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Enforcement, Managerial Discretion, and the Informativeness of Accruals

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ABSTRACT I examine the effect of strengthening the enforcement of financial reporting on managers' accrual decisions and the consequences for the informativeness of accruals. Using a sample of publicly listed German firms subject to a substantive enforcement change in 2005, I find that, consistent with the prior literature, the extent of managerial discretion in accruals declined after the introduction of the stricter enforcement regime. However, the findings on the predictive ability of accruals with respect to future cash flows and future earnings and the contemporaneous association between stock returns and accruals suggest that the informativeness of accruals also declined after the introduction of the stricter enforcement regime. This adverse effect is particularly strong when compared with a control group of publicly listed firms in Austria and Switzerland that operated in a similar institutional and economic environment but faced no substantive enforcement change. Overall, the findings suggest that stricter enforcement can have adverse consequences in the form of lower accrual informativeness.

Keywords: Financial Reporting Enforcement; Managerial Discretion in Accruals; Accrual Informativeness

1. Introduction

The quality of financial reporting outcomes is not only a function of the quality of accounting standards but also of the application of these standards in practice (e.g., Ball et al., 2000, 2003; Holthausen, 2009; Kothari, 2000). The ways managers, as preparers of financial statements, both interpret and apply accounting standards are influenced by their reporting incentives as well as the incentives of other participants in the financial reporting process, such as auditors and supervisory boards (e.g., Ball et al., 2000, 2003; Leuz et al., 2003; Watts & Zimmerman, 1986). These incentives are shaped by firms' institutional environment such as the legal system, the ownership and corporate governance structure, and the strength of the enforcement of the financial reporting standards (Hail et al., 2010; Kothari, 2000).

A key financial reporting outcome is accounting earnings, particularly accruals. In this study, I examine the effect of strengthening the enforcement of financial reporting on managers' incentives and their ability to exercise discretion over accruals, and, in particular, the consequences for the informativeness of accruals. Following the prior literature, I define informativeness as the information content reflected in accounting numbers or, given the focus of this study, accruals,

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and the ability of accruals to predict future cash flows and future earnings (e.g., Robin & Wu, 2015; Subramanyam, 1996).

In the extensive earnings quality literature,¹ different views exist about the desirability of discretion in earnings. In particular, empirical works often treat more discretion in earnings as synonymous with more opportunistic earnings management and thus poor earnings quality (Kothari, 2001; see, for example, Ahmed et al., 2013; Ernstberger et al., 2012; Francis et al., 2005). By contrast, many normative and theoretical works view managerial discretion in earnings as predominantly informative (e.g., Arya et al., 2003; Ewert & Wagenhofer, 2012, 2015, 2016; Sankar & Subramanyam, 2001). The main argument for the latter is that discretion conveys managers' private information and enables them to report earnings that more accurately reflect firms' current and future performance (Hail et al., 2010). Empirical evidence that shows that discretionary accruals are, on average, informative supports this view (e.g., Subramanyam, 1996; Tucker & Zarowin, 2006).

Given these conflicting views in the literature, the consequences of limiting (or increasing the cost of) managerial discretion in earnings, particularly with respect to the informativeness of earnings, are *ex-ante* unclear. Stricter enforcement that limits managerial discretion over earnings likely mitigates opportunistic earnings management, but it may prevent managers from incorporating private information into earnings. Specifically, stricter enforcement may increase managers' costs for including their information in earnings due to the uncertainty, time, and labor involved in the enforcement process and potential reputational costs associated with the publication of error findings. Moreover, stricter enforcement affects not only firms, but also their governing bodies. A more rigid interpretation of accounting standards by auditors and other governing bodies can also reduce managers' ability to exercise discretion (e.g., Hitz et al., 2012; Jamal & Tan, 2010; Lu & Sapra, 2009). From an informational perspective, the negative effect of reducing information in earnings for many firms could offset or dominate the potential positive effect of reducing opportunism in some firms. Hence, whether the net effect of strengthening enforcement on the informativeness of accruals is beneficial, detrimental, or neutral is an empirical question.

Several studies document capital market benefits from strengthening the enforcement of financial reporting. Christensen et al. (2013) find an increase in market liquidity around substantive enforcement changes worldwide, including Germany. Hitz et al. (2012) provide evidence that the German enforcement authorities' error findings convey new information to capital market participants. Ernstberger et al. (2012) find that the establishment of the new enforcement regime in Germany, together with the reform of the audit oversight and new audit independence rules, led to an increase in market liquidity and firm valuation and a decrease in abnormal accruals; they interpret the latter as evidence that the stricter enforcement regime in Germany has improved earnings quality by curbing opportunistic earnings management. On a related note, Cohen et al. (2008) find that the magnitude of abnormal accruals of US firms decreased significantly after the passage of the Sarbanes–Oxley Act (SOX). In sum, the prior literature points toward the benefits of stricter enforcement, whereas evidence on its potential detriments is lacking. Notable exceptions, however, include the recent works by Christensen et al. (2019) and Florou et al. (2019), who both examine publicly listed firms in the United Kingdom. Christensen et al. (2019) find that stricter enforcement, despite its positive effect on market liquidity, has a negative net effect on firm value and Florou et al. (2019) document that stricter enforcement increases audit fees for firms that do not adopt more conservative accounting behavior in response to the enforcement change. However, neither study examines how strengthening enforcement affects the informativeness of accruals, which is a key characteristic of high-quality financial reporting.

¹See, for example, Dechow et al. (2010) for a comprehensive review of the literature on earnings quality.

To examine the effect of strengthening the enforcement of financial reporting on the informativeness of accruals, I focus on a sample of German publicly listed firms during 2002–2007.² Germany provides a powerful setting for at least three reasons: First, with the enactment of the *Bilanzkontrollgesetz* on 15 December 2004, all firms whose securities are admitted to trading on the regulated market in Germany are subject to a new enforcement regime. The creation of new enforcement authorities and implementation of a proactive enforcement policy together marked a substantive change in the enforcement of financial reporting in Germany (e.g., Brown et al., 2014; Christensen et al., 2013; Ernstberger et al., 2012; Hitz et al., 2012), which establishes a natural setting for testing the effects of stricter enforcement.³ Second, a fundamental challenge in exploring the effects of regulatory changes is finding appropriate control samples to ensure that other (unobservable) factors or events do not confound the identified effects. For example, many studies that evaluate the effects of the SOX in the United States have struggled to find appropriate control samples (Leuz & Wysocki, 2016). This study exploits that two neighboring countries, Austria and Switzerland, are comparable with Germany along important dimensions such as institutional characteristics, accounting traditions, and macroeconomic conditions (Daske & Gebhardt, 2006; IMF, 2013; Iselin & Siliverstovs, 2016; Kaufmann et al., 2009; Spamann, 2010) but had no significant enforcement changes during the study's sample period (Brown et al., 2014; Christensen et al., 2013). Thus, publicly listed firms in Austria and Switzerland provide a useful control sample for a difference-in-differences (DiD) analysis. Third, a major challenge in a European setting is isolating the effect of enforcement changes from the mandatory adoption of IFRS because many countries have implemented these changes simultaneously (e.g., Christensen et al., 2013). Although this was also the case for Germany, I exploit the fact that a substantial number of firms in Germany, Switzerland, and Austria adopted IFRS before the EU mandate in 2005, which allows me to control for confounding effects due to concurrent changes in accounting standards and thus provides a better identification of the enforcement effects.⁴

As a starting point, I examine whether previous findings on the effect of enforcement on managers' use of discretion in accruals (e.g., Cohen et al., 2008; Ernstberger et al., 2012) carry over to my setting despite the sample, research design, and measurement differences. In line with this strand of the literature, I find a significant decrease in the magnitude of discretionary accruals under the strengthened enforcement regime in Germany and compared with the non-enforcement sample after controlling for various economic fundamentals (e.g., Hribar & Nichols, 2007; Owens et al., 2017).

To empirically operationalize whether the informativeness of accruals has changed during the enforcement change, I examine the association between current stock returns and discretionary accruals (which is conceptually similar to the earnings response coefficient) and the ability of discretionary accruals to predict future cash flows and future earnings.⁵ The association with stock returns captures the market pricing of discretionary accruals, whereas the predictive value of discretionary accruals is directly related to the IASB's defined objectives of financial statements, which state that '*existing and potential investors, lenders and other creditors need information to help them assess the prospects for future net cash inflows to an entity*' (IASB, 2010).

My primary results are as follows. I find a significant drop in the association between stock returns and discretionary accruals after the enforcement change in Germany compared with the

²The sample period is selected to reduce the likelihood that other economic and regulatory events confound the results, particularly with the onset of the global financial crisis at the end of the sample period.

³Note that the German stock market provides a large and meaningful sample of treated firms with approximately 650 listed domestic firms with a total market capitalization of more than a trillion euro in 2005.

⁴The EU's IFRS mandate does not apply to Switzerland. However, the SWX Swiss Exchange required all firms listed in a main market segment to apply either IFRS or US GAAP from 2005 onward (SWX, 2003). See also Zeff (2016).

⁵See Subramanyam (1996) for a similar approach to measure the informativeness of discretionary accruals.

control sample, which indicates a decline in the informativeness of discretionary accruals. In line with these results, the ability of discretionary accruals to predict future cash flows and future earnings also decreased significantly from the pre- to the post-enforcement period relative to the control sample. The results from pre–post comparisons within the German sample are consistent with the DiD findings, although the significance levels are generally lower. Overall, the findings suggest that the informativeness of accruals declined after the introduction of the stricter enforcement regime.

These findings are robust to several sensitivity checks. In addition to using control variables to account for the confounding effects of the IFRS adoption, the results also hold in a subsample that contains only firms that had applied IFRS before the EU mandate. To address concerns about potential biases in the measurement of discretionary accruals (e.g., Chen et al., 2018), I repeat the informativeness analyses using total accruals and achieve consistent results. I also obtain similar results using an entropy-balancing approach to mitigate the differences in firm characteristics between the treatment and control samples and when I use Austria and Switzerland as separate control groups.

