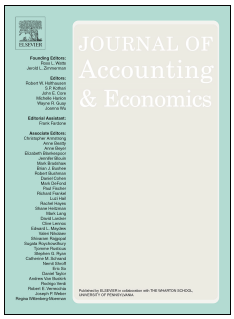

Discussion of “Accounting quality and the transmission of monetary policy”

Lindsey A. Gallo, S.P. Kothari

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Lindsey A. Gallo
University of Michigan
gallol@umich.edu

S.P. Kothari
Division of Economic and Risk Analysis, US Securities and Exchange Commission
Massachusetts Institute of Technology, on leave
kothari@mit.edu

Abstract

Armstrong, Glaeser and Kepler (2019) examine whether accounting quality affects the sensitivity of a firm's stock returns to monetary policy news. The authors document that firms with lower accounting quality experience more pronounced responses to surprise changes in the target Federal funds rate, consistent with proposed balance-sheet channel of policy transmission. We first discuss how this paper fits with prior literature on the role of accounting quality and firm investment and with recent work examining information frictions and policy transmission. We then question the intuition behind the paper's symmetric prediction. In addition, we highlight potential measurement issues related to returns and accounting quality. Lastly, we consider the key takeaways of the paper and provide suggestions for areas of future research.

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Lindsey A. Gallo
University of Michigan
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S.P. Kothari
Division of Economic and Risk Analysis, US Securities and Exchange Commission
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1. Introduction

Armstrong, Glaeser and Kepler (this issue, hereafter AGK) find that the effects of monetary policy news are sensitive to a firm's accounting quality. Specifically, they document that stock-price responses to the surprises in the Federal funds target rate changes are more pronounced for lower accounting quality firms. This constitutes evidence on one of the proposed channels for monetary policy transmission – the balance sheet channel. Through this channel, interest rate shocks not only affect interest rate expense (and hence, net income), but also directly impact a firm's net worth and collateral value, for example by inhibiting access to capital and ultimately depressing investment in the case of a rate increase. AGK argue that accounting quality affects monetary policy transmission through the sensitivity of the firm to credit market imperfections. In particular, low (high) quality firms should be more (less) sensitive to changes in net worth and net income brought about by policy shocks.

The authors take on an ambitious and important question. The Fed's policy actions are of significant interest to capital market participants and have real effects on firms' investing and operating decisions. Although traditionally economic models have focused on a representative firm, Former Fed chair Janet Yellen underscored the importance of investigating disaggregated data stating, "Economists' understanding of how changes in fiscal and monetary policy affect the economy might also benefit from the recognition that firms…are heterogeneous." (Yellen 2016). Accounting researchers are uniquely positioned to understand how heterogeneous information frictions affect policy transmission. The authors add to a growing literature explicitly examining cross-sectional variation in the equity market's response to policy news (see Ozdagli 2017; Gorodnichenko and Weber 2016; Ippolito, Ozdagli and Perez 2017).

Our discussion first considers where AGK fits in the existing literature. Given the effect of accounting quality on access to capital and firm-level investment documented in prior studies, it is useful to reflect on how these inferences translate to the monetary policy-news setting. We also highlight contradictory findings from a similar setting. Second, we question whether the symmetrical prediction on the relationship between accounting quality and monetary-policy sensitivity is consistent with economic intuition given what we know about the role of information frictions in capital markets. Specifically, when we consider the effect of an interest rate decrease, it is puzzling to predict that low-quality firms should experience a greater stock price bump than high-quality firms. That the results ultimately only hold for the subsample of interest rate decreases calls into question the interpretation of their results overall. Third, we examine the empirical design. In particular, we assess whether returns are an appropriate measure of policy transmission and discuss the costs and benefits of using Accounting and Auditing Enforcement Releases (hereafter, AAERs) and restatements to measure accounting quality. Finally, we review the key takeaways from the study and offer directions for future research.

2. Reconciling with Prior Literature

An extensive literature examines the relationship between accounting quality and cost of capital, access to finance, and investment (see Roychowdhury, Shroff and Verdi 2019 for a recent literature review). Altogether, these studies highlight the role of accounting quality in mitigating information asymmetry and suggest that better reporting quality facilitates access to capital and improves investment efficiency (i.e., Biddle and Hilary 2006; Biddle et al., 2009; Chen et al., 2011). In light of these findings, it would be surprising if transmission were *not*

affected by accounting quality insofar as monetary policy directly affects collateral values and the supply of capital.

