The Effects of Financial Reporting and Disclosure on Corporate Investment: A Review

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Abstract

A fundamental question in accounting is whether and to what extent financial reporting facilitates the allocation of capital to the right investment projects. Over the last two decades, a large and growing body of literature has contributed to our understanding of whether and why financial reporting affects investment decision-making. We review the empirical literature on this topic and highlight opportunities for future research.

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Table 1
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1. Introduction

We review the empirical literature investigating the influence of financial reporting and disclosure on corporate investment decisions. A fundamental question in accounting is whether and to what extent financial reporting facilitates the allocation of capital to the right investment projects. In a frictionless world, such as that modeled by Modigliani and Miller (1958), every project with a positive net present value (NPV) is funded as it arises, and negative NPV projects are not funded. In practice, a variety of frictions prevent this perfect outcome, with perhaps the most intuitive and widely-discussed one being frictions arising from information asymmetries (Hubbard, 1998; Stein, 2003). Over the last two decades, a large and growing body of literature has contributed to our understanding of whether and why financial reporting affects investment. Such research efforts have also uncovered unforeseen and perhaps unintended consequences of financial reporting. Our objective in this review is to synthesize this growing stream of empirical archival research in an unified framework and to highlight opportunities for future research.[1]

Much of the early literature on the "economic consequences" of financial reporting suggests that financial reporting affects stock prices and contracts (e.g., Ball and Brown, 1968; Beaver, 1968; Watts and Zimmerman, 1986), with implications for firm value. Initial efforts to establish a link between financial accounting and firm value focus on testing whether financial reporting transparency lowers the cost of capital (Healy and Palepu, 2001; Verrecchia, 2001; Beyer et al., 2010) and/or improves contracting efficiency (Bushman and Smith, 2001; Lambert, 2001; Armstrong et al., 2010).[2] An unanswered question from this stream of work is whether financial reporting affects managers' investment decisions, and consequently firm value. Capturing this

[1] We refer readers interested in the theoretical literature to a recent review by Kanodia and Sapra (2016).
[2] See also Core (2001), Dye (2001), Magee (2001), Sloan (2001), and Brickley and Zimmerman (2010) for discussions of these literatures.

sentiment, Bushman and Smith (2001) state "accounting information potentially enhances the investment decisions and productivity of firms…we suggest future research that directly examines the effects of financial accounting information on economic performance."

Most of the literature inspired by Bushman and Smith's (2001) call for research focuses on corporate investment decisions such as capital expenditures, mergers and acquisitions (M&A), and research and development (R&D). The focus on investment reflects the notion that investment decisions are a primary means through which firms create value for their investors and stakeholders. In fact, in the frictionless Modigliani-Miller world, investment is the only factor affecting firm value. Guided by the progress in the literature, we restrict the scope of our review to studies examining corporate investment and, for the most part, refrain from discussing the evidence relating financial reporting to other drivers of firm value such as financing decisions (e.g., capital issuance, payout policy).[3] For the purposes of our discussion, a firm is considered to be investing efficiently if it invests in every project with a positive NPV as such projects become available and does not invest in projects with negative NPV (e.g., see Jorgenson, 1963; Hayashi, 1982).

Several attributes of the accounting system are purported to influence investment decisions and they can be broadly classified into two non-mutually exclusive groups: (i) attributes capturing the precision of accounting information, and (ii) attributes capturing the nature and extent of disclosure related to a transaction. Examples of financial reporting attributes related to the precision of accounting information include earnings quality proxies, changes in accounting standards, voluntary disclosures, etc. Examples of attributes related to the nature and extent of

[3] To narrow the scope, our review also focuses only on non-financial institutions. The financial sector regulation introduces a variety of different incentives issues that diverge from the framework of our review. We refer the reader interested in the financial sector to reviews by Beatty and Liao (2014) and Acharya and Ryan (2016).

disclosure include the frequency of financial reporting, which economic transactions are measured and which are not measured, how they are measured and aggregated, etc (Kanodia and Sapra, 2016).[4]

Why might financial reporting affect investment choices and hence investment efficiency? As we describe in Figure 1, we organize the literature into four non-mutually-exclusive channels condensed into two broad categories. The first category involves the role of financial reporting in a world with information asymmetry that results in agency frictions. The second category hinges on the presence of uncertainty about investment opportunities, without requiring information asymmetry among agents.

Within an agency framework, accounting information can affect investment decisions by influencing information asymmetry between managers and shareholders (and between other stakeholders of a firm, for example, shareholders and debtholders) in two ways. First, financial reporting can improve investment decisions by reducing information asymmetry between managers and investors, as well as among investors, which can affect adverse selection costs and consequently the cost of raising external capital. Second, accounting information can improve investment decisions by reducing moral hazard costs arising from agency conflicts among various stakeholders in the firm. At the same time, the use of accounting information in contracts and/or for valuation can contribute to moral hazard by incentivizing managers to achieve financial reporting benchmarks, in part by altering their investment choices. Sections 2 and 3 discuss the adverse selection and moral hazard channels.

[4] Of course, these two attributes are related. For instance, to the extent that increasing reporting frequency improves reporting quality, it will also have a precision effect. This distinction will become clearer when we discuss myopic incentives arising from reporting benchmarks.

The second broad reason why financial reporting can affect investment decisions abstracts away from information asymmetry frictions and suggests that financial reporting can alter managers' (and shareholders') information sets when there is uncertainty about investment opportunities. Our review highlights two channels through which managers (and shareholders) can learn new information about their investment opportunity set. First, accounting information disclosed by *peer* firms can help reduce uncertainty about growth opportunities available to related firms, particularly when a firm is affected by common demand and supply conditions as the disclosing peer firms.[5] Second, in the presence of information acquisition and processing costs, disclosure requirements and financial reporting regulation (e.g., internal control testing) can induce firms to collect and process additional information that affect managers' information sets and thus their investment decisions. Sections 4 and 5 discuss the role of peer information and a firm's own disclosure requirements in informing managers. Much of the literature we review can be characterized as relying on one or more of the four channels in Figure 1. However, in Section 6, we discuss other channels that have received less attention in the literature.

In the remainder of this section, we highlight five insights that emerge from our review (we provide ideas to address the issues in the later sections). First, the literature documenting that financial reporting can *improve* investment efficiency has evolved somewhat independently from the literature showing that financial reporting can induce myopia and *reduce* investment efficiency (e.g., when a firm cuts R&D to meet financial reporting goals). As a result, although the evidence in these literatures is closely related, they do not provide a cohesive picture of the economic consequences of financial reporting that incorporates both the positive and negative investment incentives that arise from financial reporting. Key to the issue of whether financial reporting

[5] Information disclosed by peer firms can also reduce adverse selection and moral hazard costs for related firms, which we discuss in Section 4.

alleviates or exacerbates investment distortions is a clearer understanding of the information frictions (e.g., adverse selection, moral hazard, uncertainty about growth opportunities, etc.) that transparency is expected to solve. More research is necessary to reconcile these two streams of the literature.

Second, in addition to having both beneficial and distortionary investment effects at an individual firm-level, financial reporting also generates significant externalities for peer firms. As a result, it is difficult to estimate the aggregate effect of financial reporting on investment decisions that accounts for (i) the firm-specific positive and negative effects (as discussed in the first point above) as well as (ii) the positive and negative spillover effects on non-disclosing firms. As an illustration, consider the case of increased reporting frequency. On the one hand, Fu et al. (2012) document that an increase in reporting frequency can be beneficial because it reduces the cost of capital. On the other hand, Kraft et al. (2018) show that increases in reporting frequency can be detrimental to shareholders because it leads managers to reduce investment, presumably by exacerbating myopic incentives. Most recently, Kajüter et al. (2018) find that increases in reporting frequency is net costly for small firms (due to compliance costs), but that increased reporting frequency by larger firms have spillover benefits for smaller firms exempt from the reporting requirements. Collectively, these studies provide important evidence on several pieces of a large and multidimensional issue. However, the question of whether an increase in reporting frequency is desirable from a regulator's perspective critically depend on the sum of all these pieces and the net impact of financial reporting on aggregate investment. A concerted effort by researchers to estimate and discuss the economic magnitudes of the effect of financial reporting on investment will help answer the above question.

Third, the findings in most studies are consistent with multiple mechanisms. For example, an observed increase in investment after an increase in financial reporting transparency may be the result of the increased transparency reducing adverse selection costs. But it may also be consistent with the increase in transparency allowing shareholders to incentivize managers to undertake new investment projects, that is, a mitigation of moral hazard. Studies identifying and isolating specific mechanisms through which accounting information affects investment decisions will help further our understanding of when and how accounting information might be most valuable. In addition, they will also help us compare the role of accounting with other "curative mechanisms" that help resolve agency frictions.

Fourth, most of the literature concentrates on the classic agency frictions arising from manager-shareholder conflicts. However, there exist several related topics that have received less attention. For example, financial reporting information can improve investment efficiency by reducing conflicts of interests between shareholders and debtholder, by alleviating agency issues within multi-segment organizations, as well as conflicts of interest between shareholders and a broader stakeholder group that includes customers, employees, etc. Similarly, there exists relatively less research on the "learning" channel in which financial reporting information improves the manager's information set about future investment opportunities. There is also little evidence on whether information processing frictions (e.g., limited attention or bounded rationality) as well as behavioral biases (e.g., loss aversion, fixation on salient metrics, miscalibration) lead to an association between financial reporting and investment choices. As such, there are several research opportunities that we highlight along the above lines throughout the review.

Last, a criticism of this literature is that, while investment is observable, investment efficiency is not and researchers often use many imperfect proxies, each with their own limitations. Specifically, a large literature in economics and finance discuss the significant inferential challenges that arise due to measurement error in proxies for growth opportunities, conflicting evidence regarding the validity of proxies for financing constraint, and misspecification in the empirical investment model based on *q* theory.[6] In addition, as discussed in Dechow et al. (2010), financial reporting quality is also an elusive construct without a one-size-fits-all proxy that conforms to all research questions. This issue is further complicated in our setting as the concept of reporting quality encompasses proxies for both voluntary and mandatory disclosures. Researchers have attempted to address these measurement issues by either selecting proxies for financial reporting quality tailored to suit a research question, and by relying on multiple proxies for efficient investment. However, more needs to be done to address the measurement challenges in the literature.[7]

Aside from measurement issues, our review also highlights two, somewhat unique, features of the "investment" that make endogeneity challenges especially difficult to address. First, as Leuz and Wysocki (2016) note, investment is a "slow moving" variable relative to market-based variables (e.g., returns or spreads) that have immediate responses to a given "treatment." As a result, it is hard to use regulatory shocks to identify investment effects as has been done in other literatures (e.g., when looking at stock returns or bid-ask spreads). Second, the "true" financial performance of a firm is integrally linked to its investment opportunities, which makes it challenging for reporting quality proxies to separate out the *measurement* of performance from the

[6] See, e.g., Leahy (1996), Kaplan and Zingales (1997), Erickson and Whited (2000), Gomes (2001), Hennessy (2004), and Farre-Mensa and Ljungqvist (2016), among others.

[7] We plan to incorporate a discussion of this literature to provide guidance for researchers working on this topic.

true *underlying* performance of a firm. For example, firms may disclose more information in footnotes because they are more transparent (a financial reporting decision) or because they engage in more transactions (an economic/investment decision). While some progress has been made along these lines, we discuss specific areas in which endogeneity concerns are more/less severe and offer guidance for future research. Nonetheless, this stream of research would still benefit from research designs with better identification that have the potential to establish causality and allow for more precise measurement of economic magnitudes.

2. The adverse selection channel

2.1 Conceptual underpinnings

One of the primary mechanisms through which financial reporting is hypothesized to facilitate investment decisions is through a reduction in adverse selection costs resulting from information asymmetry between managers and capital providers. Accounting information can reduce adverse selection problems between the firm and new investors (stockholders, creditors, etc.), e.g., if financial reports better describe the value of assets in place or of existing investment opportunities. In this case, to the extent that the information asymmetry between managers and investors is reduced, investors would be more forthcoming with capital, which would then enable financially constrained firms to tap into new investment opportunities (Myers and Majluf, 1984).

In addition, accounting information can also mitigate adverse selection among investors, thereby improving liquidity in observable security prices (Verrecchia, 2001). Consistent with this argument, empirical studies have documented a positive relation between financial reporting quality and stock price liquidity (e.g., Healy et al., 1999; Leuz and Verrecchia, 2000). Further, to the extent that information asymmetry between managers and investors or information asymmetry among investors is non-diversifiable, then it would also affect the rate of return expected by

investors, further facilitating access to capital.[8] The implications are that, by reducing information asymmetry, financial reporting transparency improves firms' access to external capital and allows firms to increase investment efficiency by tapping into new investment opportunities.