The results of this study provide several contributions to the existing literature. In particular, the findings add to the literature on how institutional factors shape managers' reporting incentives by examining the effect of enforcement on the quality of financial reporting outcomes. I first provide evidence that corroborates previous findings that strengthening enforcement reduces managers' incentives to exercise discretion over accruals (Cohen et al., 2008; Ernstberger et al., 2012). More importantly, and in contrast to many prior studies, I provide evidence that a decline in managerial discretion in accruals does not necessarily constitute a desirable outcome from accounting-related enforcement, at least from an informativeness perspective. In particular, I show that the informativeness of the discretionary portion of earnings decreased after the establishment of the stricter enforcement regime in Germany. These findings suggest that strengthening enforcement also has detrimental effects and should thus inform regulators and other participants in the process of governing financial reporting about the potential adverse consequences of such a regulatory change. The findings are also in line with recent theoretical and empirical work that reflects the adverse consequences of strengthening accounting enforcement (e.g., Christensen et al., 2019; Ewert & Wagenhofer, 2019; Florou et al., 2019). Finally, my findings contribute to the broad discussion on the desirability of managerial discretion in accounting earnings by providing additional empirical evidence that discretionary accruals are informative about firms' future economic prospects (e.g., Linck et al., 2013; Louis & Robinson, 2005; Robin & Wu, 2015; Subramanyam, 1996; Tucker & Zarowin, 2006).

2. Background and Motivation

2.1. Institutional Background

An important element of the European Union's strategy to make financial reporting transparent, credible, and comparable is to ensure the proper enforcement of compliance with the rules set out by IFRS.⁶ The idea that the quality of financial reporting does not depend on high-quality standards alone, but rather on the overall institutional environment, particularly enforcement, is also widely acknowledged in the research literature (e.g., Ball, 2001; Ball et al., 2000, 2003; Burgstahler et al., 2006; Holthausen, 2009; Leuz et al., 2003). On 15 December 2004, the European Parliament and Council issued Transparency Directive 2004/109/EC, which set out the

⁶See Brüggemann et al. (2013) for a comprehensive overview of the literature on the intended and unintended consequences of the mandatory adoption of IFRS in the EU.

principles for proper enforcement. The directive requires all member states, inter alia, to establish an independent institution to supervise firms' application of financial reporting standards and impose penalties for a lack of compliance. However, the transposition of the directive into national law, and therefore structuring the enforcement system, was left to each member state.

With the enactment of the *Bilanzkontrollgesetz* on 15 December 2004, Germany implemented the directive by establishing a two-tier enforcement system. The first tier constitutes the German Financial Reporting Panel (FREP), a privately organized institution. The FREP serves as an independent body to review the financial statements of all firms trading in EU-regulated market segments in Germany. A review by the FREP can be initiated by concrete indications of a breach of financial reporting requirements, at the request of the *Bundesanstalt für Finanzdienstleistungsaufsicht* (BaFin), or by random sampling (FREP, 2009), with the vast majority of reviews based on random sampling. The FREP reports the results of the review to the second tier, the BaFin, which has the sole authority to issue error findings.⁷ If an error is discovered, the BaFin orders the disclosure of the error in the German electronic *Federal Gazette* (*Bundesanzeiger*) and additionally either via a national financial newspaper or an electronic information system (WpHG, Art. 37q). For example, in 2007, the FREP examined 135 firms and the BaFin disclosed 35 firms with erroneous financial statements, many of these relating to income measurement issues.⁸ Using negative publicity to punish firms with erroneous financial reporting, a type of 'name and shame' strategy, has been considered as an effective and inexpensive mechanism to deter non-compliance with accounting standards in several other jurisdictions such as the United States, the United Kingdom, and France (Brown & Tarca, 2005; Hitz et al., 2012). Hitz et al. (2012) provide empirical evidence of the functioning of the 'name and shame' mechanism in Germany by showing that firms experience significantly negative market reactions around the date of an error announcement. This finding is also supported by survey evidence of firms affected by the enforcement that shows that error disclosures are perceived as damaging to firms' and executives' reputations (PwC, 2009).

In contrast to Germany, no substantive enforcement changes were initiated in Austria and Switzerland during the sample period of this study. Christensen et al. (2013) review enforcement changes in more than 50 countries worldwide for 2001–2009 and report no substantive enforcement changes for Austria and Switzerland in this period. Furthermore, Brown et al. (2014) propose an index that captures the differences in the enforcement of financial reporting and audit regulation of 51 countries in 2002, 2005, and 2008. While their index indicates a substantive change in enforcement in Germany in 2005, it shows only minor changes in the degree of enforcement in Austria and Switzerland due to increased staffing at securities market regulators. Interestingly, while Switzerland has a consistently high enforcement score, Austria's enforcement score is relatively low for each of its index years. One of the reasons for this is that Austria did not establish a formal enforcement process until 2013 (ESMA, 2013), while Switzerland had established a strict enforcement regime before the beginning of the sample period (Brown et al., 2014; Fiechter et al., 2018). The audit regulation index of Brown et al. (2014) indicates that not only Germany but also Austria and Switzerland undertook changes in audit regulation around the date of the enforcement change in Germany. Therefore, using firms from Austria and Switzerland controls, at least partially, for the effects of changes in audit regulation.

⁷If a firm refuses to cooperate in the review process or does not accept an error finding issued by the BaFin, the BaFin takes over the review process (FREP, 2009).

⁸Anecdotal evidence from error findings shows that the FREP discovered errors relating to both income-decreasing accruals (e.g., unjustified provisioning for restructuring; see, for example, LINTEC Information Technologies AG 2005) and income-increasing accruals (e.g., insufficient bad debt allowances; see, for example, Ponaxis AG in 2006).

2.2. Motivation and Hypothesis Development

Managers frequently have to apply their professional judgment as to whether, and to what extent, certain events or transactions should be included into current period earnings (e.g., impairments, bad debt provisions, restructuring accruals). Managers are given such discretion so that they can report earnings that better reflect their firms' underlying economics (Hail et al., 2010). This discretion, however, can also be used to misrepresent events and transactions to mislead outsiders about the performance of the firm or favorably influence contractual outcomes (e.g., Healy & Wahlen, 1999; Watts & Zimmerman, 1986).

The stricter enforcement of financial reporting is targeted toward deterring (excessive) earnings management; nevertheless, it likely also increases the costs of exercising discretion over earnings in general by increasing the scrutiny on managers' accrual decisions. Prior evidence shows that 20–30% of firms contest the initial error findings by the FREP (e.g., Böcking et al., 2015; FREP, 2010; Hitz et al., 2012), which indicates that many of the errors are not simply due to the unintentional misapplication of (complex) accounting standards or opportunistic earnings management.⁹ As a result of stricter enforcement, managers could try to anticipate controversial judgments to avoid having to explain their choices to the enforcement authorities and risk an error announcement.¹⁰ For example, consider the case in which a manager has private information on a firm's true economic prospects and adjusts accruals accordingly. When the financial reports are reviewed by an enforcement authority, it may be necessary to provide details on how some estimate was derived (see FREP (2009) for a detailed description of the examination process). If insufficient evidence is provided to support a particular accrual decision, there is a great risk of an error announcement. However, regardless of the outcome, the process itself could prove costly, as the manager would likely be distracted from day-to-day-business or additional direct costs such as fees for consulting services may occur (e.g., Meusburger & Pelger, 2020).¹¹

In addition, stricter enforcement increases the pressure on other institutions responsible for governing financial reporting, such as auditors and supervisory boards (Ernstberger et al., 2012; Jamal & Tan, 2010). In particular, auditors have incentives to avoid equivocal management decisions that could lead to an error finding, which automatically triggers an investigation of the auditor by the audit oversight authorities and can result in adverse publicity and increased litigation risk (Hitz et al., 2012). Moreover, Brocard et al. (2018) find that an error finding significantly increases the likelihood that the respective firm changes its auditor. With respect to accruals, auditors can limit managers' discretion by de facto defining what is within the bounds of a reasonable interpretation of accounting standards (Francis & Krishnan, 1999). Jamal and

⁹For example, in 2005, Schwarz Pharma AG immediately expensed certain R&D investments which, according to the FREP, should have been capitalized. Although Schwarz Pharma ultimately agreed to change its reports, it initially challenged both the FREP's and the BaFin's decisions. In a few cases, firms even went to court to appeal against error findings; for example, Axel Springer AG refused to change its 2012 financial reports and fought a long fight in front of the court that partially agreed with Axel Springer's arguments. Note also that besides manager's time, consulting fees, and other costs, an additional audit by the BaFin is charged to the contesting firm if the examination result confirms the initial error finding of the FREP.

¹⁰A recent interview study by Meusburger and Pelger (2020) suggests that preparers of financial statements indeed try to anticipate enforcement authorities' behavior and adjust their application of accounting standards accordingly.

¹¹Anecdotal evidence not only suggests that some managers disagree with the enforcement authorities' view but also that they are willing to revoke their accounting decisions to save time and resources. For example, Curanum AG refers to an error finding in their 2005 and 2006 annual reports as follows:

Although CURANUM is firmly convinced that it correctly recognized the goodwill arising from the acquisition of the Hennef facility in 2006 on the basis of the relevant IFRS standards within the given scope of discretion, the Management Board passed a resolution to recognize the BaFin's determination of an error, since an appeal procedure would have absorbed a great deal of time and resources [. . .]. (Curanum AG, annual report 2009, p. 6)

Tan (2010), for example, state that the primary concern about stricter enforcement in the United States through the SOX and PCAOB is that auditors become more risk averse and subsequently interpret accounting standards too rigidly rather than considering the underlying economics of an event or transaction. Moreover, an independent enforcement authority increases the bargaining power of auditors fostering less controversial accounting decisions (e.g., Ernstberger et al., 2012; Meusburger & Pelger, 2020).