2.1 Collateral values and the balance sheet channel

2.1.1 Balakrishnan, Core and Verdi (2014)

Although AGK is the first paper in accounting to explicitly examine a link between accounting quality and the strength of the balance sheet channel, and ultimately, the degree of policy sensitivity, existing studies shed light on the same channel.[2] Gertler and Gilchrist (1994) posit that monetary policy shocks are not the only catalyst from which the balance sheet channel would take effect; indeed, any disturbance to collateral value would yield the same prediction. For instance, Chaney, Sraer and Thesmar (2012) find that when shocks to real estate values cause firms' collateral values to increase (decrease), investment also increases (decreases). The positive relationship between collateral value and investment at the firm-level translates into aggregate investment effects. Using the same setting, Balakrishnan, Core and Verdi (2014) directly examine the interaction between accounting quality and collateral value and its ultimate effect on access to capital and investment at the firm level. Because their paper directly measures the change in collateral value, which is the conduit for the balance sheet channel, the findings are indicative of what we might expect in the case of shocks to interest rates. By not relying on monetary policy shocks (which have direct effects on the supply of capital), Balakrishnan et al.'s (2014) setting is arguably better at testing how the balance sheet channel operates independently of other channels.[3]

[2] While AGK explicitly exclude banks from their sample, Lo (2014) provides evidence that accounting quality affects the transmission of policy through banks as well. Specifically, Lo (2014) finds that following contractionary policy changes, audited banks are able to access capital more easily than non-audited banks.

[3] The other version of the credit channel is the bank lending channel through which Fed actions affect the supply of lending ultimately impacting the ability of firms to access capital. The balance sheet channel and the bank lending channel are not necessarily mutually exclusive. As argued by Gertler and Gilchrist (1994), the set of borrowers that are balance-sheet constrained and bank-dependent likely overlap.

A potential benefit of the AGK setting is that it speaks directly to the effects of monetary policy shocks on asset prices and hence is generalizable across a wider array of firms than the Balakrishnan et al. (2014) setting. On the other hand, Balakrishnan et al.'s (2014) setting allows for a finer firm-specific measure of changes in collateral values. AGK's contribution is that it speaks to stock price sensitivity. If the goal is ultimately to understand heterogeneity in the market's response to policy news specifically, and to identify firms that are more or less sensitive to Fed funds rate changes, then the AGK setting is preferable. If the goal is to speak directly to the real-effects of the role of accounting quality in the balance sheet channel, Balakrishnan et al. (2014) is more convincing.

2.2.2 Balakrishnan, Core and Verdi (2014) Results

Consistent with the predictions of AGK, Balakrishnan et al. (2014) find that the investment of firms with poorer reporting quality are more sensitive to changes in collateral value. This is consistent with the overall story of AGK that interest rate shocks directly affect collateral value. The cross-sectional variation in investment-to-collateral sensitivity caused by accounting quality is what drives the moderating effect of accounting quality on the firm's stock-price sensitivity to monetary policy news. However, Balakrishnan et al. (2014) find that both high and low reporting-quality firms issue more debt when collateral values increase. High reporting-quality firms use the additional debt to return capital to shareholders. This finding is potentially problematic for AGK because it is not clear that low accounting-quality firms would exhibit greater stock-price sensitivity than high-quality firms given the ultimate use of the capital (investment versus dividends). We provide additional discussion on the use of stock returns to measure transmission in Section 4.

2.2 Relation to Ozdagli (2017)

The paper most related to AGK is Ozdagli (2017), who finds that information frictions *attenuate* the market's response to monetary policy news. Information frictions take a few forms in Ozdagli's (2017) study. Some relate directly to what we would think of broadly as "accounting quality" (e.g., accruals), while most capture financing constraints (i.e., credit rating, cash flow volatility, and several financial constraint indices). Ozdagli (2017) interprets his findings to be consistent with constrained firms being less responsive to policy news because they rely less on external finance. Most notably, Ozdagli (2017) finds that, upon the revelation of the SEC's inquiry into Enron's financial statements, Arthur Anderson clients experienced muted responses to the subsequent Federal funds target rate announcement as compared to a similar announcement before the Enron news broke. Ozdagli (2017) interprets this as evidence consistent with lower information frictions leading to stock prices that are less sensitive to policy news. One could argue that the SEC's inquiry into Enron represents a shock to the market participants' perception of accounting quality of other firms subjected to Arthur Anderson audits. AGK interpret the result differently, arguing that the muted sensitivity is consistent with investors expecting accounting quality to increase as these firms are forced to find new auditors. The AGK interpretation, however, is predicated upon investors perceiving lower reporting quality for Anderson clients in the pre-Enron period. Existing literature is mixed on which interpretation is more valid.