2.2 Empirical evidence and open issues

Early studies in this literature investigate the relation between accounting information and investment decisions by acknowledging multiple potential channels such as the reduction in adverse selection costs (as well as moral hazard costs which we discuss in Section 3), without explicitly testing the specific intermediate channel. For example, using both country-level and firm-level measures of financial reporting quality and investment-cash flow sensitivity as a proxy for investment efficiency, Biddle and Hilary (2006) document a positive association between accounting information and investment efficiency. They interpret their findings as financial reporting quality improving investment efficiency by reducing adverse selection as well as moral hazard costs. Biddle et al. (2009) extend the findings in Biddle and Hilary (2006) by showing that the relation between proxies for accounting quality and the level of investment is positive among financially constrained firms but negative among cash-rich firms. Since constrained firms are more likely to under-invest because of adverse selection costs, but cash-rich firms are more prone to over-invest due to moral hazard frictions, they interpret the results as suggesting that higher reporting quality reduces both adverse selection and moral hazard costs associated with under- and over-investment.

[8] The literature on the relation between financial reporting quality and expected return is large and beyond the scope of this review. Some channels debated in the literature include a reduction in estimation risk (Easley and O'Hara, 2004; Lambert et al., 2007, 2012; Hughes et al., 2007) and improved risk sharing (Merton, 1987; Diamond and Verrecchia, 1991).

Chen et al. (2011) study whether reporting quality improves investment efficiency among private firms. Private firms are interesting because (among other things) the moral hazard conflict between managers and shareholders is not as acute relative to public firms. In addition, because private firms rely on bank financing, Chen et al. (2011) argue that even information asymmetry between managers and suppliers of capital is not as pronounced. Nonetheless, the authors find evidence consistent with private firms with higher reporting quality investing more efficiently. Based on cross-sectional analyses the authors then conclude that the findings are due to the demand for earnings information in bank lending as well as tax incentives.

One important point illustrated by the discussion of the studies above is that it is often the case that the evidence is consistent with financial reporting affecting investment efficiency via multiple channels (e.g., adverse selection, moral hazard, tax incentives). Below we discuss some studies that attempt to isolate a specific channel. Nonetheless, a general observation that permeates all sections of our review is that the findings in many studies are consistent with multiple mechanisms driving the effect of financial reporting on investment. Future research can contribute to this literature by attempting to isolate and calibrate the relative importance of a specific channel.

Evidence in existing studies suggests that financial reporting can ease financing frictions and allow firms to improve investment efficiency by tapping into new investment opportunities. The key challenge in this literature, however, is to deal with endogeneity, which can arise in various forms. For example, it is possible that an omitted correlated factor such as managerial ability influences both reporting quality and investment efficiency (e.g., skilled managers can both invest more efficiently and disclose better the underlying activities of their firms). Alternatively, to the extent that financial reporting quality and investment are controlled by the manager, it is

possible that the manager improves reporting (say by increasing disclosure in the MD&A) in periods of increasing growth opportunities.

While dealing with endogeneity remains a challenge, some studies have made progress in this regard by estimating models in changes (as opposed to cross-sectional level) and by identifying settings with (arguably) exogenous changes in adverse selection and reporting quality. For instance, Cheng et al. (2013) use the remediation of internal control weaknesses as a proxy for time-series variation in financial reporting quality. They then show that (i) firms substantially under- and/or over-invest prior to the disclosure of internal control weaknesses, but (ii) these investment distortions are reduced subsequent to the remediation of internal control deficiencies. More recently, Dou et al. (2018) exploit the adoption of SFAS 123R as an exogenous mandatory change in the information available to shareholders about employee stock options (ESOs). They report that financially constrained firms with the most unreliable estimates of ESO costs before the new rule experience an increase in investment after the introduction of the new regime. While these studies are still susceptible to endogeneity threats arising from changes in omitted variables (e.g., changes in growth opportunities) around the remediation of internal control weakness and the introduction of SFAS 123R, they do mitigate concerns that their results are driven by time-invariant unobservable factors such as managerial ability.[9]

Other studies attempt to address endogeneity by identifying settings with exogenous variation in adverse selection costs as well as financial reporting quality. Balakrishnan et al. (2014) exploit time-series variation in financing constraints due to macro-economic fluctuations in the value of a firm's collateralizable assets as a proxy for exogenous variation in adverse selection

[9] Feng et al. (2015) and Harp and Barnes (2018) also study the effect of material weaknesses on inventory and investment decisions. Since their focus is on how internal control weaknesses can affect the quality of managers' internal information sets (as opposed to agency-based explanations), we discuss these papers in Section 5.

costs. The underlying presumption is that lenders are less worried about adverse selection when the firm has collateralizable assets, but would price protect more if the borrower lacks collateralizable assets. Balakrishnan et al. (2014) document that (i) financial reporting quality moderates the sensitivity of investment to fluctuations in collateral value and (ii) firms respond to an increase in adverse selection costs by increasing disclosure.[10] In more recent work, Shroff (2017) exploits a setting in which firms experience an exogenous increase in reporting quality resulting from staggered increases in auditor oversight. Specifically, he exploits the fact that the Public Company Accounting Oversight Board (PCAOB) inspects the audit work of non-U.S. auditors if the auditor has a client that is registered with the SEC (e.g., a cross-listed firm trading in U.S. exchanges). Using staggered auditor inspections as well as variation in the content of their inspection reports, Shroff (2017) finds that non-SEC registered firms audited by a PCAOB-inspected auditor increase capital expenditures following their auditors' inspection. The primary benefit of his design is that it relies on changes in reporting quality driven by spillover effects of a change in regulation unrelated to the focal firm.

A question that arises from the above studies is what can financially constrained firms with low reporting quality do when faced with high adverse selection costs? The evidence in Balakrishnan et al. (2014) suggests that firms respond to an increase in adverse selection costs by increasing disclosure. But if firms voluntarily increase reporting quality and disclosure, how do they make them credible? The issue of credibility in voluntary disclosure has been discussed in other contexts (see, e.g., Rogers and Stocken, 2005) but has also been investigated directly in the

[10] A related study is Ramalingegowda et al. (2013), which exploits the role of financial reporting in the sensitivity of investment to dividends (as opposed to collateral as in Balakrishnan et al., 2014). In a frictionless world the decision to pay dividends should be unrelated to the ability to raise new funds to continue investing. However, in the presence of financing constraints, firms are forced to either pay dividends at the expense of forfeiting investment, or skip the dividend to continue investing. Ramalingegowda et al. (2013) show that investment is less sensitive to dividend decisions for financially constrained firms with higher financial reporting quality relative to constrained firms with low reporting quality.

context of investment. For example, Kausar et al. (2016) exploit a setting in the U.K. (originally examined in Lennox and Pittman, 2011) in which a regulatory change exempts a sample of private firms from a mandatory audit requirement. They find that firms continuing to provide audited financials even after the regulatory exemption are able to raise more capital and increase investment relative to control firms, and that this effect is concentrated among financially constrained firms. The evidence in Kausar et al. (2016) suggests that the information contained in a firm's choice to engage an auditor serves as a signal about the firm's growth opportunities, which helps alleviate adverse selection frictions.[11,12]

Before we conclude this section, we note that the findings in this literature suggest that financially constrained firms can benefit from higher reporting quality by lowering financing costs. A natural follow-up question then is what prevents firms from voluntarily increasing reporting quality? The typical answer to this question is that the evidence doesn't take into account all possible costs associated with higher reporting quality (e.g., proprietary costs of disclosure). More relevant to our survey, section 3 notes that in the presence of moral hazard frictions the manager might derive private benefits from low reporting quality or opacity. For example, prior research (e.g., Berger and Hann, 2007; Hope and Thomas, 2008) finds that multisegment firms hide the performance of underperforming segments due to unresolved agency problems (e.g., empire building incentives). One challenge for this literature, however, is that it is hard to calibrate the potential costs of increasing reporting quality against the estimated economic benefits of increased investment, because of the difficulty in precisely estimating their economic magnitudes. An

[11] A large body of research reviewed by DeFond and Zhang (2014) discusses the role of audits in resolving agency frictions. In this review, we restrict the discussion of the auditing literature to those papers that examine firms' investment decisions.

[12] Relatedly, other studies provide evidence that the relation between reporting quality and investment is a function of the bank's ability to resolve information frictions (Biddle and Hilary, 2006; Beatty et al., 2010).

opportunity remains in the literature to improve estimates of the economic benefits of financial reporting on investment which can help researchers understand the trade-offs associated with changing reporting quality.

Alternatively, it could be that firms do not increase financial reporting quality because they can deal with adverse selection costs via other contracting arrangements. Beatty et al. (2010) argue that one option for these firms is to lease the asset but leave the ownership of the asset with the lessor. Specifically, they predict and find that financially constrained firms with low financial reporting quality are more likely to invest in (off-balance sheet) leased assets as opposed to buying the asset by raising additional external capital. Beatty et al. (2010) also show that the relation between reporting quality and leasing is weaker when banks are in a better position to monitor the borrower and provide financing (as opposed to having the borrower negotiate with lessors).

An interesting implication of Beatty et al. (2010) is that constrained firms can mitigate the financing consequences of having low reporting quality by engaging in alternative financing contracts. This poses a more general question of whether firms can successfully minimize the (various) costs of having low reporting quality by writing different contracts. If the costs of low financial reporting quality can be perfectly remediated through alternative channels, then the actual cost of having low financial reporting quality is lower than the inferences from studies that document the costs associated with low reporting quality without taking these alternative channels into account might suggest.

Overall there has been significant progress in the literature in documenting the effect of financial reporting on investment via the reduction of adverse selection costs. Nonetheless, our review highlights three paths for future work in this area: (i) improvement in identification to better document a causal effect of financial reporting on investment and to calibrate the economic

benefits from this channel, (ii) identification of the mechanisms firms use to provide credible disclosures about future growth opportunities, and (iii) measurement of the costs of improving financial reporting quality as well as identification of other contracting arrangements that firms can use to substitute for low financial reporting quality.

3. The moral hazard channel

3.1 Manager-shareholder conflicts

3.1.1 Conceptual underpinnings

In this section, we discuss the literature on how accounting information can improve investment decisions by reducing moral hazard costs that arise due to manager-shareholder conflicts. Underlying this literature is the notion that managers derive utility from actions that do not coincide with shareholder interests (Berle and Means, 1932; Jensen and Meckling, 1976). A simple example of such a friction is when the manager does not exert as much effort as desired by the shareholders. Similarly, to the extent that managers are under-diversified relative to shareholders, they might engage in actions that reduce firm risk and avoid actions that increase firm risk even if such action increases firm value (Amihud and Lev, 1981). In such a setting, to the extent that accounting information is informative about managers' actions/effort and risk-taking preferences, it can be used by shareholders to reduce moral hazard costs (Jensen and Meckling, 1976; Holmstrom, 1979; Lambert, 2001).[13] For the purpose of this review, we focus on four manifestations of moral hazard behavior that directly influence investment decisions.

First, a well-known manifestation of moral hazard is managers' incentive to over-invest, often referred to as empire building. The idea is that managers have incentives to increase the size

[13] See Bushman and Smith (2001) and Armstrong et al. (2010) for reviews of the empirical literature on the use of accounting information in incentive contracts.

of the firm because managing a larger organization can give the manager more power, potentially higher compensation, and other perquisites. In such a situation, Jensen (1986, 1993) hypothesizes that managers of firms with free cash flows will be more likely to undertake investment projects that increase the size of the firm, even though these investments have negative NPV from the perspective of shareholders (see, e.g., Harford (1999), Richardson (2006), and Hanlon et al. (2015) for empirical evidence).

Second, Bertrand and Mullainathan (2003) propose an alternative manifestation of moral hazard known as the quiet life hypothesis. Under the quiet life hypothesis, managers choose to avoid undertaking actions that increase firm value but require effort. Specifically, they show using plant-level data that when managers are protected from takeover threats (because states adopt anti-takeover laws) they are less likely to liquidate old plants and invest in new plants. As a result, the productivity and profitability of these firms decline.[14]

A third version of moral hazard arises from managers' incentives to reduce firm risk. Managers are over-exposed to the idiosyncratic risk of the firms they are employed by, and are less diversified relative to outside shareholders. Consequently, managers may engage in actions that can reduce their "employment risk" even if such actions are not in the best interests of shareholders. For example, in the context of investment decisions, Amihud and Lev (1981) propose a model in which risk-averse managers have incentives to reduce their employment risk via diversifying acquisitions. Alternatively, the manager might pass up on positive NPV projects

[14] Recently, Karpoff and Wittry (2018) show that inferences from studies using state anti-takeover adoption as a measure of exogenous variation in governance are sensitive to controlling for a firm's institutional and legal features (e.g., the existence of firm-level anti-takeover defenses, the legal regime where the firm is located). Also, Bhojraj et al. (2017) show that anti-takeover provisions can create long-term value by shielding risk averse managers against takeovers.

that are considered too risky from the managers' point of view (but desirable from shareholders' point of view).

