significance of regressions comparing the response of Reluctant Main Market and AIM firms to UK regulatory changes on the volume and presentation of disclosures on strategy and business model**

	Volume				Presentation			
	StrategySentences	GeneralSentences	ExternalSentences	InternalSentences	SBM_Indicator	SBM_Count	BM_Indicator	BM_Count
Panel A: Corporate Governance Code Amendment								
Post	24.57	18.79	17.19	9.99	2.8354	0.0000	1.8461	0.0000
PostxReluctant	0.55	0.92	-0.71	1.09	1.3303	0.0000	33.9633	0.0000
Panel B: Companies Act Amendment								
Post	9.90	11.51	5.66	5.97	239.0679	0.4568	4.2904	0.0000
PostxReluctant	42.31	28.01	25.40	11.27	0.1486	-0.1992	0.8586	0.0000

Table 4.18 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the volume and presentation of SBM disclosures for Reluctant Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. StrategySentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from (a) highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary or (b) the top ten keywords from topics salient to SBM sections and related to the external environment or internal resources. GeneralSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from highly ubiquitous words appearing in the SBM corpus that are salient to SBM commentary. ExternalSentences is the number of sentences in the front half of the annual report classified as strategy-related with at least one word from the top ten keywords from topics salient to SBM sections related to the external environment. InternalSentences is the number of sentences in the front half of the annual report classified as strategy-related. Sentences are classified as strategy-related if they contain at least one word from the top ten keywords from topics salient to SBM sections related to internal resources. SBM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. SBM\_Count is a count of the number of sections identified by managers as being strategy related, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of SBM content: “strategy”, “strategies”, “strategic”, “business model”, “key performance indicator” and “KPI”. BM\_Indicator is an indicator variable taking a value of 1 if the report contains at least one section identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. BM\_Count is a count of the number of sections identified by managers as being related to business models and/or KPIs, and zero otherwise. The following n-grams are used to identify sections containing a high fraction of business model or KPI content: “business model”, “key performance indicator” and “KPI”. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable. Effects are estimated for the average firm. For count variables, the table presents the change in the number of sentences. For binary variables, the table presents the odds ratio.

**Table 4.19 - Coefficient estimates of regressions comparing the response of Reluctant Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.137 (0.679)	2.752 (1.974)	0.949 (1.785)	1.396 (2.477)	-0.017 (0.086)
PostxReluctant	-0.137 (0.891)	-1.463 (2.643)	-2.609 (2.039)	2.267 (2.978)	0.059 (0.106)
RD_Binary	0.674 (1.482)	-3.266 (3.497)	-1.503 (3.124)	-2.236 (3.698)	0.140 (0.110)
Loss_Binary	1.045 (0.639)	-0.749 (1.991)	3.139 * (1.661)	-3.826 (2.444)	-0.231 (0.077)
NSEG	1.036 (1.149)	2.617 (3.854)	-1.679 (2.203)	3.829 (3.659)	-0.091 (0.128)
ROA	-1.374 (2.509)	2.971 (6.114)	5.805 (7.840)	-1.341 (8.350)	0.343 (0.191)
DeltaROA	0.082 (0.133)	0.102 (0.307)	0.151 (0.233)	-0.148 (0.358)	0.037 (0.011)
Returns	0.929 ** (0.377)	-2.101 * (1.239)	0.804 (0.837)	-2.515 * (1.427)	0.092 (0.043)
Size	1.297 *** (0.474)	3.584 ** (1.478)	-3.178 *** (1.071)	6.588 *** (1.763)	0.152 (0.053)
FinStatWords	-3.914 *** (0.887)	-5.609 ** (2.424)	1.367 (2.001)	-6.497 ** (2.540)	-0.018 (0.097)
MarketToBook	-0.059 * (0.034)	-0.126 (0.086)	-0.054 (0.090)	-0.100 (0.112)	0.004 (0.003)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
GenericStrategy	0.275 (0.194)	-1.163 ** (0.592)	-0.630 (0.439)	-0.569 (0.615)	0.034 (0.023)

N	2924	2924	2924	2924	2924
(Psuedo) Adj. R2	0.718	0.606	0.554	0.623	0.596
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	Yes