AGK contend that Ozdagli's paper is primarily concerned with the effect of financing constraints, which AGK argue is a distinct theoretical construct from accounting quality. Bernanke, Gertler and Gilchrist (1994) argue that while changes in net worth induce increases in agency costs in firms with weak balance sheets, costs to borrowers with ample internal capital

will be less affected.[4] The notion that the effect is stronger for firms with a greater need to access external capital makes it difficult to disentangle accounting quality and financial constraints empirically. Overall, the somewhat conflicting findings in AGK and Ozdagli (2017) highlight the difficulty inherent in capturing accounting quality separately from other information frictions or firm characteristics.

3. Empirical Predictions and Results

3.1 Symmetric Prediction

AGK model the effect of accounting quality on a firm's stock-price sensitivity to monetary policy as follows:

$$R_{i,t} = \beta_1 AccQuality_{i,t-1} + \beta_2 AccQuality_{i,t-1} \times Surprise_{i,t} + \varepsilon_{i,t}$$

where β_2 is predicted to be negative, indicating that accounting quality magnifies the stock-price effect of a surprise in interest rates. The interaction of accounting quality with the surprise variable implies the prediction of a symmetric interactive effect of accounting quality. However, this symmetry is not economically intuitive. Specifically, in the case of a surprise interest rate increase the prediction is intuitive. When interest rates rise, the firm's collateral value declines (thereby decreasing the firm's financing capacity). Information asymmetry exacerbates these financing frictions for firms with low accounting quality, causing these firms to bypass positive NPV projects and manifesting in a more negative stock market response. This appealing intuition is why the authors couch their predictions (and the economic significance of their results) using the example of an interest rate increase. However, in the case of an interest rate decrease the prediction is counterintuitive. Here, AGK's regression model predicts a larger positive stock price reaction to surprise interest rate decreases for firms with low accounting quality. While

[4] For example, a recent paper by Ippolito et al. (2017) finds greater policy sensitivity for financially constrained firms that rely on floating-rate debt.

interest rate decreases may result in greater collateral values, why would the low-quality firms experience a greater stock price bump from interest rate decreases than high-quality firms, especially holding leverage constant? This inconsistency has not been addressed in the paper and it renders the interpretation of the findings inconsistent with their hypothesis.

3.2 Asymmetry of Results and Interpretation

As discussed in section 3.1, the authors predict a symmetric result – low accounting quality exacerbates the stock-price response to policy news regardless of whether the surprise is positive or negative. At the conference, we presented a potential asymmetry in the paper's main result; in response the authors have added additional analysis confirming that the documented main result holds only for negative surprises (i.e., interest rate decreases). This finding implies that low AQ firms are not worse off when there are surprise increases in interest rates but are, in fact, "rewarded" by the market when there is a surprise decrease in interest rates. Given our questions about the symmetric hypothesis with regard to interest rate decreases, this finding and authors' explanation remain puzzling. Despite the authors' assertion that an asymmetric response is "neither inconsistent with nor ruled out by theory" the question of the economic intuition behind the paper's main "symmetric" hypothesis remains. We agree with the authors that the concentration of the main effect in the negative surprise subsample warrants future investigation, however there is a missed opportunity here for the authors to better explain how theory specifically maps into a symmetric or asymmetric hypothesis.

The paper argues that "any asymmetry in the baseline effect of monetary policy should…be amplified via the balance sheet channel." This argument ignores the importance of the cross-section in understanding transmission. In particular, prior research finds the association between surprise and market returns is only significantly negative for negative surprises (i.e.,

Gallo, Hann and Li 2016). Yet, we might still expect the coefficient to be negative for positive surprises in a subset of firms. If accounting quality only matters for negative surprises, this suggests that the economic environments that prompt positive versus negative surprises are systematically different. The benefit of understanding cross-sectional variation in transmission is that it can inform policy-makers on whether and when policy actions will be most effective, thus this documented asymmetry needs to be better incorporated into the conclusions drawn from the paper's main analysis.