The moral hazard scenarions discussed above illustrate how managers' specific incentives may lead them to over- or under-invest relative to shareholders' preferences. Accounting information can play a valuable role in mitigating moral hazard if it facilitates better monitoring of managers' investment decisions, and can be used to incentivize them to avoid making decisions detrimental to investment efficiency.[15]

Finally, in certain settings financial reporting can have distortionary effects on managers' investment decisions. Watts and Zimmerman (1986) note that the significance of financial statement numbers in assessing the financial health and future cash flow prospects of the firm, evaluating managerial performance, and setting contracts with both managers and external parties provides managers with strong incentives to manipulate reported numbers. Kanodia and Sapra (2016) point out that such incentives to achieve reporting goals can manifest in managers becoming myopic in their investment decisions. The possibility that managers are more focused on the short-term than investors in the firm is discussed in studies such as Rogerson (1997) and Reichelstein (1997, 2000). These papers argue that the ex ante non-zero probability of events such as corporate re-organizations and managers' own early departure from the firm for exogenous reasons implies that future financial results are not always attributable to managers' past actions. This in turn makes managers inherently "less patient" relative to shareholders and induces myopic

[15] While we focus on empire building, quiet life and myopia in this section, other forms of agency conflicts such as herding incentives and behavioral biases (e.g., overconfidence) can also affect investment (see Stein (2003) for a review). We discuss these conflicts in various sections below as they relate to the empirical literature discussed in those sections.

investment behavior.[16] Lambert (2001) argues that the myopia problem is exacerbated because in addition to shorter horizons relative to shareholders, managers also enjoy an information advantage with respect to the intertemporal patterns in investments' payoffs. Thus managers have the ability to manipulate any long-term performance metric used to judge managerial investment decisions, and avoid the ex post settling up costs of misleading shareholders in response to their shorter horizons.

Stein (1989) describes a scenario in which the unobservability of managerial action and managers' private information advantage over shareholders can serve to sustain myopic investments even when markets are fully efficient.[17] In his model, investors rely on earnings to make rational forecasts of future earnings, and hence of firm value. This provides managers incentives to manipulate stockholders' signals by "pumping up" current earnings to raise forecasted values. In equilibrium, the market is not fooled – it correctly conjectures that a certain amount of earnings inflation will occur and incorporates that into its predictions. This in turn provides ex-post incentives for managers to behave myopically, which Stein (1989) describes as managers being "trapped" into acting myopically. The preferred cooperative equilibrium of no managerial myopia, and no conjecture of myopia by stock market participants, is not sustainable as a Nash equilibrium. If the market were to conjecture no myopia, managers would have incentives to boost current earnings myopically. As we discuss later in this review, the role of

[16] These papers generally conclude that as long as investment costs are deducted intertemporally from income at the same rate as that at which those invetsments generate benefits inclusive of a cost-of-capital charge, the investment incentive problem can be solved by tying managerial compensation to the firm's residual income. Lambert (2001) describes these results, which are extremely robust across multiple studies as "too good to be true" and suggests they may in part be the result of the common assumption that there is zero information asymmetry between managers and shaeholders about the time patterns in the investments' cash flows.

[17] Stein's (1989) model is based on a conflict between short-term and long-term shareholders, and thus it is set up an adverse selection problem. However, it also encompasses moral hazard, since the key factor generating managerial myopia in the model is the unobservability of managers' actions.

financial reporting in the presence of managerial myopia is more complicated, since reporting has the potential to exacerbate managers' incentives to be myopic by shorting their horizon.[18]

3.1.2. Empirical evidence on empire building, quiet life and risk-taking

As discussed in Section 2, initial studies such as Biddle and Hilary (2006) provide evidence consistent with financial reporting improving investment efficiency by reducing potentially both adverse selection and moral hazard frictions. A stream of the literature focuses on explicitly testing whether accounting information reduces managers' incentives and ability to engage in empire building behavior. For instance, Hope and Thomas (2008) use the passage of SFAS 131 as an event that causes a decline in transparency about foreign operations (i.e., their proxy for lower reporting quality), and study the extent to which the decrease in transparency post-SFAS 131 increases the likelihood that managers engage in empire building.[19] Consistent with this hypothesis, Hope and Thomas (2008) find that after the adoption of SFAS 131, firms experience higher sales growth, but lower profits and firm values. Further, the results are concentrated in foreign investments, where the new regime most significantly impacts shareholders' ability to monitor the manager's investment decisions. Overall, the authors conclude that the evidence is consistent with managers being more likely to engage in empire building when financial reporting quality decreases.

One observation (acknowledged in Hope and Thomas, 2008) is that different moral hazard models can yield the same empirical predictions. For instance, while the empire building

[18] One caveat to the discussion in this section is that myopia induced by reporting objectives may not necessarily be driven by the unobservability of managerial action or the frictions of information asymmetry. Lys and Vincent (1995) document AT&T managers' keen interest in using the pooling treatment for their 1991 acquisition of NCR. Shareholders consistently signaled their disapproval and reacted negatively to any news indicating the acquisition would progress, but this did not deter managers from pursuing it. By the authors' estimates, the AT&T stock lost between $3.9 billion and $6.5 billion in value during the process. Lys and Vincent (1995) attribute AT&T management's behavior to a combination of hubris, bad judgment, and an escalation of commitments.

[19] Underlying the analysis in Hope and Thomas (2008) is the idea that following SFAS 131, managers withhold information on segments with lower profitability due to agency incentives (Berger and Hann, 2007).

hypothesis states that managers have incentives to over-invest when there are agency frictions, the managerial risk-aversion hypothesis also predicts that managers may over-invest if the new investments make the firm more diversified. To date, most of the literature has focused on the level of investment but an opportunity exists to better isolate the effect of financial reporting on the riskiness of managers' investment choices.

A related literature exploits the timely recognition of losses as an attribute of the financial reporting system that moderates managers' desire to engage in empire building behavior. Ball (2001) introduces the idea that a financial reporting system that is timely in recognizing losses potentially incentivizes managers to expedite the termination of loss-making projects, even when such projects generate private benefits for managers. The reason is that timely recognition of losses resulting from this project would directly affect the manager (e.g., via lower compensation). By the same token, timely loss recognition should also disincentivize managers from investing in negative NPV projects for the sake of empire building to the extent that managers anticipate that such investment will bring losses and consequently lower compensation in the future (Ball, 2001; LaFond and Roychowdhury, 2008).

Francis and Martin (2010) empirically investigate the influence of timely loss recognition on investment choice in the context of acquisitions. Measuring timely loss recognition using the Basu (1997) piecewise linear model, they find that firms that are timelier in recognizing losses make more profitable acquisitions. In additional tests, they find that for acquirers with timelier loss recognition, divestitures following acquisitions are less frequent (suggesting better *ex ante* decisions). They also report that when divestitures occur, they happen more quickly, indicative of an earlier termination of projects that are *ex post* negative NPV. Relatedly, in a cross-country study, Bushman et al. (2011) find that timely loss recognition has a positive moderating effect on

the sensitivity of investment to growth opportunities when investment opportunities are declining, but not when they are increasing. Their evidence, along with that in Francis and Martin (2010), suggests that timely loss recognition discourages managers from empire building.[20]

A concern with this literature is that the evidence is consistent with alternative interpretations. For example, McNichols and Stubben (2008) present evidence that poorer quality financial reporting is associated with overinvestment. Specifically, firms experiencing SEC investigations, class action litigation and restatements exhibit significant evidence of over-investment in fixed assets during the misreporting period. As we discuss in section 5, their preferred explanation for this relation is that investment decision-makers inside the firm could believe the misreported growth trend and invest accordingly. More recently, Lawrence et al. (2018) argue that Basu's (1997) measure of timely loss recognition can also capture managers' curtailment of underperforming operations, a phenomenon discussed in Hayn (1995) as managers' exercise the option to abandon poorly performing investments. Thus, the evidence in Francis and Martin (2010) and Bushman et al. (2011) could possibly be a manifestation of managers abandoning loss-making projects, which in turn leads to earlier recognition of losses.

Evidence on the influence of financial reporting on managers' propensity towards risk-taking, and its consequent impact on investment choices, is more limited. Existing studies have mostly focused on regulation encompassing, but not limited to financial reporting, in particular the Sarbanes-Oxley Act (SOX). Bargeron et al. (2010) argue that, among other reasons, the increased role and expanded liability exposure for external directors following SOX reduces directors'

[20] As discussed above, the empirical evidence is sometimes consistent with multiple agency channels. For example, the evidence in Francis and Martin (2010) is consistent with financial reporting reducing managers' empire-building incentives as well as incentives to lead a quiet life.

incentives to approve risky investments that are difficult to monitor. The authors report that risk-taking (proxied for by capital and R&D expenditures, cash retention, and return volatility) reduces post-SOX.[21] In contrast, Albuquerque and Zhu (2018) use the staggered implementation of Section 404 in SOX as an identification strategy to isolate the causal effect of SOX on risk-taking among small firms and find no evidence of reduced risk-taking. Using a different setting, Hayes et al. (2012) study a related question: do changes in mandated reporting rules influence risk-taking? They show that subsequent to the adoption of FAS 123R (requiring the expensing of option compensation), firms substantially reduce the use of stock options. However, they find little evidence that the decline in option usage causes firms to reduce risky investments. Overall, the influence of financial reporting on corporate risk-taking behavior remains an unresolved issue in the literature.

As in section 2, addressing endogeneity issues and isolating specific mechanisms pose a significant challenge in examining the influence of financial reporting on investments. In particular, it is important to understand the degree of control and discretion that managers exert over reporting choices in moral hazard settings. For example, consider the claim that timely loss recognition mitigates empire-building incentives. If managers exercise discretion in timing their losses (Roychowdhury and Martin, 2013), then they must come up with a credible commitment mechanism to execute the timely recognition of losses in order for the shareholders to believe that moral hazard problems can be contained by such a reporting choice. Alternatively, if the reporting decision is controlled by the board/shareholders, then they must be in a position to require higher quality reporting (in this case, timelier loss recognition) from managers. There is extensive research on the relation between accounting information and governance and contracting

[21] See Kang et al. (2010) for related evidence. Further, Cohen et al. (2013) argue that one mechanism explaining the reduction in risk-taking is the reduction in pay-for-performance sensitivity.

mechanisms (see, e.g., Bushman and Smith, 2001 and Armstrong et al., 2010). However, there is little direct evidence on how these intermediate channels (e.g., governance systems, lender monitoring, auditors, etc.) translate into more efficient investments. Overall, while the literature provides evidence of a negative relation between reporting quality and incentives for empire building and quiet life, future research is necessary to tease out these competing interpretations of the results.

3.1.3 Empirical evidence on myopia

Studies such as Reichelstein (1997, 2000), Lambert (2001) and Stein (1988, 1989) propose similar reasons for why managers may be myopic in their investment decisions. Collectively, they argue that the heightened probability of events such as corporate re-organizations, takeovers, and dismissal in the event of poor performance can make managers more focused on reporting higher performance in the short term (where performance is measured using earnings). Additionally, managers may need to sell stock in the near term to meet personal demands for liquidity or access the stock market to issue new shares for the firm. Thus, managers have incentives to undertake investments that either help them extract greater compensation or boost stock prices in the nearer term, and their shorter horizons make them less sensitive to the likelihood of settling up over the long term when the future consequences of their actions are revealed.

There is a long-standing and extensive literature on earnings management to accomplish reporting objectives (see Schipper, 1989, Healy and Wahlen, 1999, and Fields, et al., 2001 for reviews). Over the last twenty years, studies have focused more directly on how managers use investment decisions to meet/beat earnings benchmarks, or more broadly speaking, achieve a

desired financial report objective.[22] Bushee (1998) examines R&D expenditures in a sample of firms whose current earnings *before R&D and taxes* is "marginally lower" than earnings in the previous year. Bushee (1998) documents that the probability of an R&D cut is unusually high in firms that would have reported lower earnings relative to the previous year without an R&D cut. He interprets this finding as evidence of managers' willingness to sacrifice the long-term benefits of R&D for the sake of avoiding earnings declines.[23] Consistent with this argument, Bens et al. (2002) find that firm-years characterized by employee stock option exercises report unusually low R&D and capital expenditures, and unusually high stock repurchases. They interpret their evidence as indicating that managers worried about earnings per share (EPS) dilution from stock options exercises divert resources from value-increasing investments to stock repurchases in an attempt to boost EPS.[24]

Roychowdhury (2006) finds a similar decline in R&D expenditures in firms trying to avoid reporting losses. The study further points out that the scope of investment actions managers can engage in to meet their reporting objectives extends beyond R&D reductions. Specifically, firms trying to avoid losses also exhibit evidence of aggressive attempts to reduce selling, general and administrative expenditures (SG&A), to accelerate sales and to overproduce.[25] These decisions

[22] See Burgstahler and Dichev (1997) for one example of a paper providing evidence that managers are keen to meet certain earnings benchmarks such as zero earnings and previous year's earnings through accrual management or altering the operating/investing decisions. A number of empirical studies rely on identifying firms close to earnings benchmarks to examine investment decisions motivated by short-term earnings targets.