Using an analytical model, Ewert and Wagenhofer (2019) show that stricter enforcement unambiguously mitigates managers' accrual management activities. Similarly, Cohen et al. (2008) find that the absolute value of discretionary accruals decreased after the passage of the SOX in 2002 in the United States. With respect to Germany, Ernstberger et al. (2012) find that abnormal working capital accruals declined for firms affected by the new enforcement regime relative to a small sample of German firms listed on the Open Market – an unofficial (exchange-regulated) market segment of the Frankfurt Stock Exchange and therefore not subject to the enforcement.¹²

Although the prior empirical literature provides evidence that stricter enforcement reduces the magnitude of managerial discretion in earnings, it is not clear whether these findings directly carry over to my setting because of sample, research design, and measurement differences. I therefore test the effect of the enforcement change in Germany on the magnitude of discretionary accruals in my setting. In particular, I compare firms subject to the new enforcement regime in Germany with a control sample of unaffected firms in Austria and Switzerland. Given the findings of the prior theoretical and empirical literature, I state the following hypothesis:

H1: Strengthening financial reporting enforcement decreases the extent of managerial discretion in accruals.

Prior empirical studies usually interpret a decrease in the magnitude of discretionary accruals after a regulatory event (e.g., the switch to a stricter enforcement regime) as a decrease in opportunistic earnings management and, hence, an increase in earnings quality (e.g., Ahmed et al., 2013; Ernstberger et al., 2012). However, less managerial discretion in accruals does not necessarily constitute a beneficial outcome of stricter enforcement, at least with respect to the information content of accruals. While it is feasible that an increase in the magnitude of (discretionary) accruals indicates opportunism when managers have an incentive to manipulate reported earnings, it is unlikely that this result holds on average (Guay et al., 1996). Several analytical and empirical works oppose the widespread assumption that more discretion necessarily reduces the quality of reported earnings. The theoretical works by Sankar and Subramanyam (2001), Arya et al. (2003), and Ewert and Wagenhofer (2012, 2015, 2016) suggest that managerial discretion in accruals increases the informativeness of earnings. In particular, Sankar and Subramanyam (2001) show that granting managers discretion in earnings can reveal their private information. Using a two-period model in which a risk-averse manager has incentives to use discretion to smooth her/his consumption over time and first-period earnings management partially reverses in the second period, they find that managerial discretion improves the information content of earnings. Consequently, the market places a larger weight on reported earnings.¹³ Ewert and

¹²Open Market firms might provide an alternative control sample. However, the market segment is principally designed to trade foreign stocks that have their primary listing outside of Germany (Brüggemann et al., 2012), and the listing requirements in exchange-regulated segments are usually minimal and stocks often suffer from a lack of liquidity (Betzer & Theissen, 2010; Vismara et al., 2012). In addition, the establishment of the Entry Standard in 2005, a new subsegment of the Open Market which sets higher transparency standards, potentially impairs the usefulness of Open Market firms as a control sample in this study.

¹³Note that the information-enhancing role of discretion in the model of Sankar and Subramanyam (2001) depends on the threshold that GAAP rules require with respect to the reversal of the earnings management.

Wagenhofer (2019) show that strict enforcement can lower ‘good’ earnings management that reduces imprecisions in accounting systems and thus decrease financial reporting quality. In the empirical literature, Subramanyam (1996), for example, finds that discretionary accruals can explain contemporaneous stock returns and future cash flows. He interprets this as evidence that discretionary accruals are informative and signal managers’ private information on future economic prospects. Louis and Robinson (2005) find that managers use discretionary accruals before stock splits as a mutually reinforcing mechanism to signal optimistic expectations about the future. Tucker and Zarowin (2006) provide evidence that managers smooth earnings to convey private information to the market. Linck et al. (2013) find that firms use discretionary accruals to reduce information asymmetry and signal positive prospects to ease constraints to financing valuable projects. Robin and Wu (2015) show that high-growth firms use positive discretionary accruals to signal performance, particularly when information asymmetries are high.

To conclude the discussion above, it is ex ante not clear how strengthening the enforcement of financial reporting affects the informativeness of accounting numbers. Therefore, I formulate the following non-directional hypothesis:

H2: Strengthening financial reporting enforcement affects the informativeness of accruals.

3. Sample Selection and Research Design

3.1. Sample Selection

In the empirical analysis, I focus on a sample of publicly listed firms in Germany as the enforcement sample, while firms listed in Austria and Switzerland serve as a control sample. The sample period runs from 2002 to 2007. The relatively short sample period is chosen to mitigate potential confounding effects from other significant events, particularly the global financial crisis. The enforcement sample consists of all firms included in the CDAX index of the Frankfurt Stock Exchange as of 31 December 2005. The CDAX index is composed of all publicly listed firms incorporated in Germany that have their shares listed on one of the two EU-regulated market segments of the Frankfurt Stock Exchange, namely the Prime Standard and the General Standard, which are both subject to the new enforcement regime.¹⁴ The control sample consists of publicly listed firms incorporated in Austria and Switzerland that have their primary listing on one of the main market segments of the Vienna Stock Exchange and the SWX Swiss Exchange, respectively, again as of 31 December 2005. I consider the EU-regulated market segments Official Market and Semi-Official Market in Austria and the EU-Compatible and the Main Market segment in Switzerland as the main market segments.¹⁵

Since the FREP began its examinations in July 2005, I define all firm-year observations with fiscal year-ends before that date as belonging to the pre-enforcement period and all firm-year observations after that date as belonging to the post-enforcement period.¹⁶

¹⁴The Prime Standard and the General Standard segments resulted from a major reorganization of the Frankfurt Stock Exchange’s market segments at the beginning of 2003. Before the reorganization, the CDAX was composed of the following EU-regulated market segments: *Amtlicher Handel*, *Geregelter Markt*, and *Neuer Markt*.

¹⁵The SWX Swiss Exchange introduced the EU-Compatible market segment on July 1, 2005 (see SWX, 2005). All results remain unchanged when I exclude all firms included in the EU-Compatible segment.

¹⁶To better align the sample period with the beginning date of the new enforcement regime, a fiscal year runs from July 1 to June 30 (Ernstberger et al., 2012). Pinning down the exact timing of the effectiveness of the new enforcement regime, however, is not trivial. To ensure that my findings are not driven by this choice, I repeated my main analyses without the years 2004 and 2005 and find similar results. Moreover, shifting the enforcement date to July 2006 or July 2007 reduces the enforcement effects, indicating that the enforcement change had taken place before these dates.

Table 1. Sample composition

	Enforcement sample	Control sample
All firm-years of German (Austrian/Swiss) firms included in the CDAX (a main market segment) with data on total assets in Worldscope for at least one year between 2002 and 2007	3,115	1,463
less firm-years in the financial industry (SIC 6000–6999)	– 500	– 330
less firm-years with a change in fiscal year-end	– 48	– 3
less firm-years of Austrian or Swiss firms that are subject to enforcement in Germany	-	– 56
less firm-years with missing data on any of the main analyses	– 693	– 249
less firm-years with stock returns in the extreme 1% of the return distribution	– 39	– 13
less firm-years without data in the period before or after the enforcement change	– 175	– 76
Final sample	1,660	736

I start my sample selection procedure with all firm-year observations for publicly listed firms incorporated in Germany, Austria, and Switzerland that have data on total assets available in Thomson Reuters Worldscope and are covered by Thomson Reuters Datastream from 2002 to 2007.¹⁷ To identify German firms included in the CDAX as of 31 December 2005, I use the historical CDAX constituent list provided by Datastream.¹⁸ Firms in the control sample are identified from lists of issuers by market segment provided by the Vienna Stock Exchange and SWX Swiss Exchange, respectively. I exclude all firms in the financial industry (SIC 6000–6999) because of differences in the balance sheet structure compared with all the other firms in the sample.¹⁹ Furthermore, I exclude all firm-year observations with a change in fiscal year-end during the sample period. In the German enforcement regime, all firms listed in an EU-regulated market segment are subject to enforcement regardless of whether they are domestic or foreign firms. Therefore, I use the enforcement lists published annually by the BaFin from 2005 onward, which is composed of all firms subject to enforcement by the FREP in the respective year, to identify firms from Austria and Switzerland with a secondary listing affected by the new regime. This leads to the exclusion of 56 firm-year observations belonging to six Austrian and four Swiss firms. Next, I exclude all firm-year observations with missing data for any of the main empirical analyses. Finally, I require that every firm has sufficient data for all the analyses for at least one year before and after the enforcement change to ensure that every firm is represented in both the pre- and the post-enforcement periods. To mitigate the influence of outliers, I truncate the return distribution at the 1st and 99th percentiles in the enforcement and non-enforcement samples, respectively. All the other continuous variables, except the log-transformed variables, are winsorized at the 1st and 99th percentiles. Table 1 provides an overview of the sample selection procedure.

Most data are obtained from Worldscope and Datastream. The only exceptions are the following. For the pre-enforcement period (before 2005), I retrieve data on accounting standards from a hand-collected dataset gathered by Daske et al. (2013) to avoid concerns about misclassifications

¹⁷ Swiss francs data are converted to Euro using exchange rates provided by Datastream.

¹⁸ I use the historical version of the constituent list LCDAXGEN.

¹⁹ I use ‘Product Segment 1 – SIC Code’ (*WC19506*) from Worldscope to obtain the primary SIC code of a firm because this data field provides historical data on a firm’s primary industry. Only when data are not available do I use current ‘SIC Code 1’ (*WC07021*). However, the results remain unchanged when I use only the current ‘SIC Code 1.’

in the respective data field in Worldscope for that period.²⁰ As the data after the mandatory adoption of IFRS in 2005 are reasonably accurate, I obtain information on firms' applied accounting standards in the post-enforcement period from Worldscope.²¹ US cross-listed firms are identified from the SEC website.²² Annual data on auditors is obtained from Thomson One.²³

The final sample is composed of 2,396 firm-year observations in 2002–2007. The enforcement subsample consists of 1,660 observations from 310 firms. The control sample is composed of 736 observations from 132 firms, where 580 observations pertain to 104 Swiss firms and 156 observations pertain to 28 Austrian firms.

