

---

**Financial  
Institutions  
Center**

*The Importance of Reporting Incentives:  
Earnings Management in European  
Private and Public Firms*

by  
**David Burgstahler**  
**Luzi Hail**  
**Christian Leuz**

**04-07**



## The Wharton Financial Institutions Center

The Wharton Financial Institutions Center provides a multi-disciplinary research approach to the problems and opportunities facing the financial services industry in its search for competitive excellence. The Center's research focuses on the issues related to managing risk at the firm level as well as ways to improve productivity and performance.

The Center fosters the development of a community of faculty, visiting scholars and Ph.D. candidates whose research interests complement and support the mission of the Center. The Center works closely with industry executives and practitioners to ensure that its research is informed by the operating realities and competitive demands facing industry participants as they pursue competitive excellence.

Copies of the working papers summarized here are available from the Center. If you would like to learn more about the Center or become a member of our research community, please let us know of your interest.



Franklin Allen  
Co-Director



Richard J. Herring  
Co-Director

*The Working Paper Series is made possible by a generous  
grant from the Alfred P. Sloan Foundation*

# **The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms\***

**David Burgstahler**

Gerhard G. Mueller Endowed Professor in Accounting  
University of Washington/Seattle

**Luzi Hail**

Institute for Accounting and Control  
University of Zurich

**Christian Leuz**

The Wharton School  
University of Pennsylvania

February 2004

## **Abstract**

This paper examines how capital market pressures and institutional structures shape firms' incentives to report earnings that properly reflect their economic performance. To isolate the effects of reporting incentives, we exploit the fact that, within the European Union, privately held limited companies face the same accounting standards as publicly traded corporations because accounting regulation is based on legal form. We hypothesize that raising capital in public markets rather than from private sources and the institutional environment in which a firm operates have a systematic influence on firms' accounting quality. We focus on the level of earnings management as one dimension of accounting quality that is particularly responsive to firms' reporting incentives. As hypothesized, our results document that raising capital in public markets and the quality of the legal system are associated with the level of earnings management across European countries. We find that earnings management is more pervasive in private firms and that both public and private firms exhibit more earnings management in countries with weak legal enforcement. We also document that private and public firms respond differentially to differences in the tax and accounting rules in the EU.

*JEL classification:* G14, G15, G30, G32, K22, M41

*Key Words:* *International accounting, Earnings management, Private companies, Legal system, Accounting harmonization, Earnings properties*

\* We thank Bob Bowen, John Core, Wayne Guay, DJ Nanda, Shiva Rajgopal, Terry Shevlin, Laurence van Lent, Cathy Schrand, Peter Wysocki, and workshop participants at the University of Southern California, the University of Washington and the Wharton School for helpful comments on earlier drafts. Luzi Hail gratefully acknowledges the financial support by the research fund of the University of Zurich Association.

## **1. Introduction**

In this paper, we examine the role of incentives stemming from capital market pressures and legal institutions to report earnings that accurately reflect a firm's economic performance. Reporting incentives have been given little attention in the international accounting debate. Much of the discussion has focused on accounting standards per se, which are viewed as the primary input for high quality accounting (e.g., Levitt, 1998). Consistent with this view, several countries have adopted or plan to adopt International Financial Reporting Standards (IFRS) in an attempt to improve accounting quality. Similarly, harmonization efforts within the European Union (EU) have largely focused on eliminating differences in accounting standards across countries (e.g., Van Hulle, 2004).

Accounting standards generally grant substantial flexibility to firms. Measurements are often based on private information and the application of standards involves judgment. Corporate insiders can use the resulting discretion in reporting to convey information about the firm's economic performance, but they may also abuse discretion when it is in their interest. For this reason, reporting incentives are likely to play an integral role in determining the informativeness of reported accounting numbers. While this general insight is not new (e.g., Watts and Zimmerman, 1986), it is often overlooked in international standard setting. As Ball (2001) notes, the global debate focuses too much on the standards and too little on the role of institutional factors and market forces in shaping firms' incentives to report informative earnings.

To empirically illustrate the importance of reporting incentives, we examine a setting in which incentives to report about economic performance differ substantially across sets of firms and countries, although standards are formally harmonized and largely held

constant. We hypothesize that raising capital in public markets rather than from private sources and the institutional environment in which a firm operates have a systematic influence on its incentives to report earnings that reflect economic performance. Both factors shape the way in which information asymmetries between firms and the key financing parties are resolved, i.e., the role earnings play in the process, which in turn affects the properties of reported earnings (see also Ball et al., 2000).

International settings are especially powerful along the incentive dimension because they offer much variation in institutional features and market forces. However, it is difficult to isolate the effects of reporting incentives on earnings quality when accounting standards vary across countries. The European setting provides a unique opportunity to overcome these difficulties. As accounting regulation in the EU is not based on having publicly traded securities but depends on a firm's legal form, private limited companies face the same accounting standards as publicly traded corporations. This feature allows us to study reporting incentives and demand for information created by public debt and equity markets, while holding accounting standards constant. At the same time, the European setting provides variation in institutional factors across countries, which allows us to examine their role in shaping earnings quality for both private and public firms.

Ideally, our analysis would be based on measures that directly capture the extent to which firms use discretion to make earnings more informative about economic performance. However, the use of discretion and the resulting informativeness of earnings are difficult to measure because true economic performance is unobservable. Moreover, we do not have stock prices for private firms, which generally serve as a benchmark for economic performance. We therefore focus on the pervasiveness of earnings management

as an *inverse* proxy for the extent to which reported earnings reflect a firm's true economic performance. We believe that this proxy offers several advantages. First, earnings management is an important dimension of accounting quality and in the extreme unlikely to be informative.<sup>1</sup> Second, earnings management proxies should be particularly responsive to the use of discretion and firms' reporting incentives, making our tests more powerful. Third, there is an extensive literature offering various earnings management proxies (see Healy and Wahlen, 1999).

As it is difficult to specify *ex ante* how firms manage earnings, we use four different proxies based on Leuz et al. (2003) to measure the pervasiveness of earnings management. These proxies are designed to capture a variety of earnings management practices, such as earnings smoothing and accrual manipulations, and are constructed taking differences in firms' economic processes into account. We compute these proxies separately for public and private firms within an industry and within a country to further control for industry and country differences in business processes and economic activities.

We examine the pervasiveness of earnings management across private and public firms from 13 European countries. Our results show substantial variation in the level of earnings management across European countries, despite extensive harmonization efforts. We find that earnings management is more pervasive in private firms than in publicly traded firms. Thus, the demand for publicly traded capital and associated capital market pressures appear to curb the level of earnings management and provide incentives to render earnings more informative. We also find that earnings management is more pervasive in

---

<sup>1</sup> Accounting quality is a broad concept with multiple dimensions. Empirical operationalizations of this concept have focused on a variety of dimensions including timeliness and conservatism (e.g., Ball and Shivakumar, 2002) or quality of accruals (e.g., Dechow and Dichev, 2002). In this paper we focus on firms' relative tendency to manage earnings as another dimension of accounting quality.

countries with German and French legal origins and in countries with weaker legal systems. This finding highlights the importance of enforcement mechanisms and documents that institutional differences influence both private and public firms.

We further demonstrate that institutional arrangements can differentially affect private and public firms. Rules that closely align tax and financial accounting appear to have a larger impact on the reporting behavior of private firms, consistent with the idea that communicating firm performance via earnings is less important to private firms, which allows earnings to assume other roles, such as minimizing tax payments. Conversely, differences in accounting rules across the European countries that remain despite extensive harmonization efforts appear to matter more for public firms. The latter finding suggests that accounting standards designed to make earnings more informative play an incremental role in reducing earnings management but only if coupled with incentives to report about economic performance, e.g., capital market pressures. These interaction effects corroborate our main proposition about the importance of reporting incentives. In either case, the two main incentive variables remain significant and explain a substantial portion of the variation in earnings management across European private and public firms.