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel B: Companies Act Amendment					
Post	1.897 (1.319)	9.725 *** (2.547)	-8.572 *** (1.921)	18.348 *** (3.223)	-0.069 (0.114)
PostxReluctant	-1.796 (1.437)	4.972 (3.389)	3.495 (2.224)	0.615 (3.904)	-0.289 (0.132)
RD_Binary	-0.106 (1.015)	4.584 (3.330)	-6.668 (4.164)	10.871 ** (4.976)	-0.372 (0.171)
Loss_Binary	-1.410 (1.203)	-0.019 (3.144)	1.934 (1.985)	-1.238 (3.326)	-0.225 (0.116)
NSEG	2.020 (1.789)	0.430 (4.009)	-4.552 ** (2.116)	5.574 (4.358)	0.190 (0.117)
ROA	1.342 (5.861)	-17.763 (14.623)	8.747 (10.769)	-20.889 (16.510)	1.845 (0.596)
DeltaROA	-0.347 (0.243)	0.720 (0.729)	-0.018 (0.445)	0.558 (0.778)	0.012 (0.027)
Returns	0.081 (0.882)	0.085 (1.532)	-1.256 (1.260)	1.278 (1.975)	0.095 (0.074)
Size	-0.387 (1.064)	3.670 * (1.885)	1.188 (2.084)	1.911 (2.663)	0.113 (0.065)
FinStatWords	-2.461 (1.897)	0.113 (3.658)	5.250 ** (2.428)	-4.918 (3.249)	-0.121 (0.173)
MarketToBook	0.030 (0.113)	0.356 (0.226)	-0.081 (0.158)	0.426 ** (0.192)	0.000 (0.010)
NewEquity	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)

GenericStrategy	0.237 (0.371)	-0.237 (0.862)	0.488 (0.401)	-0.531 (0.810)	-0.042 (0.036)
N	1790	1790	1790	1790	1790
(Psuedo) Adj. R2	0.710	0.705	0.605	0.698	0.656
Model	OLS	OLS	OLS	OLS	OLS
Firm FE	Yes	Yes	Yes	Yes	

Table 4.19 presents regression results examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveTone is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. RD\_Binary is a binary variable taking a value of one where R&D expenditure (including amortized R&D expenses) scaled by total sales exceeds 5%, and zero otherwise. Loss\_Binary is a binary variable taking a value of one where the firm is loss-making from continuing operations. NSEG is the natural log of the number of business segments. ROA is operating income scaled by lagged total assets.  $\Delta$ ROA is the percentage change in return on assets where return on assets is defined as operating income scaled by lagged total assets. Returns is the 12-month return for the period ending in the month of the financial year end. Size is natural logarithm of market capitalization at financial year end. FinStatWords is the (log) word count of the financial statements. MarketToBook is market value of equity scaled by the book value of equity. NewEquity is net proceeds from new equity issuance. Generic strategy as measured by Bentley et al. (2013)'s quantitative score of the Miles and Snow typology where higher (lower) values are associated with prospector (defender) firms. Coefficient estimates and standard errors are presented after multiplying by a factor of 1000 to ease presentation.

**Table 4.20 - Economic significance of regressions comparing the response of Reluctant Main Market and AIM firms to UK regulatory changes on the best practice properties of disclosures on strategy and business model**

	Specificity	LongTerm	ShortTerm	NetLongTerm	NetPositiveTone
Panel A: Corporate Governance Code Amendment					
Post	-0.16%	3.35%	2.21%	3.56%	-1.92%
PostxReluctant	-0.16%	-1.78%	-6.07%	5.77%	6.52%
Panel B: Companies Act Amendment					
Post	2.13%	10.35%	-23.37%	31.93%	-7.58%
PostxReluctant	-2.02%	5.29%	9.53%	1.07%	-31.71%