3.2. *Measuring the Extent of Managerial Discretion in Accruals*

To measure the extent of managerial discretion in accruals, I decompose total accruals into non-discretionary and discretionary accruals following Dechow et al. (1995).²⁴ Specifically, I obtain discretionary accruals (DA) from the residuals of a linear regression model with total accruals as the dependent variable and the change in cash sales and gross property, plant, and equipment (PPE) as the independent variables, estimated for each industry-year and accounting standards combination.²⁵ I use the absolute value of the regression residual to capture both managers' earnings-increasing and earnings-decreasing decisions. For the informativeness tests, I use signed discretionary accruals.²⁶

Some of the literature suggests that managers have more discretion over current accruals than over long-term accruals (e.g., DeFond & Jiambalvo, 1994) and that long-term accruals contribute little to the variation in total accruals (e.g., Healy, 1985). Thus, I also obtain a second measure based on discretionary current accruals.

3.3. *Measuring the Informativeness of Accruals*

To measure informativeness, I focus on multiple attributes that the prior literature links to the informativeness of accounting numbers. The first attribute concerns the information content reflected in earnings, particularly how much of the information in market returns is reflected in earnings. Prior research finds that the opportunistic use of discretion in accruals adversely impacts earnings as a measure of firm performance (e.g., Hanlon et al., 2008). Therefore, if stricter enforcement reduces the opportunistic use of discretion in accruals, the association between current stock returns and the discretionary portion of earnings is expected to increase.

²⁰Daske et al. (2013) provide the data set in the Online Supplements of the *Journal of Accounting Research*.

²¹The accounting standard followed (*WC07536*) is coded as follows: 01 and 10 is local GAAP; 03 is US GAAP; 02 and 23 is IFRS. I obtain similar results using only data from Worldscope.

²²See <https://www.sec.gov/divisions/corpfin/internatl/companies.shtml>.

²³Note that the respective data field (*WC07800*) in Worldscope contains only the name of the current auditor.

²⁴Using the original Jones (1991) model and alternative models suggested by Kothari et al. (2005) and Larcker and Richardson (2004) to estimate discretionary accruals does not change the results.

²⁵Industries are classified based on Campbell's (1996) industry classification. I follow Peek et al. (2013) and Ernstberger et al. (2012) in estimating the cross-sectional regressions separately for firms using local GAAP and international accounting standards (IFRS or US GAAP). I require a minimum of six observations per regression.

²⁶A recent paper by Chen et al. (2018) shows that two-step procedures, where the residual of a first-step regression, such as discretionary accruals, is used as the dependent variable of a second-step regression generate biased estimates, resulting in Type I and Type II errors. However, this critique does not apply if the residuals are used as an independent variable in the second-step regression (see Chen et al., 2018, p. 758) as it is the case in my informativeness analyses. For the absolute value of discretionary accruals as a dependent variable (i.e., a transformed variable based on the residual of a first-step regression), the single-step regression method does not provide a satisfying solution to mitigate potential biases. However, including the first-step regressors into the second-step regression, as suggested in Chen et al. (2018), does not change any of the results in the analysis of the magnitude of discretionary accruals.

However, if stricter enforcement reduces managers' willingness or ability to include private information into earnings, the association is expected to decrease.

An increased association between stock returns and discretionary accruals does not necessarily imply that discretionary accruals are more informative – it may also be a result of market mispricing (e.g., Subramanyam, 1996). I therefore directly investigate the association between future economic performance and discretionary accruals by examining the effect of stricter enforcement on the association between future cash flows (future earnings) and discretionary accruals (e.g., Altamuro et al., 2005; Subramanyam, 1996).

3.4. Testing the Effect of the Enforcement Change on the Extent of Managerial Discretion in Accruals (H1)

To test whether the introduction of a stricter enforcement in Germany reduces managerial discretion in accruals, I estimate a DiD regression model using Austrian and Swiss firms as the control group to account for the time-invariant unobserved heterogeneity across firms and for common time trends that may confound the observed effect of the enforcement change (e.g., Meyer, 1995). In addition, I control for the observable time-varying firm characteristics that the literature has found to affect the magnitude of discretionary accruals, but that relate to firms' business model or operating environment rather than managerial decisions (e.g., Francis et al., 2005; Hribar & Nichols, 2007; Owens et al., 2017). Specifically, I include firm size, the length of the operating cycle, cash flow variability, sales variability, the incidence of losses, and asset growth to control for firms' operating volatility (Francis et al., 2005; Gu et al., 2005; Hribar & Nichols, 2007). The recent work by Owens et al. (2017) shows that including past cash flow and sales variability does not sufficiently control for model misspecification due to idiosyncratic business shocks. Therefore, I also include their measure of idiosyncratic shocks based on firm-specific abnormal stock returns. Leverage controls for differences in firms' financing. Furthermore, I control for firms that cross-list in the United States, as these firms are already subject to strict enforcement by the SEC (e.g., Doidge et al., 2004). The number of analysts following a firm is included to control for the potentially lower discretion in accruals due to increased outside monitoring by analysts. However, the effect of this variable is ambiguous, as an increase in analyst following could also increase the magnitude of discretionary accruals by incentivizing managers to engage in 'meeting or beating' analysts' forecasts (Cohen & Zarowin, 2010). A Big 4 dummy variable is included, as prior research suggests that Big 4 auditors have more influence on managerial decisions than non-Big 4 auditors (e.g., Becker et al., 1998). In addition, I include industry fixed effects to control for industry-specific differences in the magnitude of discretionary accruals.

A major concern in the empirical analysis is that any changes attributed to the enforcement could also be driven by the mandatory adoption of IFRS, as Germany implemented these changes at the same time. I empirically address this concern as follows (see also Ernstberger et al., 2012 for a partially comparable approach). First, I use a DiD approach with a control group of firms unaffected by the new enforcement regime from countries (i.e., Austria and Switzerland) that also allowed firms to adopt IFRS before 2005.²⁷ Second, I include accounting standard fixed effects to control for differences between accounting standards. Some publicly listed firms are still allowed to apply accounting standards other than IFRS because of certain exemptions. These firms' financial statements are nevertheless examined by the FREP. Third, I include a dummy variable for the firm-years in which a firm applies IFRS for the first time to capture potential

²⁷In my final sample, 68.40% of enforcement and 72.05% of the non-enforcement firm-year observations in the pre-enforcement period belong to firms applying international accounting standards (IFRS, USGAAP), which indicates that the German enforcement sample and the Austrian/Swiss control sample are fairly similar with respect to firms' accounting standards (see also Daske & Gebhardt, 2006, for comparable values).

adoption affects.²⁸ Consequently, my test is based on the following DiD regression model:

$$\begin{aligned} |AM|_t = & \beta_0 + \beta_1 \text{POST} + \beta_2 \text{ENF} + \beta_3 \text{POST} \times \text{ENF} + \beta_4 \text{SIZE}_t + \beta_5 \text{OPCYCLE}_t \\ & + \beta_6 \sigma \text{CFO}_t + \beta_7 \sigma \text{SALE}_t + \beta_8 \text{IDSHK}_t + \beta_9 \text{LEV}_t + \beta_{10} \text{LOSS}_t + \beta_{11} \text{GROWTH}_t \\ & + \beta_{12} \text{USCR}_t + \beta_{13} \text{NAF}_t + \beta_{14} \text{BIG4}_t + \beta_{15} \text{IFRSFT}_t + \text{AccStFE} + \text{IndFE} + \varepsilon_t \quad (1) \end{aligned}$$

where $|AM|$ is the magnitude of managerial discretion in accruals measured as (1) the absolute value of discretionary accruals (ADA) or (2) the absolute value of discretionary current accruals (ADCA). POST is a dummy variable coded 1 for fiscal year-ends after 1 July 2005, when the FREP started its investigations, and 0 otherwise. ENF is a dummy variable coded 1 for firms affected (treatment group) by the enforcement change and 0 for firms not affected by the change (control group).²⁹ SIZE is the natural logarithm of total assets. OPCYCLE is the natural logarithm of the length of the operating cycle. σCFO and σSALE are the standard deviations of cash flow from operations and sales, respectively. IDSHK is a measure of idiosyncratic business shocks computed following Owens et al. (2017). LEV is total liabilities over total assets. LOSS is loss years over the last five years. GROWTH is the percentage change in total assets. USCR is a dummy variable coded 1 if a firm is cross-listed in the United States and 0 otherwise. NAF is the number of analysts following. BIG4 is a dummy variable coded 1 for firm-years audited by a Big 4 auditor and 0 otherwise. IFRSFT is a dummy variable coded 1 for firm-years with IFRS applied for the first time and 0 otherwise. In addition, the regression model includes accounting standard and industry fixed effects.³⁰

The main coefficient of interest in equation (1) with respect to H1 is β_3 for the interaction term $\text{POST} \times \text{ENF}$; if the managers of firms subject to the enforcement change use less discretion in accruals after the change relative to control firms, I expect β_3 to be significantly negative.

3.5. Testing the Effect of the Enforcement Change on the Informativeness of Accruals (H2)

To test whether discretionary accruals become more or less informative after the change in enforcement, I focus on multiple measures commonly used to evaluate the informativeness of earnings and earnings components, namely the response coefficient from a return-earnings regression and ability of current accounting numbers to predict future cash flows and future earnings (e.g., Altamuro et al., 2005; Robin & Wu, 2015; Subramanyam, 1996). Therefore, I estimate the following DiD regression model:

$$\begin{aligned} \text{RET}_t \text{ or } \text{CFO}_{t+1} \text{ or } \text{NI}_{t+1} = & \beta_0 + \beta_1 \text{POST} + \beta_2 \text{ENF} + \beta_3 \text{CFO}_t + \beta_4 \text{NDA}_t + \beta_5 \text{DA}_t \\ & + \beta_6 \text{POST} \times \text{ENF} + \beta_7 \text{POST} \times \text{DA}_t + \beta_8 \text{ENF} \times \text{DA}_t + \beta_9 \text{POST} \times \text{ENF} \times \text{DA}_t + \\ & + \text{AccStFE} + \text{AccStFE} \times \text{NDA}_t + \text{AccStFE} \times \text{DA}_t + \text{IndFE} + \varepsilon_t \quad (2) \end{aligned}$$

where RET is the stock return measured over the 12-month period beginning four months after the end of the previous fiscal year,³¹ CFO_{t+1} is one-year-ahead cash flow from operations, and NI_{t+1} is one-year ahead net income. CFO is current cash flow from operations; NDA is the

²⁸The results are robust to leaving out the IFRS first-time adoption dummy.