Aside from presenting novel evidence on private firms, this paper builds on recent studies highlighting the role of institutional factors and market forces in determining the properties of earnings and accounting quality. In attempting to hold standards constant and to isolate the influence of reporting incentives, our paper complements the studies by Ball et al. (2003) and Ball and Shivakumar (2002). Ball et al. (2003) analyze earnings timeliness and conservatism for four East Asian countries that have accounting standards similar to common law countries, but differ in institutional structures. They show that

despite the similarity in accounting standards the earnings properties of the East Asian countries do not resemble those in common law countries, like the U.K. or the U.S. Ball and Shivakumar (2002) compare the timeliness of loss incorporation for private and public firms in the U.K. and find evidence consistent with the notion that privately held firms exhibit lower earnings quality than publicly traded firms.

We extend the Ball and Shivakumar findings to a large set of countries, which allows us to combine and jointly analyze institutional differences and listing status. Furthermore, we examine a group of countries for which accounting standards have been formally harmonized by accounting regulation, which extends the work of Ball et al. (2003). We also focus on a different dimension of earnings quality than these prior studies, namely earnings management. Our results are consistent with this earlier work but offer several new insights about the joint effects of market forces and institutional factors. Together, these studies provide evidence that firms' reporting incentives created by market pressures and institutional structures are important determinants of accounting quality.

This insight has important implications for standard setters, suggesting that effective accounting harmonization is unlikely to be achieved by accounting standards alone. In this sense, our study relates to the literature on accounting harmonization (e.g., Gernon and Wallace, 1995, or Saudagaran and Meek, 1997, for an overview) and accounting convergence (Land and Lang, 2002; Joos and Wysocki, 2002). Our findings show that considerable differences in the properties of accounting numbers persist across EU countries despite decades of harmonization efforts. These findings are consistent with other studies suggesting that the success of the EU harmonization process has been modest (Emenyonu and Gray, 1992; Joos and Lang, 1994; Herrmann and Thomas, 1995).



Our study also contributes to the earnings management literature. We demonstrate that the influence of institutional factors on the level of earnings management extends to private firms, generalizing the results in Leuz et al. (2003). Prior research has focused primarily on publicly listed firms, despite the macroeconomic significance of private firms.<sup>2</sup> However, it is not clear that the arguments and prior findings extend to private firms. Moreover, the evidence on differences in earnings management between public and private firms is either confined to a particular industry or a particular country (e.g., Beatty and Harris, 1999; Beatty et al., 2002; Vander Bauwhede et al., 2003). Our study spans a broad cross-section of industries and countries and casts doubt on the extent to which earlier findings generalize outside the highly regulated U.S. banking sector.

The paper is organized as follows. Section 2 develops our hypotheses. Section 3 describes the research design. In Section 4, we report the main results linking firms' listing status and legal environments with the degree of earnings management. In Section 5, we consider additional institutional factors, namely, differences in tax alignment and residual differences in the accrual accounting rules across Europe. Section 6 concludes.

## **2. Hypothesis Development**

Our analysis is based on the recognition that accounting standards provide considerable discretion to firms in preparing their financial statements. As corporate insiders generally have private information about the firm's economic performance, they can use the discretion to report earnings that accurately reflect the firm's underlying performance. Alternatively, they may decide it is not worth their effort and resources to make reported earnings more informative for external valuation and contracting purposes.

---

<sup>2</sup> A notable exception is Coppens and Peek (2003) providing evidence on tax influences on private firms'

Moreover, corporate insiders can use the flexibility to hide poor economic performance, achieve certain earnings targets or avoid covenant violations. Given their private information, it is difficult to constrain such behavior. Thus, reporting incentives are likely to play a crucial role in determining accounting quality and the informativeness of reported earnings.<sup>3</sup>

In particular, we hypothesize that both raising capital in public markets rather than from private sources and the institutional environment in which a firm operates have a systematic influence on its incentives to report earnings that reflect economic performance. Both factors shape the way in which information asymmetries between the firm and its key financing parties are resolved and the role earnings play in the process, which in turn affects the properties of reported earnings (see also Ball et al., 2000).

#### *Incentives from Raising Capital in Public Markets*

Privately held firms and those with publicly traded debt or equity securities face very different demands for accounting information. Raising capital in public markets creates strong incentives to provide information that is useful in evaluating and monitoring the firm. Investors in public markets generally do not have private access to corporate information and therefore rely heavily on information that firms provide. Financial statements and, in particular, earnings play an important role in evaluating and monitoring traded claims against the firm (e.g., Ball, 2001). Outside investors are aware of potential conflicts of interests and the fact that corporate insiders prepare the financial statements. Hence, they will be reluctant to supply capital to firms with low quality financial

---

tendency to avoid losses. However, they do not explicitly compare private firms to public firms.

<sup>3</sup> This logic has also been exploited in the earnings management and accounting choice literature. See Watts and Zimmerman (1986), Healy and Wahlen (1999) and Dechow and Skinner (2000).

statements. That is, in price protecting and demanding a higher cost of capital, investors provide incentives to report financial information that reflects economic performance.

In contrast, privately held firms have relatively concentrated ownership structures and hence can efficiently communicate among shareholders information via private channels. Therefore, financial information and reported earnings are less important in communicating firm performance, which in turn makes private firms less likely to expend resources (e.g., hiring a high quality auditor) to produce earnings that are highly informative about economic performance.<sup>4</sup> Moreover, reported earnings can assume a different role than for public firms. For instance, private firms face less of a tradeoff if they manage earnings to minimize taxes but make them less informative in the process. Alternatively, earnings can be used in determining dividends and other payouts to stakeholders in the firm. Following Ball and Shivakumar (2002), we argue that these other uses are likely to render earnings less informative for private firms.

While it is reasonable to believe that raising capital in public markets creates strong incentives to provide earnings that reflect economic performance, we recognize that there are many tradeoffs and potentially countervailing effects. For instance, Leuz et al. (2003) argue that private control benefits and expropriation from outside investors create hiding incentives for corporate insiders. That is, public firms with agency problems between controlling insiders and outside investors may mask firm performance by managing reported earnings to prevent outsider intervention. But similar incentives can arise for private firms, which rely heavily on debt financing from banks and use financial statements to inform banks about their performance. The relatively heavy use of bank debt

together with extensive creditor rights in many European countries make the threat of creditor intervention even more real for private firms. As before, the fear of interference and the subsequent loss of private control benefits can create incentives to obfuscate true performance (see also Fudenberg and Tirole, 1995).<sup>5</sup> Thus, it is not clear which agency problem creates stronger incentives to misrepresent economic performance.

Another argument why public capital markets can create incentives to reduce the informativeness of earnings in specific situations is based on earnings targets. Beatty et al. (2002) argue that small investors in stock markets are more likely to rely on simple heuristics such as earnings targets than fairly sophisticated private investors (e.g., banks), which makes public firms more likely to engage in earnings management to exceed targets. Similarly, public firms may manage earnings to meet or beat capital market expectations as expressed in analyst forecasts. Stock based compensation contracts can further exacerbate these incentives (e.g., Guttman et al., 2003). Consistent with these arguments, Beatty and Harris (1999) and Beatty et al. (2002) present evidence from the banking industry suggesting that public banks engage in more earnings management than their private counterparts.

In summary, it is ultimately an empirical question whether private or public firms have stronger incentives to make earnings more informative about firm performance.

---

<sup>4</sup> Private firms may even have incentives to obfuscate firm performance because the EU requires them to file financial statements to the corporate register. In particular, family-owned private firms may try to hide true firm performance from employees and the general public.

<sup>5</sup> While it is common in some European countries that bank representatives sit on the supervisory board of public firms, making them effectively corporate insiders, banks rarely assume this role in private firms, for the most part because supervisory boards are less common. Therefore, reported performance is likely to be an important trigger for lender intervention.

### *Incentives Stemming from Institutional Structures*

Countries differ in the way they channel capital to firms and in the way they reduce information asymmetries between firms and the key financing parties. These differences are likely to shape firms' incentives to report earnings that reflect true economic performance. We illustrate this idea using a stylized characterization of financial systems.