[23] Due to the GAAP requirement that R&D outlays be expensed in the period that they are incurred, managers can increase current earnings by reducing R&D, but such reductions are potentially detrimental to long-term competitiveness.

[24] By reducing the number of shares outstanding, stock repurchases have the partial effect of increasing EPS.

[25] SG&A often includes discretionary expenditures such as maintenance costs, advertising costs, etc. Acceleration of sales involves offering price discounts and other lenient sales terms to push inventory to customers. When these customers are intermediate dealers, and the offloading of inventory is not matched with retail demand, the intermediaries end up with unsold inventory, a practice often referred to as channel-stuffing. Overproduction refers to the production of inventory in excess of anticipated needs inclusive of sales and target end-of-period inventory to take advantage of absorption costing and report lower cost of goods sold by "inventorying" the fixed costs of production. Similar to R&D cuts, actions such as SG&A cuts, sales acceleration through aggressive price discounts and

correspond well with Stein's (2003) conjecture that instances of myopia could involve under-investments in hard-to-measure assets, such as maintenance, customer loyalty, employee training, etc. Subsequent studies have conventionally referred to these potentially myopic actions undertaken with the goal of increasing current earnings as real earnings management (henceforth referred to as REM). It is worth noting that in the context of our review, REM essentially involves decisions regarding cash outlays towards long- and short-term investments (e.g., R&D and inventory, respectively).

Two factors that readily emerge in the literature as responsible for inducing managerial myopia: shareholder characteristics and managerial horizons. With respect to shareholder characteristics, the literature has focused on shareholders' sophistication in monitoring managers and their investment horizons. Sophisticated investors are more likely to detect managerial myopia and anticipate its negative consequences.[26] Bushee (1998), Roychowdhury (2006) and Zang (2012) find that real earnings management is lower in the presence of sophisticated investors such as financial institutions. They interpret these findings in a moral hazard context – managers' ability to undertake real earnings management for private gains is lower because of sophisticated institutions' ability to detect such actions and unravel their impact on earnings. Shareholder horizons matter because shorter horizons can lead shareholders to continuously emphasize meeting/beating short-term earnings targets. Bushee (1998) partitions institutional investors into

overproduction can have negative future consequences, for example, safety issues in the future because of cuts to maintenance expenditures (Caskey and Ozel, 2017), permanently reduced margins and inventory obsolescence risk respectively.

[26] An example of a difference between more and less sophisticated investors is the latter's reliance on heuristics. Burgstahler and Dichev (1997) point out that shareholders often rely on short-term heuristics rather than detailed discounted-cash-flow analysis to assess the future earnings power and the financial health of the firm. In these heuristic-based models, easily observable and identifiable current earnings targets such as profits and earnings increases attain greater salience than they would in more sophisticated models of firm valuation that would incorporate future cash flow effects. Sophisticated investors are more likely to use the more elaborate models based on future cash flows.

dedicated versus transient investors and shows that R&D reductions are more (less) pronounced in the presence of transient (dedicated) investors. This leads Bushee (1998) to infer that shorter horizons of transient investors incentivize them to seek short-term returns, in turn causing managers to focus on meeting or beating current earnings targets through myopic R&D reductions.

In addition to shareholder characteristics, another important factor influencing myopic investment decisions is managerial horizon. Dechow and Sloan (1991) focus on firms that have significant ongoing R&D programs, and find that firms with CEOs in their final years in office report unusually low R&D. The paper further reports that the tendency to cut R&D in their final years is mitigated when CEOs own stock in their firms. The authors interpret their results as evidence of CEOs with shorter horizons reducing R&D to increase short-term earnings. It is important, however, to note that the authors cannot identify whether the R&D cuts indeed represent foregone valuable investment opportunities.

Edmans et al. (2016) examine whether managers have greater incentives to behave myopically when their compensation has more short-term implications. Specifically, they find that firms in which managers have vesting equity exhibit a reduction in investment growth, particularly in the growth rates of R&D and capital expenditures. Their subsequent empirical analysis reveals that investment cuts in response to equity vesting are less drastic in firms where the costs to the CEO of myopia are potentially higher, for example in firms with blockholders and younger CEOs. Chen et al. (2015) investigate a second manifestation of this phenomenon: they distinguish between CEOs with long-term employment contracts and/or severance contracts and those without, reasoning that the former have a longer-term perspective on firm value. They find that in the presence of long-term compensation contracts, real earnings management is significantly

lower. Further, this negative relation is more pronounced when CEOs face greater pressure to deliver short-term earnings, which the authors measure using the presence of transient investors.

Both shareholder and managerial horizons are particularly relevant when firms issue new equity. At the time of seasoned equity offerings (SEOs), both managers and shareholders have incentives to maximize the stock price, which would increase resources available to the firm. Further, SEOs also provide managers and shareholders with an opportunity to at least partially liquidate their stockholdings. Collectively these factors provide a greater impetus for corporate myopia at the time of SEOs as Stein (2003) conjectures. Consistent with this notion, Cohen and Zarowin (2010) find that firms issuing SEOs exhibit evidence of real earnings management, which in turn is associated with lower post-SEO return on assets (ROA). Kothari et al. (2016) focus on unusually low R&D at the time of SEOs and report similar evidence. Importantly, they also find that earnings overstatement through aggressive R&D cuts is associated with negative post-SEO equity returns, implying overvaluation at the time of the SEO, and thus a transfer of wealth from new investors to the SEO firms.[27]

Related to Cohen and Zarowin's (2010) and Kothari et al.'s (2016) evidence on a negative relation between REM and lower future performance, Vorst (2016) examines the relation between current R&D cuts, future R&D expenditures and firm performance. Vorst (2016) distinguishes between R&D expenditure cuts that reverse within a year versus those that do not. He argues that reversing R&D cuts are more likely to be symptomatic of managers' desire to achieve immediate earnings targets, with the reversals representing managers' attempts to "catch up" with R&D

[27] A legitimate question here is: why don't investors see through the myopic R&D decreases? In this context, it is important to bear in mind that Kothari et al. (2016) identify whether R&D is unusually low for any firm at the time of the SEO using data for that firm extending beyond the SEO. Thus, the relation they document between SEO-year R&D cuts and post-SEO return reversals would be opaque to shareholders at the time of the SEO, and could not have been foreseen. The authors use a similar method to construct abnormal accruals at the time of the SEO, but do not find they are associated with negative post-SEO returns.

expenditures necessary to maintain competitiveness. In contrast, permanent R&D cuts are more likely to be in response to a decline in investment opportunities. He finds that reversing R&D cuts are associated with more negative future operating performance relative to the non-reversing ones. The results suggest that despite managers' attempts to catch up, myopic R&D cuts are responsible for a decline in future performance.

Although a majority of studies investigating myopic behavior examine reductions in R&D, managerial myopia need not necessarily manifest as under-investment. Exceptions include the overproduction of inventory and the accelerated growth in receivables when managers attempt to channel-stuff (Roychowdhury, 2006). As a further illustration of overinvestment resulting from the desire to inflate short-term earnings, Kedia and Philippon (2009) study firms forced by the SEC to restate previous fraudulently-overstated earnings. They find that, relative to industry peers, overstating firms make excessive capital investments and over-hire during the earnings manipulation period. The authors propose that over-investment reinforces misreported financial statements and managers use the two strategies in conjunction to mislead shareholders by pooling with firms that have better investment productivity.[28]

It is important to recognize that a key issue in research investigating corporate myopia is measurement. As Stein (1989) points out "short-termism models can be difficult to test directly. This is because their central prediction is that there will be underinvestment in *those types of activities that are not directly observable by the market* … to the extent that an econometrician's information set is no better than that of investors, this makes it difficult to actually document the

[28] In a similar vein, Chuk (2013) examines the consequences of SFAS 132R's requirement that firms disclose the composition of pension assets. The study finds that the disclosure prompted managers who were using upward-biased expected rates of return (ERRs) to shift asset allocations into higher-risk securities. The findings suggest that that in order to justify higher ERRs, which in turn led to higher reported earnings, managers were willing to over-invest in higher-risk securities, at least relative to pre-SFAS132R levels.

underinvestment behavior explicitly." Early studies simply investigated changes in investment, for example Bushee's (1998) examination of R&D cuts. Roychowdhury (2006) introduced models for estimating "normal" production levels R&D and SG&A, with the residuals from these models yielding estimates of real earnings management. There have been some methodological improvements in the models over the past few years. For example, Stubben (2010) develops a model of revenue management that incorporates firm-specific credit policies, although his model does not distinguish accrual manipulations from operational choices. Kothari et al. (2016) introduce the estimation of these models with firm and year-fixed effects, which extracts systematic firm-specific errors. Further, Kothari et al (2016) includes data past the hypothesized year of real earnings management, which incorporates the notion that these actions are opaque at the time they are undertaken. But ex post measures of real earnings management may not be well-suited to every research setting. Finally, survey evidence from Graham et al. (2005) and Graham et al. (2011) also suggests that managers are willing to pass up investing in positive NPV projects or change the location of a firm's investments (in the context of MNCs) to meet financial reporting objectives.

One lingering issue is that a firm's investments and operations are determined endogenously with its economic environment, which implies that models of normal investments and operations could yield residuals that are susceptible to systematic firm-specific measurement errors. To refine the specification of these measures of investment and operational decisions that deviate from the norm, studies have typically used them in conjunction with specific reporting goals (such as earnings thresholds) and specific incentives to accomplish these goals. Continuous improvements and refinements to the measurement of myopia are necessary and welcome.

3.1.4 The role of transparency

The literature in this section highlights that, on the one hand, financial reporting transparency can increase investment efficiency by mitigating moral hazard. On the other hand, financial reporting can also contribute to managerial myopia in investment decisions. Key to the issue of whether financial reporting, and an increase in its quality and transparency, alleviates or exacerbates investment distortions is a clearer understanding of the problem that reporting transparency is expected to solve.

In certain instances, an increase in reporting quality can potentially heighten the incentives for myopic investment choices. As an example, consider increased frequency of reporting financial statements. In anonymous surveys, managers themselves often point to the need to meet short-term earnings targets at regular quarterly intervals as one of the primary motivators of myopic behavior (Bruns and Merchant, 1990; Graham et al., 2005; Graham et al. 2011). Gigler et al. (2014) provide theoretical basis for managers' assertions, extending the Stein (1989) model to show that increased reporting frequency can exacerbate myopia.

Empirically, Ernstberger et al. (2017) find that when the EU changed its reporting requirement in 2004 from semiannual reporting to quarterly reporting, European firms exhibited sharply increased evidence of REM. Further, this increase is more pronounced for companies domiciled in countries in which equity financing is a more prominent source of capital, suggesting that shareholders' shorter horizons are responsible for the increased REM. Related, Kraft et al. (2018) find that firms listed on U.S. stock exchanges exhibit investment declines after the exchanges imposed increasingly higher-frequency financial reporting requirements over the period 1950 to 1970. Further, these declines in investments are associated with future declines in

efficiency (measured via asset turnover) and profitability, implying that the declines are myopic.[29] However, Nallareddy et al. (2017) and Kajüter et al. (2018) find no evidence that increases in reporting frequency lead to myopic investment decision in the U.K. and in Singapore, respectively. Further, Balakrishnan and Ertan (2018) find that increases in reporting frequency serve a disciplinary role in the banking industry. Overall, whether changes in reporting frequency decreases managers' investment horizon and induces myopia, or whether it increases transparency and serves a disciplinary role remains an open question.