²⁹An alternative way of estimating the standard DiD model is a two-way fixed effects regression. Note that differences between the two methods can occur if samples are unbalanced, because the two-way fixed effects estimator uses less data in an unbalanced panel (for a detailed discussion, please refer to Lechner et al., 2016). The inferences using the two-way fixed effects regression are similar to those presented in the main analyses.

³⁰For more detailed variable definitions and sources see Appendix.

³¹Publicly listed firms in Austria, Germany, and Switzerland usually have to file their financial statements within four months after the end of the financial year.

non-discretionary portion of total accruals; and POST is a dummy variable coded 1 for fiscal year-ends after 1 July 2005, when the FREP started its investigations, and 0 otherwise. ENF is a dummy variable coded 1 for firms affected (treatment group) by the enforcement change and 0 for firms not affected by the change (control group). *AccStFE* are accounting standard fixed effects. All the accounting variables are deflated by lagged total assets.

The coefficient of interest with respect to H2 is β_9 for the interaction $\text{POST} \times \text{ENF} \times \text{DA}$; β_9 is expected to be positive if strengthened enforcement increases the informativeness of discretionary accruals and negative if they are less informative under the new enforcement regime.

4. Results

4.1. Descriptive Statistics

Table 2 provides the descriptive statistics for the full sample as well as for the enforcement and non-enforcement samples separately. They show that the mean (median) of the main measure for the magnitude of discretion in accruals, ADA, is 0.067 (0.043) in the full sample. In the enforcement sample, ADA has a mean (median) value of 0.075 (0.049) compared with 0.049 (0.031) in the non-enforcement sample. The mean (median) absolute value of discretionary current accruals is 0.070 (0.047) in the enforcement sample and 0.044 (0.027) in the non-enforcement sample.³² This is consistent with the descriptive statistics from the literature suggesting that firms in Austria and, particularly, in Switzerland have lower levels of discretionary accruals than firms in Germany (e.g., Leuz et al., 2003). Further, consistent with the prior literature, the mean (median) total accruals (TA) and non-discretionary accruals (NDA) are negative, mainly due to depreciation expenses.

The mean (median) performance in terms of earnings (NI) and cash flows (CFO) is significantly higher for firms in the non-enforcement sample than the enforcement sample, whereas mean stock returns are not significantly different between the two subsamples. However, the difference in the median return suggests that the typical non-enforcement firm has significantly higher stock returns (0.165) than the typical firm enforcement firm (0.083).

Although differences in levels do not generally harm the internal validity of the DiD approach used in the main analyses, large pre-treatment differences between the outcome variables can increase the sensitivity of the DiD estimator to the functional form assumption (e.g., Roberts & Whited, 2013). To mitigate such issues, in addition to the DiD approach, I include time-varying controls for firms' economic fundamentals such as performance and growth; in additional analyses, I also combine the DiD with an entropy-balancing approach to account for the potential influences of differences between the treatment and control samples (e.g., Hainmueller, 2012; McMullin & Schonberger, 2019).

4.2. The Effect of the Enforcement Change on the Extent of Managerial Discretion in Accruals (H1)

The first analysis examines the effect of the enforcement change in Germany on the extent to which managers exercise discretion over accruals using a DiD approach. The main coefficient of interest presented in column (1) of Table 3, β_3 , which compares the change in the magnitude

³²The differences are statistically significant. Significance of differences in the mean (median) in the descriptive statistics is based on a t-test (Wilcoxon rank-sum test). Significant means statically significant at the 5% level.

Table 2. Descriptive statistics

Variable	Full sample						Enforcement sample (Germany)				Control sample (Austria, Switzerland)			
	Mean	Med.	p25	p75	SD	N	Mean	Med.	SD	N	Mean	Med.	SD	N
ADA	0.067	0.043	0.019	0.089	0.070	2,396	0.075	0.049	0.075	1,660	0.049*	0.031*	0.054	736
ADCA	0.062	0.039	0.017	0.081	0.067	2,396	0.070	0.047	0.071	1,660	0.044*	0.027*	0.051	736
RET	0.190	0.101	-0.141	0.435	0.521	2,396	0.181	0.083	0.548	1,660	0.212	0.165*	0.453	736
NI	0.028	0.037	0.005	0.075	0.119	2,396	0.018	0.031	0.129	1,660	0.050*	0.050*	0.085	736
CFO	0.081	0.086	0.032	0.138	0.124	2,396	0.074	0.079	0.134	1,660	0.096*	0.097*	0.097	736
TA	-0.054	-0.049	-0.095	-0.008	0.101	2,396	-0.058	-0.051	0.111	1,660	-0.045*	-0.047*	0.072	736
CA	-0.003	-0.001	-0.040	0.034	0.121	2,396	-0.007	-0.002	0.133	1,660	0.003	0.001*	0.087	736
DA	-0.010	-0.004	-0.052	0.035	0.097	2,396	-0.015	-0.009	0.105	1,660	0.000*	0.002*	0.073	736
NDA	-0.044	-0.038	-0.065	-0.015	0.051	2,396	-0.043	-0.036	0.054	1,660	-0.045	-0.041*	0.044	736
SIZE	12.632	12.314	11.152	13.915	2.079	2,396	12.422	11.972	2.199	1,660	13.104*	12.962*	1.687	736
OPCYCLE	4.905	4.945	4.554	5.231	0.577	2,396	4.864	4.905	0.583	1,660	4.995*	5.024*	0.554	736
σ CFO	0.098	0.066	0.039	0.112	0.101	2,396	0.112	0.079	0.112	1,660	0.064*	0.047*	0.061	736
σ SALE	0.187	0.129	0.075	0.228	0.188	2,396	0.212	0.150	0.201	1,660	0.132*	0.091*	0.139	736
IDSHK	0.013	0.006	0.003	0.014	0.019	2,396	0.016	0.008	0.020	1,660	0.007*	0.004*	0.011	736
LEV	0.554	0.570	0.400	0.690	0.221	2,396	0.568	0.589	0.232	1,660	0.523*	0.527*	0.190	736
LOSS	0.255	0.200	0.000	0.400	0.300	2,396	0.303	0.200	0.318	1,660	0.147*	0.000	0.220	736
GROWTH	0.054	0.023	-0.062	0.118	0.256	2,396	0.055	0.029	0.266	1,660	0.053	0.016	0.233	736
USCR	0.050	0.000	0.000	0.000	0.218	2,396	0.048	0.000	0.214	1,660	0.054	0.000	0.227	736
NAF	1.152	1.099	0.000	1.946	1.040	2,396	1.068	0.693	1.067	1,660	1.339*	1.386*	0.952	736
BIG4	0.665	1.000	0.000	1.000	0.472	2,396	0.583	1.000	0.493	1,660	0.851*	1.000*	0.357	736
IFRSFT	0.095	0.000	0.000	0.000	0.293	2,396	0.111	0.000	0.315	1,660	0.057*	0.000*	0.232	736

Notes: All variables are defined in the Appendix. The * indicates that the difference between enforcement and control sample is statistically significant at the 5% level.

Table 3. Stricter enforcement and the extent of managerial discretion in accruals
$$ADA/ADCA_t = \beta_0 + \beta_1 POST + \beta_2 ENF + \beta_3 POST \times ENF + \beta_4 SIZE_t + \beta_5 OPCYCLE_t + \beta_6 \sigma CFO_t + \beta_7 \sigma SALE_t + \beta_8 IDSHK_t + \beta_9 LEV_t + \beta_{10} LOSS_t + \beta_{11} GROWTH_t + \beta_{12} USCR_t + \beta_{13} NAF_t + \beta_{14} BIG4_t + \beta_{15} IFRSFT_t + FE + \varepsilon_t$$

Dep. Var.:		(1) ADA	(2) ADCA
POST	β_1	0.007* [1.82]	0.006 [1.52]
ENF	β_2	0.017*** [4.20]	0.016*** [4.61]
POST × ENF	β_3	- 0.017*** [- 3.17]	- 0.014*** [- 2.68]
SIZE	β_4	- 0.006*** [- 4.41]	- 0.004*** [- 3.30]
OPCYCLE	β_5	0.015*** [4.63]	0.015*** [4.47]
σ CFO	β_6	0.127*** [4.98]	0.134*** [5.82]
σ SALE	β_7	0.021 [1.50]	0.027* [1.89]
IDSHK	β_8	- 0.027 [- 0.27]	- 0.036 [- 0.33]
LEV	β_9	0.031*** [3.48]	0.025*** [3.25]
LOSS	β_{10}	0.026*** [3.50]	0.013* [1.96]
GROWTH	β_{11}	0.057*** [6.99]	0.069*** [8.95]
USCR	β_{12}	0.003 [0.64]	- 0.007 [- 1.52]
NAF	β_{13}	0.001 [0.65]	- 0.002 [- 1.16]
BIG4	β_{14}	- 0.001 [- 0.24]	- 0.005 [- 1.46]
IFRSFT	β_{15}	0.013*** [2.60]	0.017*** [3.42]
AccSt FE		Yes	Yes
Industry FE		Yes	Yes
Observations		2,396	2,396
Adjusted R^2		0.229	0.237

Notes: All variables are defined in the Appendix. Reported t-values are based on clustered standard errors, clustered by firm. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

of discretionary accruals (ADA) of firms subject to stricter enforcement with the change in the control sample, is significantly negative at the 1% level, with a coefficient of -0.017 $[-3.17]$.

A further single group comparison shows a significant decrease in ADA after the enforcement change ($\beta_1 + \beta_3 = -0.010$, $[-2.35]$) in Germany. By contrast, ADA seems to increase from the pre-period to the post-period for firms in Austria and Switzerland; the coefficient on POST is significant at the 10% level (0.007, $[1.82]$). Notably, Table 3 also shows that the coefficient on ENF is significantly positive, suggesting that the level of absolute discretionary accruals before the enforcement change is higher in Germany than in Austria and Switzerland.

The results for the second measure, the magnitude of managerial discretion in current accruals (ADCA) in column (2) of Table 3, are comparable to the results for ADA.