In an outsider system, like the U.K., firms rely heavily on public debt or equity markets in raising capital. Corporate ownership is dispersed. Investors are "at arm's length" and do not have privileged access to information. Public debt and equity markets play a major role in monitoring corporate insiders. Consequently, public information about the firm is crucial as it enables investors to monitor their financial claims.

In contrast, in an insider, relationship-based system, firms establish close relationships with banks and other financial intermediaries and rely heavily on internal financing, instead of raising capital in public equity or debt markets. Corporate ownership is generally concentrated (e.g., La Porta et al., 1999). Corporate governance is mainly in the hands of insiders with privileged access to information (e.g., board members). In such a system, information asymmetries are resolved to a large extent via private channels rather than public disclosure.<sup>6</sup> Ball et al. (2000) argue that these features reduce the demand for high quality earnings, relative to outsider systems.

Prior studies suggest that countries' legal origins are summary measures of these institutional differences (e.g., La Porta et al., 1998; Ball et al., 2000). Based on the above arguments, we expect earnings to be less informative in countries with French and German

---

<sup>6</sup> Moreover, opacity is an important feature of the system because it provides barriers to entry and protects relationships from the threat of competition (e.g., Rajan and Zingales, 1998). Opacity effectively grants the financing parties some monopoly power over the firm, which allows insiders to secure sufficient returns and in turn ensures relationship financing to firms.

legal origins compared to English and Scandinavian legal origins as the former are typically viewed as insider systems (see also Leuz et al., 2003).

To explore specific institutional effects, we examine the influence of the legal enforcement system. Without proper enforcement, legal institutions remain largely ineffective. Moreover, in countries with weak legal systems, e.g., where rules are weakly enforced, courts are inefficient and corruption is widespread, firms are more likely to abuse accounting discretion. Thus, we hypothesize that *ceteris paribus* the quality of the legal system and the informativeness of earnings are negatively associated.

#### *Accounting Harmonization in the European Union*

The European setting provides a unique opportunity to analyze the role of both types of reporting incentives. First, there is a substantial range of institutional differences across Europe. For example, the U.K. is generally viewed as an outsider economy, while Germany and Italy are typically referred to as insider economies. The Netherlands and the Scandinavian countries would generally be viewed as being somewhere in the middle.

Second, accounting regulation within the European Union is not based on listing status. Privately held companies with limited liability face the same accounting standards as publicly traded corporations. Thus, within a given country, accounting standards are held constant across the two sets of firms. Moreover, accounting standards have been formally harmonized across EU countries for many years (van Hulle, 2004).

The cornerstones of EU accounting harmonization are the Fourth and the Seventh Directive. The Fourth Directive applies to some five million limited liability companies in the EU. It requires these firms to prepare audited financial accounts according to the principles laid out in the directive and to provide publicly accessible financial statements to

the corporate registers. The Seventh Directive complements these harmonization efforts with requirements on when and how firms must prepare consolidated financial accounts. Both directives effectively prescribe a common set of accounting rules for both consolidated and unconsolidated (or parent-only) financial statements. The directives had to be transformed into national laws by the member states during the late 1980s and early 1990s. As a result, accounting standards across EU member states are fairly similar, though not necessarily equal in every respect. Explicit transformation choices in the directives as well as so-called “soft transformations” lead to remaining differences (e.g., Stolowy and Jeny-Cazavan, 2001).<sup>7</sup>

Thus, the European setting is unique insofar as it provides substantial within-country and cross-country variation in capital market and legal incentives while holding the accounting rules largely constant. Our study exploits this variation and explicitly links it to reporting incentives stemming from raising capital in public markets and institutional structures.

### **3. Research Design and Data**

#### **3.1 Proxies for Earnings Management**

Our hypotheses call for measures that directly capture the extent to which firms use reporting discretion to make earnings more informative about the underlying economic performance. However, both firms’ use of discretion and the resulting informativeness of earnings are difficult to measure. A firm’s true economic performance is unobservable, and we do not have stock prices for private firms, which could serve as a benchmark. We therefore focus on the level of earnings management. Conceptually, earnings management

---

<sup>7</sup> We address this issue in Section 5 by checking to what extent residual differences in the accounting

is the extent to which firms' use reporting discretion to reduce the informativeness of earnings and, hence, an inverse proxy for our theoretical construct.<sup>8</sup> Moreover, earnings management proxies should be particularly responsive to the use of discretion and firms' reporting incentives, making our tests more powerful. Finally, we can draw on prior research in constructing several measures of earnings management (e.g., Healy and Wahlen, 1999; Dechow and Skinner, 2000).

Following Leuz et al. (2003), we compute four different proxies capturing a wide range of earnings management activities: i.e., the tendency of firms to avoid small losses, the magnitude of total accruals, the smoothness of earnings relative to cash flows and the correlation of accounting accruals and operating cash flows. We recognize that these proxies are not perfect and indicate earnings management only in a relative sense. But in their defense, extreme realizations of the measures are unlikely to reflect informative earnings, especially considering that we compute the proxies for a large set of firms over several years. Moreover, they are constructed relative to outcomes of firms' economic processes, such as the magnitude or smoothness of the operating cash flows, which makes it more likely that they capture firms' reporting choices to make earnings more or less informative. Finally, recent studies using these proxies suggest that they yield country rankings that are consistent with widespread perceptions of earnings informativeness and that exhibit plausible associations and behavior (e.g., Lang et al., 2003; Wysocki, 2004).

In what follows, we briefly discuss each of the four individual measures and how they are implemented in our setting. Throughout the paper, the unit of analysis is a set of

---

<sup>8</sup> rules affect our results.  
Note that we do not claim that firms always use discretion to reduce the informativeness of reported performance. In fact, there is evidence for the U.S. that, on average, managers use their discretion in a



private (or public) firms in an industry within a country. In computing proxies at the industry-country level, we attempt to further control for industry and country differences in firms' business processes and economic activities.

*EM1: Avoidance of Small Losses*

Burgstahler and Dichev (1997) and Degeorge et al. (1999) present evidence that U.S. firms use accounting discretion to avoid reporting small losses. While firms may have incentives to avoid losses of any magnitude, they have limited reporting discretion and it becomes increasingly costly to eliminate larger and larger losses. Thus, the incidence of small profits relative to small losses indicates the extent to which firms use accounting discretion to avoid reporting losses. A firm-year observation is classified as small profit (small loss) if positive (negative) after-tax bottom-line net income falls within the range of one percent of lagged total assets. We calculate the ratio of small profits to small losses at the industry-country level, for public versus private firms.

*EM2: Magnitude of Total Accruals relative to Cash Flow from Operations*

More generally, firms can use their reporting discretion to mask or misstate economic performance. For instance, firms can overstate reported earnings to achieve certain earnings targets or report extraordinary performance in specific instances, such as an equity issuance (e.g., Teoh et al., 1998a). Similarly, in years of poor performance, firms can boost their earnings using reserves and allowances or aggressive revenue recognition practices. Common to these examples is that earnings are temporarily inflated due to accrual choices but cash flows are unaffected. Thus, we analyze the magnitude of accruals

---

way that makes earnings more informative (e.g., Watts and Zimmerman, 1986; Subramanyam, 1996). We care about the relative informativeness of earnings and its association with reporting incentives.

relative to the magnitude of operating cash flow as a proxy for the extent to which firms exercise discretion in reporting earnings.<sup>9</sup> The ratio is computed as the median absolute value of total accruals for an industry within a country scaled by the corresponding median absolute value of cash flow from operations, where the scaling controls for differences in firm size and performance.

Cash flow from operations is calculated using the balance-sheet approach because U.S. style cash flow statements are generally not available for our sample of private and public European companies. Following Dechow et al. (1995), we compute the accrual component of earnings as  $(\Delta \text{ total current assets} - \Delta \text{ cash}) - (\Delta \text{ total current liabilities} - \Delta \text{ short-term debt}) - \text{depreciation expense}$ , where  $\Delta$  denotes the change over the last fiscal year. If a firm does not report information on cash or short-term debt, then the changes in both variables are assumed to be zero. We scale all accounting items by lagged total assets to ensure comparability across firms.