Evidence on managerial myopia resulting from increased reporting frequency contrasts with the idea that increased transparency can constrain moral hazard (see section 3.1.2). After all, more frequent reports offer external market participants the opportunity to assess and evaluate managerial performance more regularly (as Balakrishnan and Ertan (2018) show in a banking setting). As such, for transparency to reduce myopia, it has to be informative about the long-term implications of current investment choices. This purpose is defeated if managers are able to deliver current earnings but mislead shareholders about the long-term impact of their investment choices. Huang et al. (2018) discuss one such scenario. Specifically, they argue that when managers pursue myopic actions, their decisions regarding product pricing, inventory, and expense cuts are often questioned by investors and financial analysts (Tasker, 1998). In the face of such scrutiny, managers are under pressure to misrepresent the true intent and impact of their actions.[30] Thus, if

[29] As another example, studies have also exploited unintended effects of transparency when managers under pressure to report higher-quality accruals resort to real earnings management (REM) to achieve reporting objectives. Cohen et al. (2008) find that following the more stringent reporting regulations introduced by the Sarbanes and Oxley Act of 2002, U.S. firms exhibit a decline in discretionary accruals, consistent with higher quality accounting. However, firms also exhibit an increase in REM, suggesting that managers shifted from relying on accruals to relying on investment and operational decisions to meet their reporting goals (see also Zang 2012 for related evidence based on higher auditor scrutiny).

[30] Court cases reveal that managers who had to settle 10b-5 securities litigation explained channel-stuffing and/or overproduction with anticipated surges in demand, and myopic and ultimately harmful reductions in discretionary expenses as a pursuit of cost efficiencies (see Huang et al., 2018).

managers' ability to issue misleading disclosures is constrained, so is their flexibility to withstand scrutiny on myopic investment decisions motivated by meeting/beating earnings targets. Relying on well-established evidence that litigation risk disciplines misleading disclosures, Huang et al. (2018) document evidence indicating that a *decline* in litigation risk is associated with an increase in REM, and this increase is concentrated among firms that also issue misleading disclosures. The evidence implies that higher litigation risk constrains managers' ability to issue misleading disclosures and, by doing so, also constrains managerial myopia.

The papers above highlight the need for further research into the relation between reporting transparency and investment choices. Additionally, it is possible that increasing transparency encourages managers in certain situations to pursue myopic policies when faced with imminent short-term goals, but in other situations facilitates better monitoring and assessment of managers' investment decisions. A comparison of the economic magnitudes of these two effects would be extremely valuable for understanding how the net effect of financial reporting varies across firms and over time.

3.2 Other agency conflicts

While most studies in this literature have focused on manager-shareholder conflicts, a few studies have focused on other agency conflicts between other principal and agent combinations, in particular: (a) conflicts between shareholders and debtholders, (b) conflicts that arise within multi-segment organizations and (c) conflicts between managers and broader stakeholder groups such as regulators and consumers.

Prior research points out that debt and equity holders have different investment preferences following from their different payoff structures, which creates conflicts of interest (Fama and Miller, 1972; Jensen and Meckling, 1976; Myers, 1977; Smith and Warner, 1979). For example,

Jensen and Meckling (1976) and Eisdorfer (2008), among others, argue that shareholders and debtholders have conflicting appetites for risk-taking when a firm is close to financial distress, leading to agency issues such as asset substitution.

Some studies have investigated whether financial reporting can influence shareholder-debtholder conflicts by moderating asset substitution incentives through financial reporting attributes such as conservatism. Kravet (2014) tests whether debtholders' demand for accounting conservatism, measured as the timelier recognition of losses relative to gains in earnings, induces managers to under-invest in risky projects. Since some positive NPV projects carry the possibility of bad outcomes and timely loss recognition accelerates the recognition of these losses (relative to gains), managers may be predisposed towards discarding high-risk projects if these projects carry a higher chance of triggering covenant violations. In support of this hypothesis, Kravet (2014) reports that firms that are timelier in recognizing losses relative to gains are also less likely to engage in risky acquisitions, and that the findings are driven by firms with accounting-based debt covenants. These results provide support for the argument in Roychowdhury (2010) that conservative reporting can lead to less risky investments, but Kravet (2014) views the lower-risk taking as at least a partial mitigation of the asset substitution problem.

The evidence in Kravet (2014) raises the question of why shareholders agree with lower risk-taking if that implies forgoing projects with positive NPV. Garcia-Lara et al. (2016) propose an explanation: since timely loss recognition mitigates managers' asset substitution incentives, it facilitates better and cheaper access to debt capital, which increases the set of profitable investment projects. More recently, Kim (2018) uses the collapse of the junk bond market in the early 1990s as a proxy for an exogenous shock to external financing. Kim (2018) finds that following this

shock, speculative grade firms recognizing losses in a timely manner experience a smaller reduction in investment.

In contrast to attenuating shareholder-debtholder conflicts, financial reporting can in certain cases accentuate these conflicts when managers engage in investment decisions to meet or beat certain thresholds set by debtholders. Franz et al. (2014) find greater evidence of real earnings management in firms that that are closer to debt covenant violations.[31] Further, the evidence of real earnings management in such firms is stronger when the firms also have poorer credit ratings. The authors interpret the results as evidence of managers acting in the interest of shareholders to achieve reporting outcomes that would avoid a transfer of control to debtholders. Related, Shroff (2017) finds that when cumulative adjustments reported on the income statement in response to accounting rule changes are more negative, managers react by reducing R&D expenditures and capital investments. Shroff (2017) further documents that this positive relation between investments (in particular, R&D) and cumulative adjustments is more pronounced in firms with debt contracts that do not incorporate the impact of accounting rule changes on covenant computation. The results thus provide support for the hypothesis that managers alter their investment decisions to avoid the impact of accounting rule changes on existing debt contracts.

In addition to shareholder-debtholder conflicts, a few studies have also examined the effect of financial reporting on investments within multi-segment firms. For example, Stein (2003) discusses the literature on agency incentives arising inside multi-segment firms and notes that conflicts can arise when a (benevolent) CEO faces moral hazard costs when monitoring divisional managers with misaligned incentives. The presence of moral hazard can result in inefficient capital

[31] REM is measured as in Roychowdhury (2006) and Zang (2012), using unusually high production costs which capture both sales acceleration and overproduction, and abnormal discretionary expenses inclusive of SG&A and R&D.

allocation across divisions, and it seems natural that accounting information can play a role in mitigating such conflicts. Cho (2015) uses the adoption of SFAS 131 as shock to segment information to test whether accounting information can influence capital allocation in multi-segment firms. He finds that internal capital allocation among multi-segment firms improves following the increase in segment disclosure. One insight from Cho (2015) is that SFAS 131 potentially improved the information set of top manaers in the corporate headquarters, enabling them to better monitor divisional managers.[32] Such "learning" evidence is still nascent in the literature and we revisit this discussion in Section 5.[33]

Finally, we consider agency conflicts between the firm and a broader stakeholder group extending beyond firm investors. Over the past decade, policymakers across the world are requiring firms to disclose non-financial information about social issues such as employee safety, corruption, environmental issues, etc., in their financial statements. The unique aspect of such disclosures is that they are typically unrelated to investor protection objectives, which is a primary goal of disclosure regulation. Broadly speaking, such disclosures can arm the media and activist groups with information to exert public pressure on firms to engage in behaviors considered socially desirable; public pressure is then presumed to incentivize firms to be better corporate citizens (e.g., by paying more taxes). As a result, disclosure about non-financial issues can influence firms to change their decision-making processes in a manner that reduces political and social costs to the firm and its investors. For example, Dyreng et al. (2016) find that forcing firms to disclose the location of their subsidiaries dis-incentivizes firms from locating subsidiaries in tax havens. Christensen et al. (2017) show that requiring mine owners to disclose information about

[32] An important distinction between Hope and Thomas (2008) and Cho (2015) is that Hope and Thomas use the fact that firms stop reporting geographical segments as a decrease in transparency about *foreign* operations. In contrast, Cho (2015) uses the increase in the use of operating segments as an improvement in the internal information set.

[33] A related study by Shroff et al. (2014) studies the effect of peer disclosures on capital allocation of multinational firms. Because the information signal in Shroff et al. is provided by peer firms as opposed to the firm itself we discuss Shroff et al. (2014) in section 4 where we introduce peer effects.

their mine-safety performance in their 10-K filings incentivizes mine owners to increase investments in mine safety. Although the precise mechanism is not explicitly tested, the typical argument is that paying lower taxes or not adequately investing in employees generates backlash from stakeholders, which manifests as lower demand for the firm's products, a smaller pool of employees that are willing to work for the firm, fewer suppliers willing to sell to the firm, etc.[34]

On the one hand, the evidence in the studies discussed above suggests that disclosures related to social activities have a negative effect on firms' cash flow (e.g., via additional tax payments, increased safety cost), which can be detrimental to shareholder value. On the other hand, investing in social causes can help firms enhance reputation, which can result in increased demand for their products, access to a larger pool of employees with different social values, etc., which increases shareholder value. Additional research examining whether mandatory disclosure related to social issues accomplishes desired social goals or leads to shifts in who engages in the "socially undesirable" behavior is warranted to understand the effectiveness of a disclosure-based approach to modify social behavior. In this regard, Rauter (2017) examines a law requiring European firms engaged in extraction activities (e.g., of oil, gas, and minerals) to publicly disclose information concerning monetary payments to foreign governments that sell extraction rights to firms. The purpose of such disclosures is to help stakeholders identify when a firm may have engaged in corruption or bribery. Rauter (2017) finds that the disclosure regulation leads to a reallocation of investment from regulated European firms to unregulated non-European firms that are not subject to similar disclosure requirements, which suggests that disclosure laws may not have accomplished its social objective of reducing corruption.

4. Learning from peer disclosures

4.1. Conceptual underpinnings

[34] Hoopes et al. (2018) provide preliminary evidence consistent with consumer backlash against firms perceived as paying less than their fair share of taxes.

This section reviews the evidence on whether and why the disclosures provided by peer firms affect the investment decisions of related firms. Broadly speaking, there are two reasons why disclosures made by a peer firm can affect the investment decisions of other firms. First, within the agency framework discussed in the prior two sections, accounting information disclosed by peer firms can inform shareholders (and other stakeholders) of economically related firms about their growth opportunities, operations, and overall performance, which can reduce moral hazard (Holmstrom, 1982) and adverse selection costs (Dye, 1990; Admati and Pfleiderer, 2000). Specifically, firms within a peer group (e.g., industry, geographic region, supply chain, etc.) are affected by similar economic conditions related to demand, supply, labor availability, and input costs, among other things. Consequently, the disclosures of peer firms can inform the investors of other firms about these common economic factors, which can reduce information asymmetry between managers and investors, and among investors.[35] For example, information related to the performance and investment activities of peer firms can be used by investors and boards of directors of other firms as benchmarks that help them monitor managers and reduce moral hazard costs. Similarly, a large literature discusses the role of peer benchmarking in valuation and securities analysis (e.g., Graham and Dodd, 1934), which helps reduce adverse selection costs. By reducing moral hazard and adverse selection costs, peer disclosures can reduce both over- and under-investment, leading to more efficient investment.

Second, the disclosures of peer firms can affect the investment decisions of economically related firms even in the absence of agency frictions. Specifically, peer-firm disclosures can inform

[35] Consistent with the idea that peer firms' disclosures are informative to stakeholders of other related firms, prior studies document information transfers arising from news contained in earnings announcements (Foster, 1981), management forecasts (Baginski, 1987; Han et al., 1989), accounting restatements (Gleason et al., 2008), and transfers between customers and suppliers in the same supply chain (Olsen and Dietrich, 1985; Pandit et al., 2011). Recent evidence (e.g., Baginski and Hinson, 2016; Shroff et al., 2017; Arif and De George, 2018) find that peer firm disclosures can even serve as substitutes for a firm's own disclosure.

the *managers* (in addition to shareholders) of other firms about common economic factors related to demand and cost conditions, which in turn are informative about firms' investment opportunities. For example, firms are required to disclose information about their sales, cost of sales, inventories, etc. in their quarterly financial reports and prior research finds that such information is valuable for forecasting future demand and costs (e.g., Lundholm and Sloan, 2013; Curtis et al., 2014). Similarly, firms voluntarily disclose estimates of future earnings, sales, and capital expenditures, which can help managers of peer firms develop more precise estimates of aggregate demand and supply conditions (e.g., Bonsall et al., 2013). To the extent that a manager's information set about growth opportunities is incomplete, disclosures provided by peer firms can improve a related firm's investment decisions by reducing uncertainty about both the level and variability of future cash flows from an investment project. Reductions in uncertainty lower investment adjustment costs,[36] thereby allowing managers to respond faster to investment opportunities and make better investment decisions (Bloom et al., 2007; Bond and Van Reenen, 2007; Badertscher et al., 2013).