Table 4.20 presents estimates of economic effects of regressions examining the impact of two regulatory changes on the best practice properties of SBM disclosures for Reluctant Main Market and AIM firms. Panel A focuses on the inclusion of a comply or explain provision in the UK Corporate Governance Code that mandates disclosures of strategy and business model. Panel B presents results for the inclusion of a legal requirement into the UK Companies Act to provide disclosure of strategy and business model. Specificity is the total number of named entities scaled by the total number of words. LongTerm is the total number of sentences containing a long-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. ShortTerm is the total number of sentences containing a short-term n-gram (as defined by Brochet et al. (2015)) scaled by the total number of sentences. NetLongTerm is the number of sentences containing long-term n-grams less the number of sentences containing short-term n-grams (as defined by Brochet et al. (2015)), scaled by the total number of sentences. NetPositiveToneForward is the total number of phrases in SBM commentary identified as being positive less the total number of phrases identified as being negative using the bigram list provided by Garcia et al. (2023), scaled by the total number of words in SBM sentences. Post is an indicator variable taking a value of one if the annual report is published in the period after the regulatory intervention and zero otherwise. Reluctant is an indicator variable taking a value of one if the mean SBM index score in the pre-intervention period is above median, and zero otherwise. SBM index score is calculated as the first principal component of Strategy\_Sentences\_ExSBM, Strategy\_Sentences\_Words\_ExSBM and SBM\_Indicator. Economic effects are calculated as the change in the dependent variable for a one-unit change in the independent variable scaled by the unconditional mean of the dependent variable.



## Chapter 5 Conclusion

With academics and policymakers raising the alarm about the shortcomings of traditional corporate reporting, there are growing calls for more commentary on strategy and business model (SBM) to shift the focus of management and investors toward long term value creation and furnishing stakeholders with relevant information to make effective economic decisions (CFA Institute, 2006; International Accounting Standards Board [IASB], 2021; Lev and Gu, 2016; Securities and Exchange Commission [SEC], 2016). Against this backdrop, my dissertation answers two important research questions: whether and how managers provide meaningful insights on SBM matters when pressed to explain how they create and maintain value? And how do SBM reporting properties change in response to a disclosure mandate, and does the form of the mandate matter? Answering these questions is important given moves by regulators and policymakers to review current or consider implementing disclosure mandates (European Commission, 2017; Financial Reporting Council [FRC], 2019; IASB, 2021; SEC, 2020) despite substantial costs to SBM disclosures (Bini et al., 2023; Menon, 2018).

In Chapter 3, I construct the first large-scale corpus of SBM commentary to distinguish between three perspectives on SBM commentary. I reject the prediction that SBM commentary is merely padding; rather, themes prominent in the SBM corpus align with those identified in popular strategy frameworks and managers tailor the discussion of SBM topics to their unique circumstances. However, consistent with symbolic rather than fully informative reporting, I find SBM commentary is less specific, less precise about time horizon (short- and long-term), and less balanced (more positive) in tone relative to general management commentary. I conclude that symbolic compliance and legitimization characterize the typical annual report discussion of SBM. In further analyses, I identify proprietary cost considerations and obfuscation as key determinants of symbolic reporting.

Chapter 3 contributes to the SBM disclosure literature by providing evidence on the properties of SBM commentary where management are pressed to say something. I contribute the finding that pressure from stakeholders for greater transparency on value creation has only had limited success. My analysis pinpoints areas where reporting remains deficient and reveals that SBM commentary is typically symbolic in nature. My analysis in Chapter 3 also contributes to the symbolic reporting literature. Research reveals that managers report symbolically on various annual report themes to establish legitimacy (Bothello et al., 2023; Cho et al., 2015; Crilly et al., 2016; Westphal and Zajac, 1998). I extend this work to the central topic of SBM commentary. Results show that the desire to avoid disclosing information beneficial to competitors, and an attempt to obfuscate poor performance explain why the quality of SBM disclosures often falls short of the standard users seek. My results illustrate the contrasting roles that symbolic reporting can play for managers and shareholders. On the one hand, symbolic reporting can benefit shareholders by enabling management to comply with reporting requirements while simultaneously limiting the costs of increased transparency. On the other hand, management can apply symbolism opportunistically to obscure poor performance and confound shareholder monitoring.