### *EM3: Smoothing of Operating Earnings vis-à-vis Cash Flow*

Controlling owners and managers can also conceal changes in their firm's economic performance by smoothing reported earnings. Our next measure attempts to capture the degree of smoothing, i.e., the extent to which corporate insiders reduce the variability of reported earnings using accruals. To control for differences in the variability of firms' economic performance, we benchmark the variability of operating earnings to the variability of the cash flow from operations. Specifically, the measure is computed as the ratio of the standard deviation of operating income divided by the standard deviation of

---

<sup>9</sup> We recognize that exercising reporting discretion does not imply that earnings are uninformative. However, prior studies show that extreme accrual observations are indicative of poor earnings quality (e.g., Sloan, 1996).

cash flow from operations. Due to data restrictions, we calculate the standard deviations in the cross-section for each industry-country unit of analysis. We multiply the resulting ratio by  $-1$  so that higher values correspond to more earnings smoothing.

#### *EM4: Correlation between Accounting Accruals and Cash Flow from Operations*

An alternative approach to measuring whether corporate insiders smooth reported earnings is to examine accrual choices in response to shocks to the firm's economic performance. Firms can use accruals to hide bad current performance as well as to underreport good current performance and create "hidden reserves" for the future. In either case, accounting accruals buffer cash flow shocks and result in a negative correlation between changes in accruals and operating cash flows. While a negative correlation is a "natural" result of accrual accounting (e.g., Dechow, 1994), larger magnitudes of this correlation indicate, *ceteris paribus*, smoothing of reported earnings that does not reflect a firm's underlying economic performance (see Skinner and Myers, 1999).<sup>10</sup> Consequently, we define our fourth individual earnings management measure as the contemporaneous Spearman correlation between the changes in total accruals and the changes in cash flow from operations calculated for each industry-country unit of analysis. We scale all changes by lagged total assets and multiply the resulting ratio by  $-1$ , so that higher values indicate higher levels of earnings management.

#### *Aggregate Measures of Earnings Management*

Finally, to mitigate potential measurement error, we transform the individual earnings management scores into percentage ranks (ranging from 0 to 100) and combine the average

ranks into indices. We define two sub-categories, “earnings discretion” (EM1 and EM2) and “earnings smoothing” (EM3 and EM4), and construct an earnings management index for each of the sub-categories (denoted  $EM_{discr}$  and  $EM_{smooth}$ ) as well as an aggregate index of earnings management (denoted  $EM_{aggr}$ ).

### 3.2 Data, Sample Selection and Descriptive Statistics

The primary source of financial data is the January 2003 version of the *Amadeus Top 200,000* database supplied by *Bureau van Dijk*. *Amadeus* provides standardized financial statement data for a vast set of European private and public companies and is compiled from several well-established national information collectors. Since its coverage is less detailed in initial years, we focus on the five-year period from 1997 to 2001. *Amadeus* provides consolidated financial statements when they are available and parent-only accounts otherwise. Thus, our analysis is based on a firm’s primary set of financial statements from an informational perspective.

The main advantage of the relatively new *Amadeus* database is that it includes privately held corporations, allowing us to focus on an economically important group of firms that is fairly under-represented in academic research. But it also has limitations. First, the accounting information provided for private firms is not as detailed as in standard databases for public firms. Second, as by definition stock price data are not available for private firms, we cannot use market values as an independent benchmark in evaluating accounting information. Finally, the distinction between publicly traded and privately held corporations is based on the listing status indicator. Each release of *Amadeus* only

---

<sup>10</sup> As accounting systems likely under-react to economic shocks, insiders signaling firm performance use accruals in a way that on average results in a less negative (and in specific cases even positive) correlation with cash flows.

contains the listing status of a company's current fiscal year. No time-series data on listing status are provided and all past information is classified under the latest firm type available. Thus, for firms that have changed listing status over the five-year sample period, some firm-years may be misclassified.<sup>11</sup>

### *Sample Construction*

The initial sample consists of all firm-year observations from private and public companies that have their domicile in one of the 15 member states of the European Union (EU), where current year's net income and previous year's total assets are available on *Amadeus*. By adopting size restrictions similar to those laid out in the Fourth EU Directive, we explicitly exclude small privately held firms to which the EU directives may not fully apply.<sup>12</sup> Specifically, we require privately held firms to meet at least two of the following three criteria in every year: (1) total assets greater than EUR 2.5 millions, (2) sales greater than EUR 5 millions, and (3) number of employees greater than 50. We also exclude banks, insurance companies and other financial holdings (SIC codes between 6000 and 6799), public administrative institutions (SIC codes above 9000), as well as privately held subsidiaries of quoted companies as indicated in *Amadeus*. Investment, financing and operating decisions in the latter firm category are likely to be influenced by parent companies, which may bias our analyses. These sampling criteria result in 298,290 firm-

---

<sup>11</sup> We would prefer to eliminate firms that are going public over the sample period as they have been documented to exhibit higher levels of earnings management (e.g., Teoh et al., 1998b). But since data restrictions do not allow us to identify these firms, we ignore changes in listing status in our analyses. Their proportion in the overall sample, however, is likely to be very small.

<sup>12</sup> The Fourth EU Directive distinguishes between small, medium-sized and large companies depending on the three criteria balance sheet total, net turnover and average number of employees (Article 11 and 27). Small and medium-sized companies are subject to certain exemptions from reporting requirements, e.g., they are allowed to draw up abridged balance sheets and income statements.

year observations from non-financial private and public companies located in 15 EU countries.

We further eliminate observations from two sample countries with missing accounting and legal institutional data. *Amadeus* does not provide data on operating income and depreciation expenses for companies from Ireland, and several institutional proxies used in the analysis are missing for Luxembourg.<sup>13</sup>

To mitigate the influence of outliers and potential data errors we truncate accounting items needed in the calculation of our proxies at the first and 99th percentile and delete firm-year observations where accounting items are exactly equal to zero, most likely indicating missing data. For robustness, we check that our results do not hinge on either of these two design choices. The final sample consists of 287,354 firm-year observations from private and publicly traded, non-financial companies over the fiscal years 1997 to 2001 across 13 European countries.

Several of our earnings management proxies have to be computed for a group of firms. In light of this requirement, we have to define a unit of analysis that is fine enough so that group members share similar characteristics, but at the same time results in enough observations per group to reliably capture the degree of earnings management. With only 9,693 firm-level observations the number of public companies is clearly the limiting factor (compared to 277,661 private-firm observations). We conduct all our analyses on the industry-level using the industry classification in Campbell (1996). That is, we calculate the individual and aggregate earnings management scores by country and industry for both public and private firms, resulting in possibly 312 observations (= 13 countries × 12

---

<sup>13</sup> If we include Luxembourg in the analysis adopting the legal institutional data from Belgium, all the results and inferences remain the same.

industry classes  $\times$  2 firm types).<sup>14</sup> We require a minimum of ten firm-year observations per unit of analysis. This requirement reduces the sample to a total number of 274 industry-level observations, of which 152 are from privately held firms and 122 are from publicly listed firms. If we increase the required number of firm-year observations per group to  $N \geq 25$  ( $N \geq 50$ ), we lose 35 (72) public firm observations, and 5 (9) private firm observations, respectively.<sup>15</sup>

#### *Descriptive Statistics for Dependent Variables and Firm-level Controls*

Panel A of Table 1 presents descriptive statistics for the four individual earnings management measures (EM1 through EM4) as well as the overall earnings management index ( $EM_{aggr}$ ). On the country-level, mean values of industry observations from privately held companies generally exceed their public counterparts. For  $EM_{aggr}$ , only Greece exhibits less earnings management among private companies, which may partly reflect the fact that Greek publicly traded firms exhibit more earnings management than public companies in any other sample country.<sup>16</sup> On the other end of the spectrum, public firms from the U.K. and Finland exhibit low levels of earnings management. For the sample as a whole, mean and median values calculated from listed companies are significantly lower than private company means and medians.

Panel B of Table 1 reports Spearman correlation coefficients between earnings management scores. All four individual measures are highly correlated and well represented by the aggregate index. Since the *Amadeus* database has not been used much

---

<sup>14</sup> Observations with missing industry data in *Amadeus* are grouped together in a separate industry class. If we delete this ad hoc group from our analyses, the results and the inferences remain unchanged.