3.2.1 Results on Financial Constraints

Despite prior literature on the role of financing constraints in policy transmission (i.e., Bernanke et al. 1994) there is little evidence in AGK that the results are more pronounced for financially constrained firms, particularly in the AAER sample. We would not expect collateral value to matter if a firm does not need to access external capital. Within AGK's cross-sectional tests, the lack of a consistent significant difference between more and less constrained firms is likely due to low power; however, a selection issue is also possible. Dechow et al. (2011) find that AAERs are more prevalent in firms with higher ex-ante financing demands. Ideally, the AGK paper would document that accounting quality matters most when firms are financially constrained. Such a finding would corroborate what we already know about the role of accounting quality in the credit market and speak more clearly to the cross-sectional heterogeneity that matters for policy transmission per the call of Chairwoman Yellen.

4. Measuring Accounting Quality and Policy Transmission

4.1 Measuring Policy Transmission

An overarching question is whether the paper actually documents an effect on monetary policy transmission. Empirically, AGK use the sensitivity of firms' stock returns to policy news

as a measure of policy transmission. At the firm level, the best measure of policy transmission is not obvious – returns, access to financing, investments, some other measure?[5] Returns are certainly *related* to transmission, but it is important to reflect on the shortcomings of using returns to proxy for policy transmission over arguably more direct measures, such as firm investment. Returns have the benefit of being high-frequency. They reflect the market's immediate response to monetary policy actions, whereas investments may appear with a significant lag (Bernanke and Kuttner, 2005). Yet, returns do not necessarily need to move in the same direction as investments in AGK's setting. As discussed in Section 2.1 above, per Balakrishnan et al. (2014), although low accounting quality firms experience greater investment-to-collateral value sensitivity, both high and low accounting quality firms access more debt following increases in collateral value; the high-quality firms simply use the added capital to return value directly to shareholders. Further, it is not obvious ex-ante that the prospect of increased investment by low accounting quality firms will be received positively by the market, since prior research finds these firms are more likely to over-invest (i.e., Biddle et al. 2009; McNichols and Stubben 2008).[6] On the other hand, returns is a useful outcome to capture because capital market participants have an interest in understanding cross-sectional variation in the stock-price response to monetary policy news; the FOMC announcements are closely watched and induce consistent aggregate responses. As argued by Bernanke and Kuttner (2005), monetary policy is transmitted to capital markets through changes in the value of private portfolios and changes in cost of capital, amongst other mechanisms.

[5] According to the Federal Reserve, monetary policy works by "spurring or restraining growth of overall demand for goods and services" through various channels. One way for changes in interest rates to affect stock prices directly is by changing the relative attractiveness of equity as an investment vehicle.

[6] Ozdagli (2017) has a useful explanation for why stock price effects and real effects (such as investment) may behave differentially in this setting. Specifically, he emphasizes that stock price is determined by a value function whereas investment is a choice variable.

To investigate the impact on investment in this context would be difficult because of the relatively low frequency of measurement and lag in implementation as compared to the Fed's rate changes. We appreciate that the authors incorporate some limited analysis using investment as the outcome and agree that adding the there are limitations in measuring policy surprise over a long window.[7] Our goal in discussing the issues with using returns is to illustrate the distinction between transmission, as the Fed intends, and what is captured in equity returns. Whether returns best reflect transmission is important for the authors' story, but market participants and policy makers are certainly interested in what drives the equity market response to policy news. In this arena, the authors add to a growing literature specifically seeking to understand what drives stock-price sensitivity to policy news (i.e., Ozdagli 2017; Gorodnichenko and Weber 2016; Ippolito, Ozdagli and Perez 2017).