The central idea underlying both mechanisms (i.e., the effect of peer disclosure on agency frictions and managers' information sets) is that peer disclosures are informative about other firms' growth opportunities. However, as discussed in section 3, managers have reporting objectives, which can lead them to distort reported performance metrics. To the extent peer firms misreport

[36] Adjustment costs are costs that prevent or delay firms from investing in (divesting) positive (negative) NPV projects. Examples of adjustment costs include the time it takes to build/install new productive capacity or to train employees to use installed equipment, the time taken to raise external capital to fund new investments, the irreversibility of many investment projects (since they lack liquid secondary markets), etc. As such, adjustment costs are one of the most important determinants of investment activity at the micro- and macro-levels (Hamermesh and Pfann, 1996; Cooper and Haltiwanger, 2006).

performance, their disclosures can mislead managers/investors of other firms and result in firms making inefficient investment decisions (Durnev and Mangen, 2009).[37]

We highlight that the information a firm learns from the disclosures of its peers can be proprietary or non-proprietary in nature, and this distinction has important implications for disclosure regulation and aggregate investment activity.[38] Changes in a firm's investment decisions that result from learning proprietary information disclosed by its peers are more likely to involve a wealth transfer from the disclosing peer firm to the non-disclosing firms. In contrast, improvements in investment efficiency that result from disclosures of non-proprietary information by peer firms are potentially Pareto improvements as they do not necessarily put the disclosing peer-firms at a competitive disadvantage. As we discuss below, understanding the net effect of peer disclosures on both the disclosing and non-disclosing firms is crucial to assess the merits of disclosure regulation.

4.2. Empirical evidence and open issues

Despite the arguments that peer disclosures can reduce agency frictions, we are aware of only one study that explicitly examines whether peer-firm disclosures affect investment decisions of related firms by reducing information asymmetry between managers and shareholders.[39] Shroff et al. (2014) use a multinational company (MNC) setting based on the premise that such firms are

[37] The notion of "inefficient" investment in a world without agency frictions is different than the notion of inefficient investment in the context of the literature discussed in the previous sections. Specifically, in section 3, managers knowingly choose to engage in value destroying investments to consume private benefits (e.g., shirking, empire building, etc.). However, absent agency frictions, managers are acting in the best interest of their firm and the inefficiencies arise *ex post* as new information is revealed.

[38] Economically related peers include a firm's competitors as well as firms providing complementary product/service offerings. For example, firms manufacturing computer hardware and computer software are economically related but complementary to each other.

[39] The chronology of empirical studies on the peer effects of disclosure does not always follow the order in which we discusss them. We discuss the empirical evidence in the order in which we lay out the conceptual discussion, but note that some studies such as, Raman and Shahrur (2008) and Durnev and Mangen (2009), precede the studies discussed earlier in the empirical section related to peer effects.

inherently exposed to greater moral hazard problems due to the geographic dispersion in their operations. Shroff et al. (2014) argue that disclosures by peer firms in the countries where an MNC's subsidiaries are located leads to a more transparent information environment at the location of the subsidiary, which reduces information asymmetry between MNC parents and their foreign subsidiaries. Greater transparency at the location of the foreign subsidiary allows parent firms to more effectively monitor their foreign subsidiaries. Consistent with their argument, they find that the investment decisions of foreign subsidiaries are more responsive to local growth opportunities (their proxy for investment efficiency) when they operate in more transparent information environments.

In contrast to the scarce evidence on the role of peer disclosure on investment via the agency channel, much of the empirical evidence on this topic focuses on non-agency explanations for why such effects exist. These studies show that peer disclosure can improve investment efficiency (so long as the disclosures are truthful) because peer disclosures help inform managers' investment decisions.

Badertscher et al. (2013) is an example of a positive effect of peer disclosures. They argue that the composition of public versus private firms in an industry has a significant effect on transparency in the industry because public firms are subject to significant disclosure requirements while most private firms (in the U.S.) are subject to almost no disclosure requirements. They argue that as a larger fraction of the firms in an industry publicly disclose information about corporate performance, a more complete perspective of the current economic environment and future outlook for the industry emerges. They show the private (and public) firms operating in industries with greater public firm presence are more responsive to their investment opportunities, which is their proxy for investment efficiency. To tease out the role of peer information in informing managers

about growth opportunities from its role in disciplining managers, Badertscher et al. (2013) focus on small private firms, where there are few manager-shareholder conflicts. As a result, they interpret their results as evidence that peer disclosures improve investment efficiency by reducing overall industry uncertainty.

An important implication of managers relying on their peers' disclosures to evaluate investment opportunities is that such reliance can lead to costly decision-making errors when peer firms misstate their financial statements or perpetrate fraud (to the extent peer firms do not back out such accounting irregularities). Specifically, if a firm inflates its earnings or growth trend and peer firms rely on the misreported trend for decision-making, then the cost of misreporting affects not only the disclosing firms' stakeholders but also those of its peers.[40] Consistent with this idea, Durnev and Mangen (2009) argue that announcements of accounting restatements by one firm lead the restating firm's competitors to revise their prior beliefs about the uncertain payoffs of their investment projects (using Bayesian updating). As a result, they predict and find that restatement announcement returns of a peer firm is predictive of the subsequent investment decisions its competitors.

Implicit in Durnev and Mangen (2009) is the notion that managers relied on the information disclosed by peers during the peer firm's misreporting period. Beatty et al. (2013) explicitly test this argument by examining peer firm investment behavior in periods when a firm *perpetrates fraud* by overstating earnings rather than the period following the *detection of fraud*, as examined in Durnev and Mangen (2009). Specifically, Beatty et al. (2013) argue that the fraudulently overstated earnings of an (industry-leader) firm causes managers of peer firms to believe that future

[40] It is unclear whether firms misreport their financial statements in part to mislead their peers into making suboptimal investment decisions or whether the misreporting decisions are primarily driven by capital market and compensation incentives, with the cost to peers being incidental. Regardless, peer firms' reliance on misreported financial statements can increase the aggregate cost of misreporting.

industry prospects are rosier than what they truly are, which in turn leads peer firms to over-invest. Consistent with this argument, Beatty et al. (2013) show firms increase investment in periods when a peer firm overstates its earnings and that magnitude of the earnings overstatement is predictive of the magnitude of over-investment by peer firms.[41]

A related idea proposed by Raman and Shahrur (2008) is that firms manage their earnings opportunistically to influence suppliers and customers to make larger relationship-specific investments. Specifically, transactions between customers and suppliers often require specialized investments that have lower value outside the relationship (Williamson, 1979). The value of relationship-specific investments to a firm depends in part on the firm's expectation about the future prospects of the customer/supplier because (i) the size of future transactions is likely correlated with the customers's/supplier's future prospects and (ii) the period over which relationship-specific investments generate value depends on survival of the customer/supplier. Thus, firms seeking relationship-specific investments from their customers/suppliers have incentives to manage earnings to increase their customers/suppliers willingness to make such investments. Raman and Shahrur (2008) provide evidence consistent with the above hypothesis by showing that customers/suppliers invest more in R&D (their proxy for relationship-specific investments) when firms report higher discretionary accruals.

Collectively, the inference from the above studies is that firms rely on the financial statements of their peers, which leads them to make better (worse) investment decisions when the reported information is accurate (inaccurate). A natural question that arises from the evidence in the above papers is why are firms misled by the earnings management or misreporting behavior of

[41] Li (2016) extends the evidence in Beatty et al. (2013) by showing that financial misreporting distorts not only peer firms' capital expenditures decisions but also their R&D and advertising decisions. Sidak (2003) provides evidence based on a case study of WorldCom that its false financial statements and internet traffic reports led to significant over-investment by its competitors in the telecom industry.

their peers. The fact that public revelations of accounting irregularities typically generate large equity market reactions (e.g., GAO, 2002) suggests that market participants do not fully see through these irregularities as they occur. As such, in economies such as the U.S. where financial reporting enforcement is strong, it is reasonable for peer firms to believe that the average firm's financial statements comply with GAAP. Thus, egregious forms of misreporting that fall outside the purview of GAAP (e.g., misreporting by Enron, WorldCom, etc.) are more likely to deceive peer firms until the fraud is detected and publicly reported. However, it is less clear whether (and why) customers/suppliers do not anticipate some amount of *within* GAAP earnings management (as implied in Raman and Shahrur, 2008), which is undone in equilibrium. Lambert (2001) and Beyer et al. (2010) discuss some circumstances in which firms manage earnings and stakeholders do not undo the manipulation (as we discuss in section 3), but it is unclear whether those arguments apply to the peer setting.

As an empirical matter, it is particularly challenging to identify 'causal' peer effects because of the reflection problem as described by Manski (1993). This problem refers to a specific form of endogeneity that arises when trying to infer whether the characteristics of a group (e.g., industry membership and industry-level accounting information) influence the actions of the individuals that comprise the group (e.g., investment decisions by firms in the industry). Typically, associations between *firms'* disclosure choices and the investment decisions of their *peers* can be attributed to two broad explanations. First (and most important), the selection of firms into a peer group could be due to latent factors (e.g., growth opportunities) that are common to firms in a peer group. As a result, a latent factor, such as a group-level growth opportunity shock, could affect the disclosure and investment decisions of both the disclosing firm as well its peers. In essence, the correlation between firms' disclosure decisions and the investment behavior of their peers could

reflect an omitted variable endogeneity bias. Second, firms' disclosure/investment decisions could be partly driven by a response to the decisions of their peers, creating a simultaneity issue. In other words, the firms in a peer group simultaneously influence and respond to the strategic decisions of each other. Thus, it is hard to distinguish between the effect of a firm's decision on that of its peers from the effect of its peers' decision on its own decision, since these decisions can be simultaneously determined.

The empirical challenges in peer effect studies are such that Angrist (2014) paints a bleak view of this literature. A large part of his criticism applies to mechanical effects that arise when one studies the effect of group averages on the outcomes of individuals comprising the group (e.g., the effect of industry-average disclosure on the disclosure decisions of firms in the industry). However, several of his criticisms can be extended and applied to the studies discussed above. As such, it is important for future studies to discuss and mitigate concerns related to the reflection issue when conducting studies of peer effects.

While endogeneity concerns are not unique to studies of peer-effects, what makes them especially challenging to address in studies of peer effects is that the independent variable of interest is typically a "group" characteristic such as industry-level transparency that is (i) common to all firms in the group and (ii) slow-moving or persistent in nature. As a result, it is hard (if not impossible) to identify a suitable counter-factual for such group-level characteristics, forcing studies to rely on cross-sectional variation in the independent variable of interest. At the risk of being overly general in our prescription, we propose two ideas to better address concerns related to the reflection problem. First, we believe that the use of falsification tests showing when peer effects are not present (but potential confounding effects should be present) could be an effective way to mitigate some of the concerns raised by Angrist (2014). Second, in instances where theory

predicts that peer-effects should vary over time (e.g., as agents learn or form more precise expectations of firm behavior), explicitly testing whether within-firm changes in the magnitude of peer effects follows a pattern consistent with theory could be an effective way to mitigate concerns about the reflection problem (see e.g., Shroff et al., 2017). At a minimum, researchers studying peer effects should recognize and discuss the reflection concern as it relates to the research question examined.

The evidence examining externalities of accounting information is important (in part) because it is one of the primary justifications for disclosure regulation. When choosing the optimal disclosure level, firms are expected to evaluate the costs and benefits of their disclosures to themselves. For example, firms are expected to trade-off the capital markets benefits of disclosure against its proprietary costs. However, firms are not expected to internalize the costs and benefits of their disclosure to peer firms. For example, if disclosure imposes a proprietary cost on the firm or constrains the manager's ability to divert resources for private benefit (as discussed in section 3), then the firm will not disclose such information even if there are significant spillover benefits to other firms that outweighs the costs to the disclosing firm. In such a circumstance, greater disclosure could be socially beneficial but is not achieved without regulation. Consider that most private firms in the U.S. and Canada, regardless of their size and economic importance, have no public disclosure requirement (see Hope and Vyas (2017) and Minnis and Shroff (2017) for reviews of the literature on private firm financial reporting). However, several countries (e.g., the U.K., Australia, India, most E.U. member countries) require privately owned firms to disclose at least some basic financial information once they meet a size threshold. Whether the positive externalities of corporate disclosures exceed the firm-specific costs of disclosure (or vice versa) can be useful to evaluate and compare the mandatory disclosure systems adopted by countries such

as the U.S. and Canada (where a large fraction of the corporate world has few disclosure requirements) with that adopted in much of Europe (where disclosure requirements are more closely related to a firm's size and economic footprint).

Before we conclude this section, we provide some suggestions for future research. First, much of the current evidence (discussed above) documents a potential benefit/cost of peer-firm disclosures to other firms in the economy, but are generally unable to conclude whether the documented benefits/costs to peer firms outweigh the benefits/costs of such disclosures to the disclosing firms. For example, while the evidence in Badertscher et al. (2013) suggests that private firms benefit from the reporting of public firms, they are unable to document the cost of these disclosures to public firms; i.e., does the benefit to private firms come at the expense of public firms. Breuer (2018) takes a step in the direction of quantifying the effect of disclosure on aggregate resource allocation, netting out the effects of externalities and firm-specific costs and benefits of disclosure. The evidence in Breuer (2018) suggests that greater public disclosure requirements has a nuaced effect of resource allocation within the economy, such that it (i) increases competition by easing entry and exit of firms in the economy, (ii) decreases product market concentration, and (iii) decreases the reliance of relational contracting, among other things. Breuer (2018) finds no evidence that greater public disclosure requirements increases resource allocation efficiency or aggregate output. More research along the lines of that in Breuer (2018) is needed to better understand the value of disclosure regulation.