<sup>15</sup> The substantial reduction in public firm observations weakens the statistical power, resulting in lower significance levels for the public firm indicator in some of the analyses but without changing the tenor of the results.

in prior studies, we also benchmark our earnings management measures with those in Leuz et al. (2003) based on public firms from the frequently used *Worldscope* database. In (untabulated) analyses we find that the correlations between their measures and the public firm observations from our sample are above .65 for all individual EM scores, except EM1, and above .90 for the aggregate index. As reliably measuring loss avoidance is likely to require a substantial number of firm-years, it could well be that the relatively low correlation of EM1 is driven by the smaller number of public firms in the *Amadeus* database. As a robustness check, we repeat all our analyses dropping EM1 from the construction of the aggregate index. The results are very similar.

Table 2 presents descriptive statistics for firm characteristics used as control variables in the multivariate tests. We choose proxies for which prior work suggests an association with the level of earnings management (or accruals) and which are also likely to differ across private and public firms. SIZE is the book value of total assets at the end of the fiscal year (in EUR thousands) and is used to control for differences between public and private companies in size. Since access to capital and other corporate financing decisions depend on the extent of agency costs and asymmetric information (e.g., Titman and Wessels, 1988; Rajan and Zingales, 1995) and these attributes likely differ between public and private companies, we include financial leverage as a control variable. We calculate financial leverage, LEV, as the ratio of total debt to the sum of total debt plus book value of equity.<sup>17</sup> Two additional sources of variation between privately held and public companies are firm growth and profitability. GROWTH is defined as the annual

---

<sup>16</sup> This finding is consistent with Leuz et al. (2003) where Greece (together with Austria) ranked highest in terms of earnings management for an international sample of quoted companies.



percentage change in revenue, and ROA is the yearly return on assets as measured by bottom-line net income divided by lagged total assets. All firm attributes are computed as industry-level medians.

Table 2 shows that, as expected, public firms are on average larger, more profitable and experience higher growth rates than private firms. These relations hold for every single country in the sample except Portugal. As the differences in size between the two firm categories are striking, we also perform sensitivity analyses using only the largest quartile of private firms in order to make the two groups more comparable sizewise (results not tabulated). This drastic reduction in available firm-years leaves the results virtually unchanged and the inferences remain the same. With respect to financial leverage, no clear pattern arises, which may be due to our inability to distinguish between various forms of debt. Overall, mean and median values of LEV are not statistically different across private and public firms. The remainder of Table 2 provides information by country on the legal and institutional variables discussed in the next two sections.

#### **4. Main Results on the Role of Reporting Incentives**

Our main tests focus on reporting incentives that stem from raising capital in public markets and the institutional environment in which a firm operates. Both factors shape the way in which information asymmetries between firms and the key financing parties are resolved and the role of earnings in communicating economic performance.

A binary variable indicates observations stemming from firms with publicly traded debt or equity securities (PUBL). Institutional incentives are captured by a legal variable

---

<sup>17</sup> This definition abstracts from the fact that for European countries liabilities oftentimes include provisions arising from national labor market contracts or country-specific regulations with no relation to financing decisions (Giannetti, 2003).

drawn from La Porta et al. (1998). LEGAL represents the average score across three proxies measuring the quality of the legal enforcement system: (1) an index of the judicial system's efficiency, (2) an index of the rule of law, and (3) the level of corruption. LEGAL ranges from zero to ten with higher values corresponding to a higher degree of legal quality and enforcement.

In selected analyses, we also examine the level of earnings management by a country's legal origin (i.e., English, Scandinavian, French, or German), which is probably the most exogenous classification of international legal institutions. However, legal origins also capture ownership patterns and differences in financial development (e.g., La Porta et al., 1999 and 2000). Hence, they are more appropriately viewed as institutional summary measures. The main analysis therefore focuses on the LEGAL variable in an attempt to more specifically identify institutional effects stemming from the quality of legal enforcement.

#### *Univariate Comparisons across the Capital Market and Legal Incentives Dimensions*

Table 3 provides univariate tests across the two incentive dimensions under study. Panel A summarizes the results of within-country univariate regressions with an indicator variable to compare earnings management for public versus private firms. Summary results are shown for the sub-category indices as well as for the aggregate index. For the earnings discretion sub-category, the earnings management index is significantly greater for private firms in 10 of the 13 countries and there is no significant difference between public and private firms in the remaining 3 countries. For the earnings smoothing sub-category, the earnings management index is significantly greater for private firms in 7 countries, and there is no significant difference between public and private firms in 5

countries. In the remaining country, Greece, the sub-index is significantly greater for public firms. For the aggregate earnings management index, the index is significantly greater for private firms in 8 of the 13 countries, there is no significant difference between public and private firms in 4 countries, and in the remaining country, Greece (see discussion in Section 3), the index is significantly greater for public firms.

Thus, for most, but not all, individual countries, the evidence suggests that earnings management is more pervasive among private firms than among public firms. This result also holds if we contrast each of the four individual earnings management scores (EM1 through EM4) by country for private versus public firms. The bottom row in Panel A of Table 1 provides an assessment of statistical significance for each EM measure using Monte Carlo simulation.

Panel B of Table 3 shows correlations among the earnings management indices, listing status, and the LEGAL variable. The top three lines of panel B describe the correlations among the earnings management indices. As expected, the indices are highly correlated and significantly different from zero at the 1% level. The correlations of the earnings management indices with the PUBL variable are negative, reflecting the general result showing lower earnings management scores for public firms. The correlation is substantially more negative for  $EM_{discr}$  (-.49) than for  $EM_{smooth}$  (-.17). In contrast, the strength of the negative correlation between the earnings management indices and the legal enforcement variable is stronger for the smoothing sub-index than for the discretionary sub-index, and strongest for the aggregate earnings index, presumably reflecting the reduction of measurement error. Again, all correlations are significantly different from zero at the 1% level.

Taken as a whole, the evidence presented here and in Table 1 shows no obvious advantage to using the individual components or either of the two sub-indices. Given this evidence, and in light of the potential measurement advantage from combining all earnings management scores into a single index, the remainder of the analysis in the paper focuses on the aggregate earnings management index,  $EM_{aggr}$ .<sup>18</sup>

Panel C of Table 3 compares the aggregate earnings management index across groups of countries defined by their legal origins, which broadly capture investor protection and ownership regimes across countries (La Porta et al., 1999). The ordering of the mean and median values of  $EM_{aggr}$  follows the expected ordering of legal origins, with the English origin countries showing the lowest earnings management index, followed by slightly higher values for the Scandinavian origin countries, followed by significantly higher earnings management among French origin countries, and still higher values for the German origin legal system. These findings are consistent with Ball et al. (2000) and Leuz et al. (2003). Pairwise comparisons of all the differences described above are significant at the .05 level or better, except for the difference between the English and Scandinavian countries. Thus, even within the set of EU countries and despite accounting harmonization, we observe significant variation in the level of earnings management reflecting institutional differences.

Panel D of Table 3 reports average  $EM_{aggr}$  for subgroups defined by the two main variables, legal quality and listing status, to see how they separately and jointly affect the informativeness of earnings. We create a binary variable indicating high and low legal quality countries splitting LEGAL by the median value. As hypothesized, publicly traded

---

<sup>18</sup> Unreported factor analysis shows that there is only one factor with an eigenvalue above one and that all of the four individual scores exhibit substantial loadings onto this factor, further supporting the use of a

firms in countries with high legal quality show the lowest level of earnings management. In contrast, private firms located in low quality legal environments exhibit the highest levels of earnings management. As the off-diagonal comparisons show both variables appear to play a role for the pervasiveness of earnings management. In fact, they do so in an almost equal manner, as the private firms/high legal quality and the public firms/low legal quality cells are statistically indistinguishable. These findings suggest that both incentive dimensions separately contribute to the reporting behavior of European private and public firms.