The control variables generally have signs consistent with the prior literature (e.g., Francis et al., 2005, 2008; Gu et al., 2005). Specifically, the coefficient on SIZE is negative and coefficients on OPCYCLE, σ CFO, LEV, LOSS, and GROWTH are positive. The positive coefficient on the IFRS adoption year (IFRSFT) likely reflects adoption effects.³³

Taken together, these results suggest that the magnitude of discretion in accruals declined after the introduction of the stricter enforcement regime in Germany, particularly in comparison to Austrian and Swiss firms over the same period. These results support H1 and corroborate previous findings indicating that stricter enforcement reduces managerial discretion in accruals (Cohen et al., 2008; Ernstberger et al., 2012).

4.3. *The Effect of the Enforcement Change on the Informativeness of Accruals (H2)*

Table 4 reports the effect of the enforcement change in Germany on the informativeness of discretionary accruals. Following the literature (e.g., Robin & Wu, 2015; Subramanyam, 1996), I use the coefficient on DA to measure the informativeness of discretionary accruals. Columns (1) and (2) of Table 4 report the results for the association between contemporaneous stock returns and discretionary accruals. The main coefficient of interest with respect to the effect of enforcement, the coefficient β_9 on the interaction term POST \times ENF \times DA, which captures the change in the response coefficient after the introduction of the new enforcement regime relative to the change in the response coefficient in the control sample, is significantly negative at the 1% level (-1.568 , [-2.63]). This indicates a decline in the information value of discretionary accruals of firms that became subject to the new enforcement regime in Germany relative to unaffected firms from Austria and Switzerland. A separate examination of the pre–post change within groups shows that the informativeness of discretionary accruals in Austria and Switzerland increases (0.922, [1.66]), whereas the pre–post coefficient for Germany indicates a significant decline in the informativeness of the discretionary portion of accruals ($\beta_7 + \beta_9 = -0.646$, [-1.93]).

Notably, the base regression results in column (1) of Table 4 show that cash flows, non-discretionary accruals, and discretionary accruals are significantly positively associated with current returns, indicating that all these earnings components contain information included in returns.³⁴

Columns (3) and (4) of Table 4 show the effect of the enforcement change on the association between future cash flows and discretionary accruals. Consistent with the results for stock returns, the coefficient β_9 on the interaction term POST \times ENF \times DA, which reflects the incremental change in the predictive ability of discretionary accruals with respect to future cash flows, is significantly negative at the 1% level (-0.537 , [-2.84]). This suggests that the discretionary accruals of firms in the enforcement sample lost predictive ability with respect to future cash flows after the enforcement change relative to the control group. The single group comparisons show that the predictive ability of discretionary accruals decreased in the post-period for enforcement firms, whereas it increased for firms in the control sample. However, the first result is not significant at conventional levels.

The results on the predictive ability of discretionary accruals with respect to future earnings, presented in columns (5) and (6) of Table 4, are consistent with those for future cash flows and therefore corroborate the prior findings of an incremental reduction in the informativeness of discretionary accruals. The coefficient on POST \times ENF \times DA is significantly negative (-0.313 ,

³³Interestingly, the coefficient on the IDSHK measure is insignificant; this seems to be due to a high correlation with other operating volatility measures included in the regression model. For example, if firm size or cash flow and sales volatility are excluded, the coefficient on IDSHK is significantly positive.

³⁴In an additional test, I exclude all firms with error findings published within the study's sample period as these announcements likely affect firms' returns (e.g., Hitz et al., 2012). The results are not affected by these exclusions.

Table 4. Stricter enforcement and the informativeness of discretionary accruals
$$RET_t/CFO_{t+1}/NI_{t+1} = \beta_0 + \beta_1 POST + \beta_2 ENF + \beta_3 CFO_t + \beta_4 NDA_t + \beta_5 DA_t + \beta_6 POST \times ENF + \beta_7 POST \times DA_t + \beta_8 ENF \times DA_t + \beta_9 POST \times ENF \times DA_t + FE + \varepsilon$$

Dep. Var.:		(1) RET _t	(2) RET _t	(3) CFO _{t+1}	(4) CFO _{t+1}	(5) NI _{t+1}	(6) NI _{t+1}
POST	β_1		-0.062** [-2.13]		0.010 [1.45]		0.007 [1.19]
ENF	β_2		0.025 [0.85]		-0.001 [-0.13]		-0.007 [-1.33]
CFO	β_3	0.895*** [9.04]	0.942*** [9.21]	0.422*** [9.03]	0.419*** [8.76]	0.496*** [11.13]	0.489*** [10.56]
NDA	β_4	0.696** [2.19]	1.037*** [3.07]	0.283*** [2.89]	0.318*** [3.04]	0.438*** [5.65]	0.450*** [5.25]
DA	β_5	0.937*** [6.57]	0.484 [0.93]	0.391*** [6.73]	0.217* [1.78]	0.437*** [7.90]	0.353*** [4.28]
POST × ENF	β_6		-0.061 [-1.64]		-0.026*** [-3.12]		-0.012* [-1.67]
POST × DA	β_7		0.922* [1.66]		0.387** [2.34]		0.184* [1.78]
ENF × DA	β_8		0.925* [1.72]		0.246* [1.88]		0.148* [1.83]
POST × ENF × DA	β_9		-1.568*** [-2.63]		-0.537*** [-2.84]		-0.313** [-2.57]
AccStFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AccStFE Interact.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		2,396	2,396	2,396	2,396	2,396	2,396
Adjusted R ²		0.032	0.039	0.107	0.114	0.237	0.242

Notes: All variables are defined in the Appendix. Reported t-values are based on clustered standard errors, clustered by firm. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

[-2.57]). The single group comparisons show a decrease in the predictive ability of discretionary accruals in the German sample after the enforcement change ($\beta_7 + \beta_9 = -0.129$, [-1.65]); this negative change is again mirrored by a significantly positive change in the control sample (0.184, [1.78]).³⁵

Overall, the results from analyzing the contemporaneous association between stock returns and discretionary accruals, as well as the findings on the predictive ability of discretionary accruals with respect to future cash flows and future earnings, suggest that the informativeness of discretionary accruals declined after the introduction of the stricter enforcement regime in Germany. This effect is particularly evident when compared with the control group of publicly listed firms in Austria and Switzerland, where no substantive change in the enforcement of financial reporting took place during the sample period.

5. Additional Analyses

5.1. DiD Analysis with Entropy Balancing

The main results in this study are based on a DiD design. A crucial assumption of this design's ability to identify a causal effect is the parallel trend assumption; in other words, the outcome

³⁵I also examined the predictive ability of discretionary accruals with respect to aggregated future cash flows and future earnings beyond one year. The coefficients of interest have negative signs consistent with the main results.

variable of interest would have exhibited the same trend in the treatment and control groups without the introduction of a stricter enforcement regime (Abadie, 2005; Roberts & Whited, 2013). Therefore, a particular concern is that the two groups may differ in ways that affect their trends over time.

To mitigate concerns that fundamental differences between the enforcement and control samples affect the results, I improve the comparability between the two samples using entropy balancing (Freier et al., 2015; Hainmueller, 2012; Marcus, 2013; McMullin & Schonberger, 2019; Shroff et al., 2017). The advantage of entropy balancing over other matching techniques such as propensity score matching is that it preserves the full sample size. The entropy-balancing approach reweights each observation in the control sample so that the distributional properties of all the matched variables are close to identical between the treatment and control samples.³⁶ To compute the weights, I use the full set of control variables shown in equation (1): SIZE, OPCYCLE, σ CFO, σ SALE, IDSHK, LEV, LOSS, GROWTH, USCR, NAF, BIG4, and IFRSFT. The weights are computed based on the first moment of the firm-specific average of these variables in the pre-enforcement period. The obtained (firm-specific) weights are then used in the DiD regression analysis (e.g., Freier et al., 2015; Marcus, 2013). By construction, the differences in the means of all the matching variables between the enforcement and control samples in the pre-period are close to zero and not significant. Relative to before the entropy-balancing procedure, most of the differences in the outcome variables (ADA, ADCA, NI_{t+1} , and CFO_{t+1}) between the two subsamples in the pre-period, except for RET, are lower and all the differences are not significant at conventional levels.

Column (1) of Table 5 shows the effect of the enforcement change on the magnitude of discretionary accruals using the entropy-balanced sample in combination with the DiD approach. The coefficient on $POST \times ENF$ remains significant at the 1% level, confirming that the magnitude of discretionary accruals decreased significantly after the enforcement change relative to the non-enforcement group.

The results on the informativeness of discretionary accruals presented in columns (1), (2), and (3) of Table 6 also have consistent signs and comparable magnitudes to the main results in Table 4. Overall, the DiD results using an entropy-balanced sample are thus in line with the main results.³⁷

5.2. *The Enforcement Change in Austria*

With the Accounting Control Act (RL-KG) in 2012, Austria implemented a financial reporting enforcement as required by Transparency Directive 2004/109/EC, which came into force in July 2013. The set-up of the newly created two-tier enforcement system is similar to that in Germany and also based on a ‘name and shame’ mechanism. The first tier constitutes the Austrian Financial Reporting Enforcement Panel, a privately organized institution, and the second tier the Austrian Financial Market Authority. Austria’s delayed enforcement change allows me to repeat my analysis with reverse treatment and control groups (i.e., Austria as the treatment group and Germany and Switzerland as the control group).

Using equation (1) in this reverse setting, the coefficient β_3 for the interaction term, $POST \times ENF$, is $-0.007 [-1.25]$ for ADA and $-0.009 [-1.66]$ for ADCA. With respect to

³⁶For a detailed guide on how to use entropy balancing see Hainmueller (2012) or McMullin and Schonberger (2019).

³⁷Using a fully balanced sample reduces the sample to 1,728 observations. The results for this sample are in line with the results reported in the main analysis. The coefficient on $POST \times ENF$ is $-0.016 [-2.70]$ for ADA and $-0.018 [-3.50]$ for ADCA. The coefficient on $POST \times ENF \times DA$ in the informativeness analysis is $-1.521 [-2.24]$ for the returns specification and $-0.415 [-2.10]$ and $-0.141 [-1.16]$ for the future cash flow and earnings specifications, respectively.