Second, our review of the literature reveals that prior research generally does not distinguish between peer effects that arise from the disclosure of proprietary versus non-proprietary information. In other words, prior studies examine whether peer-firm disclosures affect the investment decisions of related firms without empirically testing the implications for the

disclosing firm. An exception is present in McNichols and Stubben (2015), who examine the role of peer disclosures in an M&A setting. Specifically, they argue that greater transparency by a target firm allows the acquiring firm to develop more precise estimates of target value as well as the expected gains from the acquisition. Consequently, acquirers make more profitable acquisitions (at the target's expense) when their targets have higher disclosure quality.

If such disclosures concern proprietary information, then the disclosing firm is also likely to change investment behavior – an idea that has not been empirically tested. As such, there is a lack of evidence showing whether/how firm alter their investment decisions in response to the *proprietary* information disclosed by competing peers.[42] Considering that a large literature argues that a firm's disclosure decisions are affected by proprietary cost concerns, the lack of evidence showing that firms indeed incorporate the proprietary disclosures of their competitors into their decision-making is somewhat surprising. One recent study that gets at the fringes of testing how firms use the proprietary disclosures of their peer firms (although not directly focusing on investment decisions) is Bernard (2016). Specifically, Bernard (2016) finds that an enforcement change in Germany forced small private firms to publicly disclose their financial statements. Upon disclosing their financial statements, these firms' competitors were able to evaluate the degree to which the disclosing firms are financially constrained and used the disclosing firms' financial vulnerability to steal market share away and increase their likelihood of bankruptcy.[43] Although

[42] However, we note that a few studies provide evidence that accounting information affects peer-firm investment at a broad level without testing the specific mechanism for why such peer effects manifest. For example, Chen et al. (2013) provide evidence that mandatory IFRS adoption increases the transparency and comparability of disclosures made by peers operating in foreign countries. In other words, Chen et al. (2013) provide evidence that IFRS adoption leads to an association between the disclosures of foreign peer firms and domestic firm investment efficiency, but do not explicitly examine why such effects arise.

[43] When financially unconstrained competitors are informed about the financial constraints of their rivals, the unconstrained firms can temporarily lower prices (and engage in other forms of non-price competition) to push financially constrained competitors out of business – a competitive strategy known as predation (see Bolton and Scharfstein, 1990).

his paper does not directly examine how firms incorporate the proprietary information disclosed by competitors into their investment decisions, his findings provide indirect evidence of such behavior.

Third, in the discussion so far, externalities are defined as economic costs/benefits on others that the disclosing firm is assumed to *ignore* when making its decisions. However, if a firm's disclosures affect the information set of its peers' investors/stakeholders, then it is plausible that firms take advantage of the implications of their disclosures for peer firms and use this channel to gain a strategic advantage over their competing peers. For example, Aobdia and Cheng (2018) suggest that firms strategically disclose good news when their peers are renegotiating contracts with labor unions. Since labor unions use peer-firm disclosures to evaluate their own firm's prospects, the good news disclosed by peer firm *during contract renegotiations* can help unions negotiate better contract terms with their employer, putting the unionized firm at a competitive disadvantage. Similarly, a recent paper by Kim et al. (2018) finds that acquirers in M&A transactions disclose information to lower the target's stock price (via information transfers) in periods when M&A negotiations are taking place. Like Aobdia and Cheng (2018), their evidence is consistent with spillover effects influencing firms to change the timing and content of their disclosures. These studies stop short of examining the investment implications of their predictions. If firms do internalize the externalities of their disclosures on peers (as suggested in the above studies), understanding their implications for investment decisions at the disclosing firm and the peer firm is a promising avenue for research.

Fourth, a large literature dating back to Keynes (1936) shows that managers have labor market incentives to mimic the decisions of other firms or "follow the herd" (see e.g., Scharfstein and Stein, 1990; Zwiebel, 1995). Consistent with these theoretical predictions, prior studies

document evidence consistent with "herding" or "mimicry" in a variety of corporate decisions, including capital structure, investment, governance practices, tax planning, etc. However, prior research is largely silent on how managers obtain the information necessary to follow their peers. An interesting avenue for future research is examining whether peer-firm disclosures facilitate the herding behavior documented in prior research.

Finally, although peer-firm disclosure is also purported to affect related firm investment by lowering adverse selection costs (Dye, 1990; Admati and Pfleiderer, 2000), we are unaware of any empirical study that isolates this mechanism. Shroff et al. (2017) provide evidence that a firm's disclosure affects peer firms' cost of capital but do not examine investment decisions. Similarly, we are unaware of any evidence examining whether misreporting by one firm exacerbates moral hazard and adverse selection costs for peer firms. Durnev and Mangen (2009) and Beatty et al. (2013) find that misreporting by one firm is associated with inefficient investment decisions at peer firms. However, we do not know whether boards of directors, regulators, and other stakeholders of firms also rely on the misreported disclosures of peer firms in their interactions with their firms. For example, it is plausible that misreporting by one firm affects CEO incentive contracts at peer firms, which then affects CEO decision-making. Evidence along these lines would further the literature on the peer effects of disclosure.

5. Learning from a firm's own disclosure requirements

5.1. Conceptual underpinnings

With the exception of the evidence showing that peer firms' disclosure can facilitate the investment decisions of related firms by reducing uncertainty, much of our review focuses on evidence showing that financial reporting affects investment decisions by mitigating agency frictions. However, it is important to note that financial reporting can have significant effects on

investment decision-making even in the absence of agency frictions. Over the past few decades, traditional economic models of firm behavior are incorporating the idea that economic agents, including managers, can have bounded rationality and as a result, incur information acquisition and processing costs (see Conlisk (1980) and Sims (2003) for reviews of the literature). In fact, research in psychology dating back to Simon (1955), suggests that managers, like all other economic agents, face information processing constraints that affect their decision-making. As a result, it is plausible that managers do not incorporate *all* decision-relevant information accessible to them within their firms because such information is costly to collect and/or process.

A recent stream of research incorporates theories of bounded rationality and processing costs into their hypothesis development and predicts that preparing financial statements and complying with financial reporting requirements can affect managers' information sets. Specifically, the idea is that information acquisition and processing costs affect the extent to which managers' investment decisions incorporate information accessible within their firm that is not yet collected or processed. When changes in disclosure regulation or a firm's stakeholder base (e.g., becoming a government supplier) prompt firms to collect and process additional information, the additional information collected/processed can affect managers' information sets and thus their investment decisions, even in the absence of agency considerations.[44]

[44] A related stream of literature suggests that stock prices aggregate information from several traders and greater stock price informativeness informs managers investment decisions (e.g., Chen et al., 2007). In other words, managers extract information embedded in their firm's stock price while making investment decisions; when stock prices are more informative of the firm's fundamental value, managers make better investment decisions. We do not review the evidence in that literature as it does not concern the role of financial reporting and disclosure but refer reader to Bond et al. (2012) for a review of the literature. That said, we note that one study in this line of research that fits into the scope of our review is Jayaraman and Wu (2018), who provide evidence that improvements in mandatory disclosure discourage informed trading, which lowers stock price informativeness and the extent to which managers learn from price. Other related papers include Zuo (2016) and Zhu (2018).

A primary (but not the only) mechanism through which managers are purported to learn new information from complying with financial reporting regulation is that firms typically use the same measurement rules for internal decision-making as that required for external reporting (Kaplan, 1984). Thus, compliance with new financial accounting rules leads to changes in managerial accounting systems, which is the premier source of information for managers' capital budgeting decisions.[45] In his textbook, Zimmerman (2013) provides some justification for why managerial and financial accounting systems are closely aligned in many firms. Specifically, he argues that using different approaches to measure firm performance for internal decision-making and external reporting creates confusion from having to reconcile the numbers from different (internal and external reporting) accounting systems, implicitly relying on the notion that information processing is costly (see also Dichev et al. (2013) for survey evidence consistent with Zimmerman's conjecture). As such, the link between managerial and financial accounting is likely an important reason why changes in financial reporting regulation affects managerial information sets and their subsequent decisions.

5.2. Empirical evidence and open issues

McNichols and Stubben (2008) are perhaps the first to suggest that managers might "believe" their own *misreported* financial statements, which then leads to sub-optimal investment decisions.[46] Specifically, they show that firms over-invest in periods when they overstate their earnings and interpret their evidence as consistent with managers relying on the misreported

[45] A primary purpose of managerial accounting systems is to provide managers with information to facilitate capital budgeting decisions. Thus, it is perhaps obvious that managerial accounting systems affect investment decision-making. The focus of our review is on the effect of *financial* reporting and disclosure on corporate investment and thus we do not review evidence examining the effect managerial accounting on investment. See Ittner and Larcker (2001) and Zimmerman (2001) for reviews of the managerial accounting literature.

[46] Note that the conceptual discussion above accommodates both a rational explanation for why managers learn from complying with financial reporting requirements as well as a behavioral one. McNichols and Stubben (2008) allude to a behavioral argument for why financial reporting affects managers' information sets and their decision-making.

growth trends while making their investment decisions. This may occur because the individuals within the firm responsible for making investment decisions are different from those responsible for the firm's financial reporting choices. However, as the authors recognize, the evidence in McNichols and Stubben (2008) is also consistent with poor quality accounting increasing moral hazard costs. As such, the authors are agnostic about the specific mechanism that leads to a relation between accounting misstatements and investment efficiency.

More recently, Shroff (2017) argues that compliance with new accounting rules can, at times, force managers to collect and/or process additional information that is relevant for their investment choices. To test this prediction, Shroff (2017) uses cross-sectional variation in the characteristics of several changes in GAAP and classifies them as more or less likely to provide managers with decision-relevant information upon compliance.[47] He finds that changes in GAAP that are more likely to require firms to collect new information (as part of the compliance process) have a significant effect on firms' investment decisions even in the absence of a contracting motive. In contrast, changes in GAAP that are less likely to require firms to collect new information affect investment decisions only in the presence of a contracting motive.[48] Bae et al. (2017) extend the evidence in Shroff (2017) by documenting that more knowledgeable auditors help increase their client firms' investment efficiency, presumably by improving the quality of information reported to managers within their firms.

A related stream of research uses the Sarbanes Oxley's requirement that firms are required to assess the effectiveness of their internal controls to identify changes in the quality of managers'

[47] For example, Shroff (2017) argues that changes in GAAP requiring firms to *recognize* accounting amounts previously *disclosed* in financial statements are less likely to provide managers with new information than changes in GAAP that fundamentally change the measurement of an economic transaction.

[48] Related to Shroff (2017), Cheng et al. (2018) and Samuels (2018) provide evidence that compliance with new financial reporting requirements can lead to improvements in managers' voluntary disclosure decisions as a result of improvements in managers' internal information environments.

internal information sets. The premise underlying this line of research is that internal controls over financial reporting (ICFR) encompass processes and procedures set by managers to maintain records that accurately reflect a firm's transactions. If a firm's ICFR are ineffective, managers are supplied with lower quality information that they use as inputs into decision-making, leading to inefficient decisions. Consistent with this idea, Cheng et al. (2013) and Harp and Barnes (2018) find that firms with material weaknesses in their ICFR have lower investment efficiency in terms of capital expenditure and M&A decisions, respectively.[49] Feng et al. (2015) find that firms with inventory-related material weaknesses have lower inventory turnover and higher inventory impairments. These studies also document an improvement in investment and inventory management efficiency following the remediation of ICFR material weaknesses.

Since managers' information sets are unobservable to the researcher, an important limitation of the above studies is that it is difficult to empirically identify whether *managers* do indeed learn new information from their own firms' financial reports. Further, since changes in managers' information sets are likely to be correlated with changes in investors' information sets, the above studies struggle to differentiate between two completing explanations for much of the evidence. On the one hand, changes in financial reporting could inform managers (due to processing costs) and thus lead to changes in their investment decisions. On the other hand, changes in financial reporting could inform investors/stakeholders, which can lower agency costs and thus affect investment. As such, we expect that advances in this area of research would require a mix of approaches such as combining survey data with archival data (e.g., Cheng et al., 2018) or a field experiment (e.g., Floyd and List, 2016) to provide further support of the managerial learning hypothesis.

[49] As discussed in section 2, Cheng et al. (2013) interpret the association between ICFR weaknesses and investment using an agency framework rather than a managerial learning/information processing cost framework.