#### *Multivariable Tests of Capital Market and Legal Incentives Hypotheses*

Table 4 presents results of regressions that examine the role of capital market forces and legal factors, separately and jointly, thereby including additional controls for differences in firm characteristics. Throughout the discussion, assessments of statistical significance are based on heteroskedasticity-corrected t-statistics.<sup>19</sup>

The first four columns of Table 4 examine the effect of listing status, introducing controls for differences in firm characteristics that may be systematically related to earnings management *and* differ across public and private firms. The first column shows our benchmark case without any control variables, and confirms earlier results of significantly higher earnings management scores for private firms. The second column introduces size and leverage controls, which are potential explanators of earnings management, although neither is empirically significant in this setting. The third column introduces two more control variables, growth and return on assets (ROA), which

---

single aggregate index.

<sup>19</sup> As the legal variable varies only at the country level, we repeat our analyses using robust standard errors clustered by country, resulting in a more conservative assessment of statistical significance.

systematically affect the level of accruals. Finally, column four adds industry controls based on the industry classification in Campbell (1996). Moving across the four specifications, the magnitude of the coefficient on PUBL remains relatively constant except in Model 3. Correspondingly, the coefficient on PUBL is significant at the .01 level in all but Model 3, where it is significant at the .05 level. Thus, introduction of variables reflecting controls for firm and industry characteristics do not alter the basic conclusion that raising capital in public markets results in greater demand for high-quality earnings as evidenced by the lower level of earnings management for public firms.

The next four columns examine the legal incentive variable separate from the public versus private hypothesis. Column five shows that the earnings management index is significantly negatively related to the enforcement variable (benchmark case). Columns six to eight show that this significantly negative relation continues to hold if we introduce size, leverage, growth, ROA, and industry controls.

The final column presents a combined model simultaneously including the capital market and the legal variable together with the controls. The coefficients on the variables of interest are highly significant. In fact, the t-statistic for the PUBL coefficient in the complete model is larger than in any other model, except for the simple univariate comparison in column one.<sup>20</sup>

Design choices to this point maintain sample size but allow differences in industry composition between the public versus private observations and between countries. To the

---

However, the inferences are the same and the legal variable remains significant at the 1% level in all models presented in Table 4.

<sup>20</sup> In order to explicitly account for the varying numbers of input data, we also estimated the regressions in Table 4 using weighted least squares. The square root of the number of firm-level observations serves as weighing variable. With the exception of the coefficient on PUBL in Model 3, which has a p-value of .18, all previously reported results remain significant at the .01 level.

extent that economic differences between industries are systematically related to the informativeness of reported earnings, it is possible that the differing incidence of industry observations among public versus private firms and among countries accounts for some of the reported results. To address this issue, we construct a balanced sample that includes only observations where we have corresponding observations from the same industry for both public and private firms and for all countries included. With this design, the sample is less than half the number of observations in the preceding analysis, and includes 5 industries from 11 countries, resulting in a total of 110 public-firm and private-firm observations. The (untabulated) results are essentially unchanged from those reported in Table 4. Overall, the results are consistent with the hypothesis that listing status and legal enforcement have a significant influence on firms' incentives to report earnings that reflect economic performance, which is the paper's main proposition.

## **5. Additional Analyses on the Role of Tax and Accounting Rules**

In this section we explore differences in institutional factors in tax and accounting regimes across countries and how they relate to our main results on capital market incentives. Although accounting standards are formally harmonized within the EU, there are still differences in the way tax and financial accounting are aligned as well as residual differences in the accounting rules themselves. These differences are likely to affect private and public firms differentially and hence are potentially confounding factors in our analyses.

### *Influence of Tax Alignment*

We first introduce a variable to control for the effects of different tax alignment regimes throughout the EU. Ball et al. (2000) hypothesize that the link between financial

and tax accounting can play an important role in firms' reporting behavior. Moreover, recent work suggests that taxes could play a role in observed earnings distributions as well as firms' tendency to avoid losses (Coppens and Peek, 2003). We rely on a tax status classification provided by Alford et al. (1993) and Hung (2001). It indicates countries with a high alignment of financial and tax accounting, for instance, because financial statements serve as basis for taxation purposes, or tax laws explicitly require that certain items are treated equally in both sets of accounts (see Table 2). The TAX variable takes on a value of one when financial and tax accounts are highly aligned and zero otherwise. For the three countries with missing tax information (Austria, Greece and Portugal), we assume a tax status of one.<sup>21</sup>

Table 5 Panel A examines the relation between the TAX variable and the earnings management index. The results for Model 1 show that TAX is significant in a univariate model (benchmark case). When the capital market and legal incentive variables are added in Model 2, the TAX variable provides incremental explanatory power significant at the .05 level, while the coefficients on PUBL and LEGAL remain significant at the .01 level and are similar in magnitude to those in the combined model in Table 4.

It is quite plausible that the degree of tax alignment of financial accounting has a differential effect on private and public firms. For instance, as explained in Section 2, private firms face less of a tradeoff than public firms if they manage earnings to minimize taxes but make them less informative in the process. Moreover, tax considerations matter more to private firms, many of which prepare (unconsolidated) parent-company accounts,

---

<sup>21</sup> The rationale for this assumption is that Austria is close to the German system, which is classified as a one, and Portugal and Greece are both French legal origin countries, which generally exhibit a high alignment. If we exclude the three countries without explicit classification from the tax analysis, the results do not materially change.



for which the tax link is more explicit. To examine these arguments, we first estimate the effect of TAX in separate models for public and private firms. Model 3 shows a positive and significant coefficient on TAX for private firms and Model 4 a positive but insignificant coefficient for public firms. These findings are consistent with our expectations. However, an ad hoc test based on the assumption that the two coefficient estimates are independent normal variates with variances equal to their estimated variances indicates that the effects of TAX on earnings management are not significantly different for public versus private firms.

In order to provide a more formal test of the difference between the TAX coefficients for public versus private firms, we introduce a model to estimate the coefficients jointly. The natural way to conduct joint estimation is to include a term that interacts the PUBL indicator variable and the TAX variable. However, empirically this interaction term, the TAX proxy and the LEGAL variable are highly correlated, which makes the estimate of the interaction term difficult to interpret.

To mitigate this problem, we empirically decompose the TAX variable into a component related to the general institutional and legal environment and a residual component that reflects the separate effect of the TAX variable. Specifically, we estimate a first-stage regression of the TAX variable on the legal origins and the natural log of GDP per capita. This first stage regression is intended to separate the systematic component of TAX related to the general nature of the institutional environment from the component of TAX that is uniquely attributable to tax alignment. The legal origin captures this general nature together with a country's wealth, which likely plays an important role for the quality of the legal institutions. The predicted value of TAX is included in the second-stage

regression (reported in the table as Model 5) to capture institutional incentives (similar to the LEGAL variable before) while the residual component is included as main effect and interacted with the PUBL variable. Thus, the coefficients on the residual TAX component and the interaction of the residual TAX component and PUBL provide an assessment of whether the effect of tax alignment differs across public and private firms.

The estimates for Model 5 show a positive coefficient on TAX, corresponding to the unique effects of tax alignment for private firms, and a negative coefficient on the interaction of TAX and PUBL, which corresponds to a lower tax effect for public firms. However, both coefficients are not statistically significant at a two-tailed level. The coefficient on PREDICT is significant at the .01 level, which is consistent with our earlier findings that incentives from the institutional framework have substantial explanatory power. Finally, the coefficient on PUBL remains negative and highly significant in the presence of these additional explanatory variables.

To further corroborate and even strengthen the results in Table 5 Panel A, we rerun separate analyses using only observations which come from consolidated financial statement data or only observations which come from unconsolidated parent-company accounts.<sup>22</sup> For countries where there is a link between financial reporting and taxes, we expect the effect of the tax variable to be much more important for the unconsolidated observations than for the consolidated observations, because the link with taxes is commonly with the unconsolidated parent-only accounts. Untabulated results corresponding to those in Table 5 differ between the two samples as one would expect. Consistent with our expectations, the tax variable for the unconsolidated sample is always

significant (including the coefficients of the main effect and the interaction term in Model 5) whereas the tax variable loses its significance in the consolidated sample.