4.2 Measuring Accounting Quality

The paper use two measures of accounting quality in their main analyses – an indicator for the incidence of a restatement and an indicator for the incidence of an AAER. By choosing these two indicators over model-based measures of accruals quality, the authors largely avoid type-one errors, since these firm-quarters unambiguously have reporting issues. However, the research design choice confounds what could be considered a clean measure. More specifically, the authors argue that an ex-post restatement or AAER suggests low accounting quality for the period in question. A key assumption of their analysis is that the market can identify these firms ex-ante. The assumption is at odds with empirical evidence of a negative market reaction to the eventual announcement of a restatement or AAER (i.e., Dechow et al. 1996; Palmrose et al. 2004). A reasonable question is whether AAERs and restatements are correlated with some other

[7] Future studies may be able to implement econometric methods aimed at dealing with data of mixed frequencies (e.g., Ball et al. 2019).

observable characteristic of the firm that is related to policy sensitivity. Why not, for example, use the probability score derived by Dechow et al. (2011), as opposed to actual AAERs, if testing the prediction of future enforcement? Further, prior research documents that earnings credibility suffers for several quarters following a restatement (i.e., Chen, Cheng and Lo 2014) suggesting the effect on policy sensitivity may be attributable to whatever precipitated the degradation in reporting quality. Finally, the strongest results occur in the sample of AAERs, which represent only 1% of the observations in this study. It is difficult to believe that policy transmission is significantly impacted by such a small, extreme portfolio of firms.

5. Key Takeaways and Opportunities for Future Research

Increasingly, accounting researchers are examining the relationship between accounting information and the macroeconomy. AGK take on the ambitious task of examining heterogeneity in the firm-level response to monetary policy news. This work is important because monetary policy shocks represent a significant source of aggregate market fluctuation. However, the authors' ultimate goal of informing on the channel underlying policy transmission is hampered by the confusion surrounded the symmetrical predictions and the difficulty in defining transmission at the firm-level. Still, given the recent interest in understanding the effects of heterogeneity on policy transmission, the authors take a necessary first step and, in turn, highlight a potential role for accounting information.

In the case of interest rate increases, AGK's predictions are intuitively appealing. Unfortunately, ex-ante, it is difficult to think of a coherent argument for why low-quality firms would enjoy a more positive response to "good" news about interest rates than high-quality firms. That the results ultimately only hold in the subsample of negative surprises (i.e., larger-than-expected decreases or smaller-than-expected increases in interest rates) hampers our ability

to explain the results in an intuitive way and draw inferences about policy transmission. This task is made more difficult by the shortcomings in using returns as a measure of policy transmission. For example, is the asymmetry present if we use investment as the outcome of interest?

Even if we were to ignore the confusing asymmetry and take as given that returns perfectly capture policy transmission, the paper stops short of assigning an implication of their results for policy-makers. For example, we wonder whether the results suggest that better policy transmission could be achieved if accounting quality were worse overall. This is a rather unbelievable assessment that necessitates further study. Is this an unintended consequence of improved disclosure? Further, while heterogeneity across firms in response to policy news is potentially important with respect to real effects at the firm level, the Fed is most interested in whether this variation affects *aggregate* outcomes. The paper stops short of thinking about the aggregate implications of their findings; future research can draw upon these inferences to answer Chairwoman Yellen's call and investigate whether this heterogeneity has repercussions for policy transmission in the aggregate.

Aside from implications for policy setters, the paper's results also inform about a firm's disclosure incentives. Balakrishnan et al. (2014) find that firms increase their reporting quality in response to an increase in adverse selection costs. Future research can consider how firms strategically respond to expected rate changes or the interest rate environment. To the extent that interest rate news is an important driver of a firm's investment decisions, whether and how managers adjust reporting quality in anticipation of policy news could ultimately affect the information environment of the firm and its cost of capital.[8]

[8] A recent paper by Nagar et al. (2018) finds that firms increase disclosure in response to economic policy uncertainty while Choi et al. (2019) find that firm-level voluntary disclosure helps reduce uncertainty around Fed announcements.

Recently, Chairwoman Yellen (2016) emphasized the need to move away from representative agent models in order to better understand how firm heterogeneity impacts policy transmission. AGK and Ozdagli (2017) take an important step to highlight the role of information frictions in explaining cross-sectional variation in the sensitivity to policy news. Their seemingly contradictory findings underscore the complicated nature of the relation between information frictions and financing constraints. At the same time, they offer a potential path for future research to further explore what drives the sensitivity to policy news across firms and in the time series. Accounting researchers are positioned to make important contributions in this area by applying their expertise on firm-level characteristics to macroeconomic questions.

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