In Chapter 4, I answer how SBM reporting properties change in response to a disclosure mandate, and whether the form of the mandate matter. I construct empirical measures for a menu of reporting properties including volume, topic content, presentation and effectiveness. I apply these measures to the novel UK regulatory environment to compare empirically the disclosure properties in voluntary, comply or explain and legal requirement regimes. My results suggest that while presentation materially adapted following the comply or explain provision, firms failed to respond substantively in terms of volume or best practice features. In contrast, I find clear evidence firms respond to enacting the same disclosure requirements in law by incrementally increasing the volume of SBM disclosure, improving coverage across a broad

menu of SBM themes, and disclosing information with greater focus on the long term. Both firms (i) previously remaining silent and (ii) providing substantive disclosure respond materially to the legal requirement, with evidence suggesting that previously resistant firms close the disclosure gap.

My analysis in Chapter 4 makes several contributions. First, I contribute to the SBM literature by going beyond an analysis of disclosure volume to investigate the response of firms to reporting mandates across reporting themes and the qualitative characteristics predicted by regulators to influence disclosures usefulness (Beattie and Smith, 2013; Wang et al., 2023). My analysis comparing how firms respond to different forms of SBM mandate are relevant both to the academic literature and policymakers currently considering SBM disclosure regulation (FRC, 2019; IASB, 2021; SEC, 2020). Second, more broadly I contribute to the non-financial disclosure literature. Recent literature advocates going beyond viewing regulation of non-financial information as a simple, binary voluntary-mandatory choice to instead consider the form of the regulation (e.g., Christensen et al., 2021). Empirical evidence comparing company decisions (such as disclosure choice) over time and across jurisdictions is rare (Ho, 2017). I contribute to the emerging literature examining disclosure response to regulatory mandates by extending the literature to the central topic in non-financial reporting of SBM commentary and going beyond simple volume measures. Further, my novel institutional setting facilitates direct comparison of firm responses to different forms of regulatory mandate, holding the disclosure requirements constant.

The empirical analyses presented in Chapter 3 and Chapter 4 are subject to several limitations. First, extracting SBM commentary from glossy annual reports without standardized headings necessitates trading off type I and type II errors. In Chapter 3, my objective is to construct a representative corpus of SBM commentary. I therefore choose to compile sections clearly demarcated by managers as being strategy-related to avoid tainting

the corpus with non-SBM commentary. However, this means I naturally omit SBM content appearing in other annual report sections. In Chapter 4, I seek to capture how SBM commentary changes in different regulatory regimes, including voluntary regimes where disclosure is noted by prior literature as being sparse (e.g., Morris and Tronnes, 2018). Therefore, it is imperative that I capture SBM commentary in all narrative sections rather than SBM sections only. While my empirical strategy seeks to mitigate the risk that I inadvertently capture non-SBM commentary by focusing only on salient SBM topics, the nature of word list approaches means SBM keywords may be used in a different context which is not SBM-related. Although outside the scope of this dissertation, there may be opportunity to refine the identification of SBM commentary for future research by developing a classification algorithm to separate sentences or paragraphs into strategy versus non-strategy commentary.

Similarly, a second limitation to my empirical analysis is the use of bag-of-word approaches. Such approaches, like the LDA topic modelling approach in Chapter 3 or the word list approaches to measuring disclosure tone in Chapter 4, does not consider the semantic meaning or context of words and phrases (El-Haj et al., 2019; Lewis and Young, 2019).<sup>64</sup> This presents a challenge for my empirical analysis, such as the appearance of polysemic words introducing noise to my distinctiveness tests in Chapter 3.<sup>65</sup> In light of these shortcomings, I take the following steps. First, I make research design choices in the construction of my LDA model in Chapter 3 by following best practices in computational linguistics research (such as calculating coherence scores and completing word intrusion tasks) which focus on interpretability and meaning. Second, when measuring disclosure properties such as forward-

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<sup>64</sup> A classic example is the word “bank”. In some contexts, a “bank” could refer to a financial institution. In other contexts, a “bank” could be used to describe the land alongside a river. Bag-of-words approaches are ambivalent to the context in which a word is used.