Taken as a whole, accounting for differences in tax alignment does not alter the primary conclusion that capital market pressure increases firms' incentives to report earnings that reflect economic performance. At the same time, the finding that the tax alignment variable is more important for private firms than for public firms is consistent with the conjecture that reported earnings can serve different purposes in private companies.

#### *Influence of Remaining Differences in Accounting Rules*

A second potential confounding factor on reporting incentives are differences in the accounting rules remaining after formal harmonization. Comprix et al. (2003), for instance, argue and provide evidence that the remaining differences in EU accounting rules give rise to stock market reactions to regulatory action towards further harmonization and stricter enforcement. We use the "accrual rules index", ACCRUAL, constructed by Hung (2001) and updated for EU countries by Comprix et al. (2003), to capture the remaining differences in the accounting rules. This index measures the use of accrual accounting rules to accelerate recognition of economic transactions in the accounts (e.g., R&D activities, pension plans). It proxies for the extent to which a country's stated accounting rules are designed to produce timely and informative reported earnings. Higher index values correspond to more extensive accrual rules that allow for accelerated recognition (see Table 2).

---

<sup>22</sup> For completeness, we also reexamined the results in Table 4 for these two subsamples and, despite the reduction in sample size for the subsamples, the significance levels for the major variables are qualitatively unchanged from those reported in Table 4.

Table 5 Panel B examines the relation between the accrual accounting rules and the earnings management index. The results for Model 1, our benchmark case, show that ACCRUAL is significant at the .01 level. When PUBL and LEGAL are added in Model 2, the ACCRUAL variable continues to be significant, but so are the two incentives variables. Thus, our previous results are not adversely affected by an attempt to explicitly control for residual differences in EU accounting rules.

As with tax alignment, it is quite plausible that the effects of accrual accounting rules differ across private and public firms. Rules that are designed to produce timely and informative earnings are likely to be more important for public firms, which heavily rely on financial statements in their communications with outside investors. We again estimate separate models for public and private firms. Model 3 shows a negative and significant coefficient on ACCRUAL for private firms and Model 4 shows a more negative and significant coefficient for public firms. Using the ad hoc test described above, the difference between the coefficients from the two separate regressions is significant at the .10 level. These results suggest that the effects of accrual accounting rules on earnings management are significantly different for public versus private firms and, as expected, more important for the former group.

To further explore this issue, Model 5 provides an assessment of whether the ACCRUAL variable provides incremental explanatory power relative to PUBL when its effect is allowed to vary between public and private firms. The accrual rules variable is included in Model 5 in two parts, derived from a first-stage regression of ACCRUAL on the legal origins and the natural log of GDP per capita. The estimates for Model 5 show a negative but insignificant coefficient on ACCRUAL. The coefficient on the interaction of

ACCRUAL and PUBL is negative and significant at the .05 level, which corresponds to a negative effect of accrual rules for public firms. The coefficient on PREDICT is significant at the .01 level. As in Panel A, the coefficient on PUBL remains negative and highly significant in the presence of these additional explanatory variables.

The results in Panel B suggest that the design of the accounting rules has relatively little effect on earnings management by private firms but a significant effect for public firms.<sup>23</sup> This finding suggests that accounting standards that are intended to produce timely and informative earnings can play an incremental role but only if coupled with incentives to report about economic performance. This interaction effect corroborates our main proposition about the importance of reporting incentives.

## **6. Conclusion**

This study extends and generalizes previous evidence that firms' reporting incentives created by market forces and institutional factors are important determinants of accounting quality. In an international setting where accounting standards are largely harmonized while institutional factors vary substantially, we examine whether raising capital in public markets rather than from private sources and strong legal enforcement exert a systematic influence on firms' incentives to report earnings that accurately reflect economic performance.

For a large sample of private and public firms from 13 European countries, we find that one dimension of earnings quality, earnings management, is more pervasive in private firms than in publicly traded firms, consistent with the hypothesis that capital market incentives result in higher earnings quality. These results are interesting in light of recent

---

<sup>23</sup> However, this result has to be interpreted cautiously, as Leuz et al. (2003) show that the influence of the accounting rules is potentially endogenous across countries.

allegations that capital markets exacerbate incentives to mask economic performance. The results also contribute to the earnings management literature, suggesting that prior evidence in Beatty and Harris (1999) and Beatty et al. (2002) showing greater evidence of earnings management among public firms than private firms for U.S. banks is not generalizable to a broader set of industries and countries. The results also extend those in Leuz et al. (2003) by demonstrating that the influence of institutional factors on the level of earnings management extends to private firms. The results show that for both private and public firms, earnings are less transparent in countries with weak legal systems.

Finally, we document a residual role of tax alignment and accounting rules, which seem to differentially affect private and public firms. Rules that align tax and financial accounting have a larger impact on the reporting behavior of private firms, consistent with the idea that private firms emphasize tax minimization relative to communicating firm performance via earnings. On the other hand, residual differences in the accounting rules across the European countries are more important for public firms, suggesting that accounting standards designed to make earnings more informative play a more important role when they are coupled with capital market pressures to report earnings that reflect economic performance.

Taken as a whole, the evidence suggests that, despite extensive efforts to harmonize accounting standards, there remains substantial variation across European countries in the informativeness of earnings and that reporting incentives created by capital markets and institutional structures explain much of this variation.

## References

- ALFORD, A.; J. J. JONES; R. W. LEFTWICH; AND M. E. ZMIJEWSKI. "The Relative Informativeness of Accounting Disclosures in Different Countries." *Journal of Accounting Research* 31 (1993): 183-223.
- BALL, R. "Infrastructure Requirements for an Economically Efficient System of Public Financial Reporting and Disclosure." In *Brookings-Wharton Papers on Financial Services*, edited by R. E. Litan and R. Herring, pp. 127-69. Washington DC: Brookings Institution Press, 2001.
- BALL, R., AND L. SHIVAKUMAR. "Earnings Quality in U.K. Private Firms." Working paper, University of Chicago and London Business School, May 2002.
- BALL, R.; S. P. KOTHARI; AND A. ROBIN. "The Effect of International Institutional Factors on Properties of Accounting Earnings." *Journal of Accounting & Economics* 29 (2000): 1-51.
- BALL, R.; A. ROBIN; AND J. S. WU. "Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries." *Journal of Accounting & Economics* (2003): forthcoming.
- BEATTY, A. L., AND D. G. HARRIS. "The Effects of Taxes, Agency Costs and Information Asymmetry on Earnings Management: A Comparison of Public and Private Firms." *Review of Accounting Studies* 4 (1999): 299-326.
- BEATTY, A. L.; B. KE; AND K. R. PETRONI. "Earnings Management to Avoid Earnings Declines across Publicly and Privately Held Banks." *The Accounting Review* 77 (2002): 547-70.
- BURGSTAHLER, D., AND I. D. DICHEV. "Earnings Management to Avoid Earnings Decreases and Losses." *Journal of Accounting & Economics* 24 (1997): 99-126.
- CAMPBELL, J. Y. "Understanding Risk and Return." *Journal of Political Economy* 104 (1996): 298-345.
- COMPRIX, J. J.; K. A. MULLER, III; AND M. STANFORD. "Economic Consequences from Mandatory Adoption of IASB Standards in the European Union." Working paper, Arizona State University, Pennsylvania State University, and Texas Christian University, July 2003.
- COPPENS, L., AND E. PEEK. "An Analysis of Earnings Management by European Private Firms." Working paper, University of Maastricht, June 2003.
- DECHOW, P. M. "Accounting Earnings and Cash Flows as Measures of Firm Performance: The Role of Accounting Accruals." *Journal of Accounting & Economics* 18 (1994): 3-42.