Table 5. Stricter enforcement and the extent of managerial discretion in accruals: Evidence from entropy balanced and IFRS only samples
$$ADA_t = \beta_0 + \beta_1 \text{POST} + \beta_2 \text{ENF} + \beta_3 \text{POST} \times \text{ENF} + \beta_4 \text{SIZE}_t + \beta_5 \text{OPCYCLE}_t + \beta_6 \sigma \text{CFO}_t + \beta_7 \sigma \text{SALE}_t + \beta_8 \text{IDSHK}_t + \beta_9 \text{LEV}_t + \beta_{10} \text{LOSS}_t + \beta_{11} \text{GROWTH}_t + \beta_{12} \text{USCR}_t + \beta_{13} \text{NAF}_t + \beta_{14} \text{BIG4}_t + \beta_{15} \text{IFRSFT}_t + FE + \varepsilon_t$$

Dep. Var.:		(1) Entropy balanced sample ADA	(2) IFRS only sample ADA
POST	β_1	0.013 [1.45]	0.011** [2.07]
ENF	β_2	0.009 [1.40]	0.018*** [3.31]
POST × ENF	β_3	- 0.028*** [- 2.91]	- 0.025*** [- 3.42]
SIZE	β_4	- 0.006*** [- 3.88]	- 0.005** [- 2.50]
OPCYCLE	β_5	0.017*** [3.71]	0.017*** [3.63]
σ CFO	β_6	0.064** [2.21]	0.087*** [2.94]
σ SALE	β_7	0.071*** [3.14]	0.020 [1.05]
IDSHK	β_8	- 0.262** [- 2.06]	- 0.167 [- 0.94]
LEV	β_9	0.047*** [3.30]	0.032** [2.38]
LOSS	β_{10}	0.020* [1.95]	0.034*** [3.02]
GROWTH	β_{11}	0.075*** [4.81]	0.061*** [5.64]
USCR	β_{12}	0.017** [2.15]	- 0.003 [- 0.35]
NAF	β_{13}	- 0.003 [- 0.93]	0.001 [0.38]
BIG4	β_{14}	- 0.005 [- 1.12]	- 0.003 [- 0.58]
IFRSFT	β_{15}	0.002 [0.20]	0.008 [0.80]
AccSt FE		Yes	No
Industry FE		Yes	Yes
Observations		2,396	1,363
Adjusted R^2		0.322	0.228

Notes: All variables are defined in the Appendix. Reported t-values are based on clustered standard errors, clustered by firm. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

informativeness, the coefficient on $\text{POST} \times \text{ENF} \times \text{DA}$ in equation (2) is negative in all three specifications, but none is statistically significant. The coefficient is -0.103 $[-0.16]$ for the returns specification, and -0.203 $[-0.63]$ and -0.145 $[-1.29]$ for the future cash flows and future earnings specifications, respectively.

The patterns of the results are consistent with the findings in the main analysis. However, most of the results are not significant; they should thus be interpreted with care and are of mostly anecdotal value, as the enforcement change in Austria was implemented with significant delay, which gave firms and the market a long time to adjust to such changes. Moreover, the treatment sample of 27 Austrian companies is fairly small.

Table 6. Stricter enforcement and the informativeness of discretionary accruals: Evidence from entropy balanced and IFRS only samples
$$\text{RET}_t/\text{CFO}_{t+1}/\text{NI}_{t+1} = \beta_0 + \beta_1\text{POST} + \beta_2\text{ENF} + \beta_3\text{CFO}_t + \beta_4\text{NDA}_t + \beta_5\text{DA}_t + \beta_6\text{POST} \times \text{ENF} + \beta_7\text{POST} \times \text{DA}_t + \beta_8\text{ENF} \times \text{DA}_t + \beta_9\text{POST} \times \text{ENF} \times \text{DA}_t + \text{FE} + \varepsilon$$

Dep. Var.:	Entropy balanced sample			IFRS only sample		
	(1) RET _t	(2) CFO _{t+1}	(3) NI _{t+1}	(4) RET _t	(5) CFO _{t+1}	(6) NI _{t+1}
POST	β_1 -0.263*** [-2.76]	0.010 [0.55]	0.001 [0.06]	-0.044 [-1.32]	0.010 [1.37]	0.006 [1.00]
ENF	β_2 -0.102 [-1.42]	0.010 [0.92]	-0.003 [-0.30]	0.030 [0.76]	0.003 [0.32]	-0.003 [-0.44]
CFO	β_3 0.855*** [3.28]	0.516*** [4.71]	0.556*** [7.48]	0.879*** [6.58]	0.457*** [7.58]	0.543*** [10.35]
NDA	β_4 1.773*** [2.60]	0.259 [1.49]	0.380*** [2.69]	0.495 [1.24]	0.325*** [2.74]	0.533*** [5.33]
DA	β_5 -0.537 [-0.48]	0.210 [1.01]	0.150 [0.95]	-0.049 [-0.08]	0.231* [1.76]	0.379*** [4.33]
POST × ENF	β_6 0.099 [1.16]	-0.019 [-1.14]	-0.001 [-0.05]	-0.053 [-1.07]	-0.029*** [-2.64]	-0.014 [-1.60]
POST × DA	β_7 1.691* [1.76]	0.524* [1.94]	0.392** [2.47]	1.311** [2.02]	0.472*** [2.67]	0.213** [2.09]
ENF × DA	β_8 1.664** [2.04]	0.248 [1.49]	0.328*** [2.84]	1.411** [2.03]	0.329** [2.06]	0.202** [2.22]
POST × ENF × DA	β_9 -2.093** [-2.55]	-0.609** [-2.19]	-0.456*** [-2.83]	-1.997*** [-2.69]	-0.649*** [-2.77]	-0.328** [-2.36]
AccStFE	Yes	Yes	Yes	No	No	No
AccStFE Inter.	Yes	Yes	Yes	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,396	2,396	2,396	1,363	1,363	1,363
Adjusted R ²	0.072	0.201	0.311	0.037	0.131	0.292

Notes: All the variables are defined in the Appendix. Reported t-values are based on clustered standard errors, clustered by firm. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

5.3. Enforcement Change vs. Change in Accounting Standards: IFRS Firms Only

To further mitigate concerns that the findings could be driven by changes in accounting standards rather than the change in enforcement, I repeat the main analyses using only IFRS firm-year observations. Despite a substantial reduction in the sample size (a loss of about 43% of the sample), the coefficients remain similar to those presented before. The results in column (2) of Table 5 show that the coefficient on POST × ENF is significantly negative at the 1% level.

Most importantly, columns (4), (5), and (6) in Table 6 show that the coefficients on POST × ENF × DA from the return-earnings regression and predictive ability regressions are significantly negative at the 1% and 5% levels, respectively. These results provide further confidence that the effects are not driven by firms switching accounting standards during the sample period.³⁸

³⁸In additional analyses, I repeat my analyses without firms that apply US GAAP or cross-list in the US instead of using control variables. All main coefficients remain similar to those presented in Tables 3 and 4.

Table 7. Stricter enforcement and the informativeness of total accruals
$$RET_t/CFO_{t+1}/NI_{t+1} = \beta_0 + \beta_1 POST + \beta_2 ENF + \beta_3 CFO_t + \beta_4 TA_t + \beta_5 POST \times ENF + \beta_6 POST \times TA_t + \beta_7 ENF \times TA_t + \beta_8 POST \times ENF \times TA_t + AccStFE + AccStFE \times TA_t + FE + \varepsilon$$

Dep. Var.:		(1) RET _t	(2) RET _t	(3) CFO _{t+1}	(4) CFO _{t+1}	(5) NI _{t+1}	(6) NI _{t+1}
POST	β_1		-0.061 [-1.31]		0.030** [2.49]		0.016 [1.63]
ENF	β_2		0.042 [0.87]		0.015 [1.35]		-0.001 [-0.12]
CFO	β_3	0.907*** [8.97]	0.949*** [9.17]	0.431*** [9.27]	0.428*** [9.00]	0.497*** [10.92]	0.490*** [10.37]
TA	β_4	0.921*** [6.56]	1.186** [2.14]	0.387*** [6.92]	0.146 [1.12]	0.442*** [7.87]	0.375*** [3.33]
POST × ENF	β_5		-0.091 [-1.64]		-0.053*** [-3.72]		-0.024** [-2.14]
POST × TA	β_6		0.005 [0.01]		0.484*** [2.82]		0.196* [1.67]
ENF × TA	β_7		0.232 [0.42]		0.289** [2.08]		0.107 [0.97]
POST × ENF × TA	β_8		-0.632 [-0.97]		-0.586*** [-3.02]		-0.294** [-2.12]
AccStFE		Yes	Yes	Yes	Yes	Yes	Yes
AccStFE Interact.		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Observations		2,396	2,396	2,396	2,396	2,396	2,396
Adjusted R ²		0.032	0.039	0.106	0.115	0.239	0.243

Notes: All the variables are defined in the Appendix. Reported t-values are based on clustered standard errors, clustered by firm. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

5.4. The Effect of Stricter Enforcement on the Information Content in Total Accruals

In this analysis, I present additional results using total accruals instead of discretionary accruals to evaluate the effect of strengthened enforcement on the informativeness of accruals. Discretionary accruals represent the component of total accruals that is expected to vary over time and across the treatment and control samples, whereas (changes in) non-discretionary accruals are expected to cancel out in the DiD design. Therefore, I would expect the coefficients on total accruals to be consistent with those on discretionary accruals.

Table 7 shows that all the signs for the interaction term $POST \times ENF \times TA$ in the returns, future cash flows, and future earnings models are consistent with the results for discretionary accruals.

While the coefficient on $POST \times ENF \times TA$ in the returns regression is negative, but not statistically significant at conventional levels, the coefficients on the triple interaction terms in the future cash flows and future earnings regressions are negative and statistically significant at the 1% and 5% levels, respectively. Thus, the loss of informativeness after the enforcement regime change is also observable in total accruals.