In the spirit of trying new approaches to examine whether managers learn new information from preparing financial statements, Choi (2018) estimates a structural model to get at this question. His model incorporates the idea that implementing an accrual accounting system supplies managers with incremental information to one provided by a cash-basis accounting system, which is useful for making investment decisions. He goes on to show that an accrual accounting system improves managers' estimates of the firm's future productivity. Further, improvements in managers' estimates of future productivity lead to better resource allocation within the economy such that both capital and labor flow to the most productive firms. Overall, Choi (2018) finds that improvements in the quality of information managers use to make decisions (via an accrual accounting system) lead to increases in aggregate productivity and aggregate output.[50]

An important question that arises from the evidence in the above studies is whether regulation requiring managers to collect/process additional information increases or decreases firm value. Obviously, it must be too costly for managers to process every piece of information relevant for decision making. Thus, it would be informative to know what kinds of information firms collect (i.e., where is the optimal stopping point) and whether regulation force managers to collect/process additional information that is useful for decision-making and yet not efficient to collect in the absence of regulation. On the one hand, it is plausible that firms rationally choose to *not* collect/process certain information even if such information is useful for decision-making because information processing costs exceed the value of such information (e.g., Sims, 2003). On the other hand, it is plausible that managers did not fully appreciate the value of information not collected until regulation forces them to do so (e.g., Simon, 1973; Camerer and Malmendier, 2007). More research is needed to better understand the implications of information processing costs on the

[50] The evidence in the above studies is related to that in Soll (2014), who provides an historical account of the role double-entry accounting played in contributing to the rise and fall of nations in the 17th and 18th centuries.

relation between accounting and investment. Perhaps, technological improvements related to processing big data can increase or decrease the relation between financial accounting and investment by providing managers alternative sources of more precise information.

An observation that emerges from our review is that prior studies generally suggest, but do not explicitly test, the idea that the reason why managers learn new information from financial reporting is due to the link between managerial and financial accounting systems. Explicit tests documenting the link between managerial and financial accounting are limited to survey evidence from Dichev et al. (2013) and some archival studies such as Goodman et al. (2014) and Ittner and Michels (2017). Whether the link between financial and managerial accounting is truly the causal mechanism tying accounting rule changes to investment remains to be seen. More broadly, the notion that financial reporting systems shape the structure of management accounting systems is likely to lead to additional testable predictions concerning their joint influence on managers' real actions. Hemmer and Labro (2008) provide some theoretical guidance on implications of the link between managerial and financial accounting systems; Goodman et al. (2014), Gallemore and Labro (2015), and Ittner and Michels (2017) examine additional implications of the link between internal information and external reporting for corporate decision-making.

In sum, existing studies in this area provide evidence that complying with financial reporting requirements can affect managers' investment decisions. However, the idea that managers can learn new information from the financial reporting process is still in its infancy and much is yet to be learned. The existing evidence is largely cross-sectional in nature, leaving room for alternative interpretations. In addition, the precise mechanisms that drive the extant evidence are unclear. Thus, more research is needed to examine whether the financial reporting system indeed informs and improves managers' investment decisions.

6. Emerging topics

This section discusses two emerging research topics that abstract away from traditional agency conflicts as the source of friction that generates a relation between financial reporting and investment.

6.1 Behavioral biases

Over the past three decades, economists have made substantial progress in incorporating psychological properties related to preferences and judgement into the standard economic model. By doing so, research in behavioral economics and finance offers several new predictions related to how managers make corporate finance decisions and provides evidence supporting many of these predictions (see Mullainathan and Thaler (2001), Camerer and Malmendier (2007), and Baker and Wurgler (2013) for reviews of this literature). The previous section touches upon the idea that managers can have cognitive limitations, which affect their decision-making. However, we are aware of only a few studies that explicitly examine the implications of managers' and investors' behavioral biases in the context of the relation between accounting and investment.[51]

Jackson et al. (2009) argue that the method of depreciation accounting used by firms affects their capital investment decisions. Specifically, they observe that straight-line depreciation results in recording financial statement losses more often than accelerated depreciation when assets are sold, and hypothesize that loss-averse managers are less likely replace assets when they use straight-line depreciation than when they use accelerated depreciation. Consistent with their

[51] We note that there are some experimental studies that test behavioral theories linking accounting to investment. To limit the scope of this review, we do not discuss research from the experimental area. However, we refer interested readers to Libby and Emett (2014) and Libby et al. (2015), who review many of the experimental studies testing behavioral theories that link financial reporting to investment.

hypothesis, Jackson et al. (2009) find a negative association between the use of straight-line depreciation and capital investment.[52]

Graham et al. (2017) provide evidence consistent with managers having a salience bias that leads them to use financial reporting metrics for decision-making.[53] Using a survey instrument, they find that managers often use the GAAP effective tax rate (ETR) rather than the marginal tax rate (MTR) as the tax rate input for evaluating investment decisions. Graham et al. (2017) combine their survey data with archival data to provide evidence consistent with a salience bias leading public company managers to use the GAAP ETR. Finally, they show that using the GAAP ETR for decision-making leads managers to make value-decreasing investment (and capital structure) decisions.

The idea that managers' investment decisions rely on numbers reported in financial statements even when financial statements do a poor job capturing the economics of the transaction likely extrapolates to several other cases besides taxes and depreciation (e.g., accounting for stock option, pension, and leases prior to recent accounting changes, many forms of conservative accounting such as lower of cost or market, etc.). As a result, an important avenue for future research is to better understand *when* managers are more susceptible to make decision-errors by using GAAP numbers for internal decision making. In general, we should expect to find more decision-making errors when (i) the decision in question is infrequent and lacks clear feedback, (ii) the manager does not specialize in the decision, and (iii) managers are protected from market pressure and competition (see Camerer and Malmendier, 2007). Along these lines, Graham et al.

[52] Pinnuck and Lillis (2007) also examine an implication of managers being loss-averse. Specifically, they find that loss-averse managers are more likely to exercise the abandonment option to improve performance and avoid reporting a future loss.

[53] Salience can be thought of as a byproduct of having information processing constraints. Specifically, if managers are constrained in their ability to process information, they are more likely to rely on heuristics and salient metrics that impose lower information processing costs.

(2017) provide preliminary evidence that managers are less likely to make decision-errors due to taxes when there is more competition and when managers have a degree in accounting or have more years of education.

Overall, there is much to be learned from advancements in both theoretical and empirical research in accounting that incorporates the effects of behavioral biases into decision-making by all economic agents interacting with firms. Broadly speaking, economic agents can have several behavioral biases such as overconfidence, limited attention, loss aversion, miscalibration, and attribution among others (see Camerer and Malmendier, 2007; Baker and Wurgler, 2013). Further, these behavioral biases could occur at the manager-level, investor/stakeholder-level, regulator-level or some combination of these. We believe that several testable predictions will emerge as we incorporate the idea that different subsets of economic agent(s) can have behavior biases, which affects their decision-making. For example, if investors are rational but managers are loss averse, managers might under-invest in R&D given that U.S. GAAP requires firms to immediately expense R&D costs, and information asymmetry related to the payoffs of R&D investments prevent investors from designing a contracting solution to this problem. Alternatively, it is plausible that investors have limited attention and tend to fixate on earnings (e.g., Sloan, 1996). A consequence of investors fixating on earnings is that managers are then incentivized to make investment decisions that maximize earning rather than cash flows (as discussed in section 3). As a point of caution, we believe that advancements in our understanding of how behavioral biases affect the relation between accounting and investment would require a fair bit of innovation and creativity with respect to separating and identifying behavioral explanations from rational ones.

6.2 Diffusion of accounting information though networks

A recent stream of research examines whether the use of common agents (e.g., auditors, board members, shareholders, etc.) by firms affects the decision-making process at these firms. The premise underlying such studies is that shared agents (i) have conflicts of interest and/or (ii) act as a conduit for information, which subsequently affects the decisions managers make. For example, Cai et al. (2016) find that M&A transactions in which the acquirer and target share a common auditor are more value enhancing (proxied by M&A announcement returns) than those without common auditors. They argue that common auditors facilitate the flow of information during M&A deals by acting as information intermediaries for merging firms. Dhaliwal et al. (2016) present similar findings as Cai et al. (2016) but provide evidence that much of the value generated by common auditors is captured by the acquiring firms' investors because the auditor's interests are more aligned with those of the acquirer. Both Cai et al. (2016) and Dhaliwal et al. (2016) find that the documented effects are stronger when the merger involves acquirers and targets sharing auditors in the same local office. As such, research examining whether common agents affect the relation between disclosure and investment is an interesting area for future research. In past two decades, there has been a steady increase concentration in audit markets, labor market for directors, stock ownership, etc, thereby increasing the likelihood that two firms share a common agent. Thus, understanding the economic consequences of having a common agent is an important area of inquiry.

More broadly, research in economics and finance suggests that management practices of one firm can be transmitted to other firms in the network through 'word-of-mouth' communication (e.g., Ellison and Fudenberg, 1993). However, it is also plausible that such learning occurs through corporate disclosure. Specifically, public companies are required to disclose detailed information related to governance arrangements (e.g., compensation practices, board structure, etc.), tax

planning activities, technological innovations, etc. Thus, it is plausible that corporate disclosure helps firms learn and adopt the management practices of other firms, particularly industry leaders. We are unaware of much research examining whether disclosure facilitates the diffusion of management practices across firms.

7. Conclusion

Over the last two decades, a large and growing body of literature has contributed to our understanding of whether and why financial reporting affects investment decision-making. In this review, we provide a framework that organizes the literature into the different channels that connect financial reporting to investment choices. We articulate two broad scenarios in which financial reporting "matters" for investment choices: (i) the presence of information asymmetry that gives rise to agency frictions such as adverse selection and moral hazard costs, and (ii) the presence of information uncertainty about growth opportunities. The framework we provide is by no means complete or perfect, and the channels we highlight are not mutually exclusive or exhaustive. However, our classification scheme allows us to categorize most of the literature in a manageable and accessible manner. Additionally, it is easy to see how most studies that do not fit the framework can still be interpreted in its context, with some modifications.

With respect to adverse selection, earlier studies concentrate on establishing a relation between reporting quality and investment efficiency in settings where adverse selection is likely to play a crucial role. The two-fold effort in more recent studies has been to demonstrate that reporting quality influences investment efficiency by facilitating access to external capital, and to provide better identification. Nonetheless, the literature would definitely benefit from an expansion of these efforts to establish credible causal links between reporting quality and investment choices through the mitigation of adverse selection costs. Further, there is a need to better estimate the

magnitude of the increases in investment efficiency attributable to financial reporting, as well as to understand alternative forces and channels available to firms to overcome the purported costs (in terms of foregone investment efficiency) of having low reporting quality.

Studies examining financial reporting in the context of moral hazard have collectively generated interesting insights, in particular the possibility that reporting can either alleviate or accentuate moral hazard and consequently, either improve or hinder investment efficiency. Specifically, studies have found in certain settings that higher reporting quality increases shareholders' ability to monitor managers and thus reduce managerial incentives to over-invest. At the same time, the reliance on accounting information in contracts and for valuation create financial reporting benchmarks that managers are incentivized to meet or exceed, in part by distorting their investment behavior. A key issue in the context of moral hazard is that managers not only exert control over their investment decisions, but they also have scope for discretion in their reporting choices, inclusive of the specific reporting objectives they decide to pursue (for example, short-term earnings or long-term growth). The interaction between mandatory reporting requirements, managers' discretionary disclosure choices and their investment decisions is thus a fertile ground for future research to understand the circumstances under which the impact on investment efficiency is beneficial or distortionary.

Stepping away from agency frictions, a still-nascent stream of literature examines how accounting information affects investment decisions when there is uncertainty about future investment opportunities. Two distinct scenarios are possible. First, accounting information disclosed by *peer* firms can reduce managers' (and shareholders') uncertainty about growth opportunities for their own firms, thereby improving investment efficiency. Second, the presentation and preparation of financial reports for their own firms can enhance managers'

information sets, which then affects the quality of their investment decisions. Despite the intuitive conceptual appeal, only a relatively few studies provide evidence on this "learning" channel and a number of issues remain to be explored in greater depth. For example, when does the knowledge that managers extract from their peer firms' disclosures represent wealth transfers from their peers in the form of proprietary costs, as opposed to increases in the collective knowledge about investment opportunities? Similarly, what is the type of information about future investment opportunities that firms' financial statements reveal to their own managers? The link between financial and managerial reporting may be key to answering this last question.

In summary, our goal is to provide a description of what we have learned with respect to the relation between financial reporting and investment decisions, and the challenges and open questions that remain. The framework we provide can help researchers to understand how individual studies fit into existing literature and identify new research questions that can further the literature. We look forward to future research on this topic.

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Figure 1
Framework for our review of the investment literature in accounting