<sup>65</sup> For example, I find the *Efficiency* topic is not salient to SBM commentary. Table 3.1 shows that one of the top ten keywords in the topic is “plan”. While it may be expected that “plan” should be salient to SBM commentary if management talk about a “strategic plan” or “investment plan”, it is likely that “plan” appears frequently in my reference sections, such as “long term investment plans” in the case of executive remuneration.

looking orientation or tone, I select or adapt word lists that use n-grams rather than single words to better capture semantic meaning. Further improvements could be made in future research by going beyond bag-of-words approaches to use either topic models which consider context, such as the *lda2vec* model (Moody, 2016), or constructing large language models to measure disclosure properties, such as Google's Bidirectional Encoder Representation of Transformer (BERT). These approaches translate text into vector representations which capture the order and combinations of words. However, such approaches require extensive task-specific fine tuning and lie outside the scope of this dissertation.

More broadly, my dissertation focuses on the textual properties of SBM commentary. Other features of SBM disclosure likely influence the value of information to users. The disclosure processing literature argues that presentation impacts how users extract and interpret information (Blankespoor et al., 2020). For example, there is current debate around how information is presented, such as in the form of narrative text or formatted into diagrams, infographics or tables. Considering these disclosure properties is particularly important for SBM reporting, with some users finding business model disclosures are most effectively presented through a combination of infographics and narrative commentary (FRC, 2016). Analysis of non-text reporting elements is outside the scope of this dissertation because automated techniques to extract, parse and interpret infographics are in early development (e.g., Bylinskii et al., 2017). In the future, considering the formatting of SBM information could yield interesting insights and contribute a further dimension to the analysis of how firms respond to disclosure mandates.

There are two further potential avenues for future research to expand the work conducted in this thesis. First, future work could go beyond examining the properties of disclosure to examine determine the accuracy of disclosures. Specifically, a firm may present a comprehensive disclosure of SBM that aligns with best practices but is not reflective of the

strategy and business model pursued. Such decoupling of disclosure has been observed in other settings, such as ESG disclosures (Bothello et al., 2023) and management control systems (Laguecir and Leca, 2022). My empirical approach in this thesis is not able to identify such instances. One way to approach this is to draw on research which relies on financial ratios to allocate firms to different business models (see e.g., Ballas et al., 2020). Comparison of such a classification with the content of disclosure could shed light on the extent to which SBM disclosure is decoupled from the economics of the firm.

Second, this thesis complements existing literature which examines the capital market effects of SBM disclosure mandates by investigating how disclosure properties change in response to regulation. While Athanasakou et al. (2022) demonstrate cascade effects to other disclosure channels and Park (2023) finds an increase in intangible investments, the real effects of SBM disclosure mandates remains underexplored. One direction could be to look at capital allocation across the industry in the spirit of Breuer (2021). Specifically, conditional on firms responding to disclosure mandates by increasing and improving SBM commentary, that investors are better informed about industry conditions and the competitive landscape across firms may spur ownership dispersion at the aggregate level. In the product market, that firms become better informed about rivals may mean an increase in competition intensity. At the same time, learning from mandates disclosures could help firms invest more efficiently and avoid duplicate market-intelligence efforts which would lead to improved productivity. It is an empirical question whether at the aggregate level the SBM reporting mandates improve productivity beyond the cost of revealing proprietary information (Roychowdhury et al., 2019).

Despite these limitations, this dissertation contributes to the accounting literature by examining how firms discuss a central topic to economic decision making in annual reports and how firms respond to different forms of disclosure mandate. Further, the results of my analysis are likely to be of value to regulators and policymakers currently reviewing or

considering mandating disclosure requirements. Specifically, policymakers are undertaking projects to understand whether to implement or adapt reporting rules around strategy and business model (e.g., FRC, 2019). Practical questions regulators are seeking to address include how strategy and business model are described and communicated in annual reports, how the business model is used as a central link between other disclosures in the annual report and highlight current gold standard reporting practice. Similarly, the IASB (2021) are developing a Management Commentary statement which places commentary on strategy and business model centre stage. It will be at the discretion of local regulators to enforce. My findings that the form of the regulatory mandate matters could be of value for local regulators deciding how to enforce the disclosure mandate.

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