5.5. Heterogeneous Effects of Enforcement on the Informativeness of Accruals

The effect of enforcement on the informativeness of accruals may depend on managers' incentives and ability to use accruals to convey private information or mislead firm outsiders. Thus, an enforcement change can have heterogeneous treatment effects, which has implications for external validity. The previous literature suggests that managers of firms in poor information

environments have more incentives to convey information via accruals, because these firms have fewer alternative means of communication (e.g., Arya et al., 2003; Louis & Robinson, 2005). Hence, limiting the ability (or increasing the cost) of managerial discretion in accruals may be more severe for these firms. Another possibility for heterogeneous treatment effects emerges if firms are already subject to strict enforcement in other countries such as the United States. These firms should be less affected by the enforcement change in Germany.

To test whether the information environment or an US cross-listing affects the informativeness findings, I include a fully interacted variable, SUB, in equation (2), which provides information on the heterogeneous treatment effects across these subsamples. The main coefficient of interest is $POST \times ENF \times DA \times SUB$, which reflects the magnitude and direction of the differences in the treatment effect across subsamples.

To capture the richness of the information environment, I use three proxies: firm size (SIZE), analyst coverage (NAF; e.g., Louis & Robinson, 2005), and firm age. Specifically, I define subsamples based on the median splits of these variables, where a value of one ($SUB = 1$) denotes a rich information environment. The subsample for firms with a US cross-listing is based on the USCR dummy variable defined in the main analysis.

The coefficient on $POST \times ENF \times DA \times SUB$ is positive in most of the specifications, suggesting a weaker effect of enforcement on the informativeness of discretionary accruals for firms less reliant on accruals as a communication device and those subject to strict US enforcement. However, of the 12 regression coefficients, only three are significant at conventional statistical levels (firm size and firm age in the future earnings specifications and firm age in the future cash flows specification), which may be attributable to the noisiness of the broad proxies for firms' information environment or small sample size of the tighter proxies (e.g., only 15 treatment and eight control firms cross-list in the United States). Thus, although these tests suggest that heterogeneous treatment effects may exist, the evidence must be interpreted with considerable caution.³⁹

5.6. Austria and Switzerland as Separate Control Groups

I repeat the main analyses using Switzerland and Austria as separate control groups. The coefficient on $POST \times ENF$ in equation (1) is negative and significant using Switzerland (-0.014 , $[-2.44]$) and Austria (-0.029 , $[-2.62]$). The coefficients in the informativeness analysis using only Swiss firms as controls are comparable to the results obtained using both control samples: $POST \times ENF \times DA$ is -2.119 $[-3.08]$ in the returns regression and -0.569 $[-3.14]$ and -0.232 $[-2.06]$ in the cash flows and earnings predictability regressions, respectively. The coefficients using only Austrian firms as controls have similar signs but lack significance at conventional levels in two of the three regressions: $POST \times ENF \times DA$ is -0.760 $[-0.80]$ in the returns regression and -0.451 $[-1.36]$ and -0.479 $[-2.37]$ in the cash flows and earnings predictability regressions, respectively. However, the lack of statistical significance is likely a matter of power, as the respective coefficients are generally comparable to the main results. Taken together, the analysis provides confidence that the results are not driven by any specific control sample.

³⁹Prior research has identified several cross-sectional determinants that can affect the relation between stock returns and earnings and therefore may also affect the relation between stock returns and discretionary accruals. Following the literature, I add firm size, leverage, asset growth, sales growth, a dummy for loss firms, and the book-to-market ratio (e.g., Marquardt & Wiedman, 2004; Hanlon et al., 2008). I also rerun the regression including all the control variables from equation (1) as well as all the interactions with DA and accounting standard controls and industry fixed effects. All the inferences regarding the main coefficient on $POST \times ENF \times DA$ remain the same.

6. Conclusion

In this study, I examine a sample of publicly listed firms in Germany that became subject to a stricter enforcement of their financial reporting because of the European Union's efforts to promote the transparency and credibility of financial reporting by ensuring firms' compliance with accounting standards. Specifically, I test the effect of the enforcement change on the magnitude of managerial discretion in accruals and the consequences for the informativeness of accruals.

I find that managers exercise less discretion over accruals after the enforcement change and compared with a control sample of publicly listed firms in Austria and Switzerland not affected by the regulatory change. This result is consistent with prior findings that stricter enforcement reduces the incentives of managers to exercise discretion over accruals (e.g., Cohen et al., 2008; Ernstberger et al., 2012). However, in contrast to the prior literature, I provide evidence suggesting that strengthening enforcement can lead to adverse consequences regarding desirable characteristics of accounting earnings. In particular, I show that the information content reflected in accruals decreases in response to the enforcement change and relative to the control sample by analyzing the association between stock returns and discretionary accruals. Consistent with this result, I also find that the predictive ability of discretionary accruals with respect to future cash flows and future earnings declined under the new enforcement regime and relative to the control group. Overall, my results indicate a decline in the informativeness of accruals after the enforcement change.

These results add to the literature on how institutional factors shape managers' reporting incentives by examining the consequences of stricter enforcement for desirable characteristics of accounting numbers. Besides providing additional evidence that the substantive enforcement change in Germany reduced managers' incentives to exercise discretion over accruals, the results reinforce findings of the prior literature that, on average, discretionary accruals are informative. Therefore, these findings should inform regulators and other participants involved in the process of governing financial reporting that there may be adverse consequences to limiting the discretion of managers in reporting their information.

To place the findings of this study in broader perspective, several caveats are in order. First, the finding that strengthening enforcement reduces the informativeness of accruals is initially in stark contrast to studies that document favorable capital market outcomes (e.g., Christensen et al., 2013, 2016; Cumming et al., 2011; Ernstberger et al., 2012). However, my analysis focuses on the effect of enforcement on the quality of earnings, particularly its accruals part, as one key component of overall financial reporting quality. Thus, it neither allows nor intends to give an overall assessment of the capital market and welfare effects of stricter enforcement.

Second, while having several advantages regarding the identification of the effects of interest, the specific setting naturally limits generalizability. In particular, I use countries that already had strong institutional and legal systems before the enforcement change. The results are therefore not necessarily transferable to countries with weak outsider protection and legal enforcement. However, the differences in the institutional setting may also explain the different results of previous studies that strong legal institutions decrease opportunistic accrual management and increase earnings usefulness (e.g., Ball et al., 2000; Hung, 2000; Leuz et al., 2003). Moreover, the relatively short sample period makes it hard to draw firm conclusions about the long-term effects of strengthening the enforcement of financial reporting.

Finally, the prior literature points out that the decomposition of total accruals into non-discretionary and discretionary accruals using Jones-type models is prone to measurement errors. However, the use of multiple different accruals decomposition models, a battery of controls for firms' economic fundamentals (e.g., Francis et al., 2005; Hribar & Nichols, 2007; Owens et al., 2017), and tests based on total accruals attempt to allay these concerns.

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Appendix: Variables definition

Variable	Definition
ADA	Absolute value of discretionary accruals deflated by lagged total assets.
ADCA	Absolute value of discretionary current accruals deflated by lagged total assets.
BIG4	Dummy variable coded 1 for firm-years that are audited by a Big 4 auditor and 0 otherwise.
CA	Current accruals, calculated as change in current assets (<i>WC02201</i>) minus change in cash and short-term investments (<i>WC02001</i>) minus change in current liabilities (<i>WC03101</i>) plus change in debt included in current liabilities (<i>WC03051</i>) plus change in tax payable (<i>WC03063</i>), scaled by lagged total assets (<i>WC02999</i>). Missing values for <i>WC03051</i> and <i>WC03063</i> are assumed to be zero.
CFO	Cash flow from operations, computed as net income (<i>WC01551</i>) minus total accruals, deflated by lagged total assets.
DA	Discretionary accruals deflated by lagged total assets.
ENF	Dummy variable coded 1 for firms affected (treatment group) by the enforcement change and 0 for firms not affected by the change (control group).
GROWTH	Growth, calculated percentage change in total assets (<i>WC02999</i>).
IDSHK	Measure of idiosyncratic business shocks calculated as the mean of the squared residuals from a regression of monthly firm-specific returns on market and industry returns in the 24 months before fiscal-year end (see Owens et al., 2017).
IFRSFT	Dummy variable coded 1 for firm-years that use IFRS for the first time and 0 otherwise.
LEV	Leverage, calculated as total liabilities over total assets.
LOSS	Number of years over the last five years, in which a firm reported negative net income (<i>WC01551</i>).
NAF	Natural logarithm of 1 plus the number of analysts following (<i>FINE</i>).
NDA	Non-discretionary accruals, calculated as total accruals minus discretionary accruals.
NI	Net income (<i>WC01551</i>) deflated by lagged total assets.
OPCYCLE	Natural logarithm of the sum of days accounts receivable (<i>WC08131</i>) and days inventory (<i>WC08126</i>). If data is missing in Worldscope, OPCYCLE is calculated as the sum of 365 divided by the ratio of sales (<i>WC01001</i>) to accounts receivable (<i>WC02051</i>) and 365 divided by the ratio of cost of goods sold (<i>WC01051</i>) to inventory (<i>WC02101</i>).
POST	Dummy variable coded 1 for fiscal year-ends after July 1, 2005, when the FREP started its investigations, and 0 otherwise.
RET	Annual stock return measured over the 12-month period beginning four months after the end of the previous fiscal year.
SIZE	Natural logarithm of total assets (<i>WC02999</i>).
σ CFO	Standard deviation of cash flow from operations deflated by total assets, calculated from fiscal year $t-4$ to fiscal year t .
σ SALE	Standard deviation of sales (<i>WC01001</i>) deflated by total assets, calculated from fiscal year $t-4$ to fiscal year t .
TA	Total accruals, calculated as change in current assets (<i>WC02201</i>) minus change in cash and short-term investments (<i>WC02001</i>) minus change in current liabilities (<i>WC03101</i>) plus change in debt included in current liabilities (<i>WC03051</i>) plus change in tax payable (<i>WC03063</i>) minus change in provisions for risk and charges (<i>WC03260</i>) minus depreciation and amortization expense (<i>WC01151</i>).
USCR	Dummy variable coded 1 if a firm is cross-listed in the United States and 0 otherwise.