- DECHOW, P. M., AND D. J. SKINNER. "Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators." *Accounting Horizons* 14 (2000): 235-50.
- DECHOW, P. M., AND I. D. DICHEV. "The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors." *The Accounting Review* 77 (2002): 35-59.
- DECHOW, P. M.; R. G. SLOAN; and A. P. SWEENEY. "Detecting Earnings Management." *The Accounting Review* 70 (1995): 193-225.
- DEGEORGE, F.; J. PATEL; AND R. ZECKHAUSER. "Earnings Management to Exceed Thresholds." *Journal of Business* 72 (1999): 1-33.
- EMENYONU, E. N., AND S. J. GRAY. "EC Accounting Harmonisation: An Empirical Study of Measurement Practices in France, Germany and the UK." *Accounting and Business Research* 23 (1992): 49-58.
- FUDENBERG, D., AND J. TIROLE. "A Theory of Income and Dividend Smoothing Based on Incumbency Rents." *Journal of Political Economy* 103 (1995): 75-93.
- GERNON, H., AND R. S. O. WALLACE. "International Accounting Research: A Review of its Ecology, Contending Theories and Methodologies." *Journal of Accounting Literature* 14 (1995): 54-106.
- GIANNETTI, M. "Do Better Institutions Mitigate Agency Problems? Evidence from Corporate Finance Choices." *Journal of Financial and Quantitative Analysis* 38 (2003): 185-212.
- GUTTMAN, I.; O. KADAN; AND E. KANDEL. "Adding the Noise: A Theory of Compensation-Driven Earnings Management." Working paper, Hebrew University, November 2003.
- HEALY, P. M., AND J. M. WAHLEN. "A Review of the Earnings Management Literature and its Implications for Standard Setting." *Accounting Horizons* 13 (1999): 365-83.
- HERRMANN, D., AND W. THOMAS. "Harmonisation of Accounting Measurement Practices in the European Community." *Accounting and Business Research* 25 (1995): 253-65.
- HUNG, M. "Accounting Standards and Value Relevance of Financial Statements: An International Analysis." *Journal of Accounting & Economics* 30 (2001): 401-20.
- JOOS, P., AND M. H. LANG. "The Effects of Accounting Diversity: Evidence from the European Union." *Journal of Accounting Research* 32 (1994): 141-68.
- JOOS, P., AND P. D. WYSOCKI. "(Non)Convergence in International Accrual Accounting: The Role of Institutional and Real Operating Effects." Working paper, Sloan School of Management MIT, April 2002.



- LA PORTA, R.; F. LOPEZ-DE-SILANES; AND A. SHLEIFER. "Corporate Ownership around the World." *Journal of Finance* 54 (1999): 471-517.
- LA PORTA, R.; F. LOPEZ-DE-SILANES; A. SHLEIFER; AND R. W. VISHNY. "Law and Finance." *Journal of Political Economy* 106 (1998): 1113-55.
- \_\_\_\_\_. "Investor Protection and Corporate Governance." *Journal of Financial Economics* 58 (2000): 3-27.
- LAND, J., AND M. H. LANG. "Empirical Evidence on the Evolution of International Earnings." *The Accounting Review* 77 (2002): 115-33.
- LANG, M. H.; J. SMITH RAEDY; AND M. HIGGINS YETMAN. "How Representative Are Firms that Are Cross-Listed in the United States? An Analysis of Accounting Quality." *Journal of Accounting Research* 41 (2003): 363-86.
- LEUZ, C.; D. NANDA; AND P. D. WYSOCKI. "Earnings Management and Investor Protection: An International Comparison." *Journal of Financial Economics* 69 (2003): 505-27.
- LEVITT, A., JR. "The Importance of High Quality Accounting Standards." *Accounting Horizons* 12 (1998): 79-82.
- RAJAN, R. G., AND L. ZINGALES. "What do we know about Capital Structure? Some Evidence from International Data." *Journal of Finance* 50 (1995): 1421-60.
- \_\_\_\_\_. "Which Capitalism? Lessons from the East Asian Crisis." *Journal of Applied Corporate Finance* 11 (1998): 40-48.
- SAUDAGARAN, S. M., AND G. K. MEEK. "A Review of Research on the Relationship between International Capital Markets and Financial Reporting by Multinational Firms." *Journal of Accounting Literature* 16 (1997): 127-59.
- SKINNER, D. J., AND L. A. MYERS. "Earnings Momentum and Earnings Management." Working paper, University of Michigan, April 1999.
- SLOAN, R. G. "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings?" *The Accounting Review* 71 (1996): 289-315.
- STOLOWY, H., AND A. JENY-CAZAVAN. "International Accounting Disharmony: The Case of Intangibles." *Accounting, Auditing & Accountability* 14 (2001): 477-96.
- SUBRAMANYAM, K. R. "The Pricing of Discretionary Accruals." *Journal of Accounting & Economics* 22 (1996): 249-81.
- TEOH, S. H.; I. WELCH; AND T. J. WONG. "Earnings Management and the Underperformance of Seasoned Equity Offerings." *Journal of Financial Economics* 50 (1998a): 63-99.

- \_\_\_\_\_. "Earnings Management and the Long-Run Market Performance of Initial Public Offerings." *Journal of Finance* 53 (1998b): 1935-74.
- TITMAN, S., AND R. WESSELS. "The Determinants of Capital Structure Choice." *Journal of Finance* 43 (1988): 1-19.
- VAN HULLE, K. "From Accounting Directives to International Accounting Standards." In *The Economics and Politics of Accounting*, edited by C. Leuz, D. Pfaff, and A. G. Hopwood, pp. 351-76. Oxford: Oxford University Press, 2004.
- VANDER BAUWHEDE, H.; M. WILLEKENS; AND A. GAEREMYNCK. "Audit Firm Size, Public Ownership, and Firms' Discretionary Accruals Management." *International Journal of Accounting* 38 (2003): 1-22.
- WATTS, R. L., AND J. L. ZIMMERMAN. *Positive Accounting Theory*. Englewood Cliffs, N.J.: Prentice-Hall, 1986.
- WYSOCKI, P. "Earnings Management, Tax Compliance, and Institutional Factors: A Discussion of Haw et al. [2004]." *Journal of Accounting Research* 42 (2004): forthcoming.

**TABLE 1**

**Descriptive Statistics for the Individual and Aggregate Earnings Management Scores**

*Panel A: Mean Earnings Management Scores of Private and Public Firms by Country*

Country	Listing Status	Firm-Years	Industry Obs.	Earnings Discretion Scores		Earnings Smoothing Scores		Total Score EM <sub>aggr</sub>
				EM1	EM2	EM3	EM4	
Austria	private	1,536	11	3.143	0.743	-0.585	0.916	66.6
	public	88	3	0.667	0.656	-0.511	0.920	53.0
Belgium	private	20,495	12	3.326	0.746	-0.543	0.907	69.2
	public	206	9	1.056	0.642	-0.646	0.840	42.1
Denmark	private	7,879	12	2.400	0.616	-0.658	0.834	44.4
	public	259	9	0.611	0.562	-0.591	0.850	39.6
Finland	private	6,734	11	2.991	0.526	-0.680	0.822	36.8
	public	350	10	0.700	0.385	-0.654	0.741	22.6
France	private	47,482	12	3.554	0.677	-0.622	0.885	57.9
	public	1,282	12	2.667	0.519	-0.757	0.806	33.6
Germany	private	4,338	12	4.296	0.784	-0.495	0.908	75.7
	public	932	10	2.998	0.592	-0.600	0.893	49.8
Greece	private	5,499	12	1.383	0.702	-0.625	0.885	47.7
	public	1,122	12	1.257	0.654	-0.528	0.938	60.5
Italy	private	47,383	12	4.091	0.729	-0.512	0.935	78.3
	public	479	11	3.564	0.670	-0.626	0.877	55.9
Netherlands	private	13,762	12	2.067	0.635	-0.607	0.885	46.9
	public	628	11	2.015	0.506	-0.723	0.808	36.2
Portugal	private	5,888	11	7.242	0.736	-0.506	0.938	80.6
	public	141	7	2.571	0.686	-0.610	0.839	55.5
Spain	private	42,934	12	4.566	0.664	-0.613	0.869	60.4
	public	526	12	1.604	0.445	-0.611	0.873	40.5
Sweden	private	15,038	11	2.581	0.582	-0.654	0.820	39.5
	public	301	4	3.500	0.622	-0.852	0.642	33.3
United Kingdom	private	58,693	12	1.889	0.655	-0.593	0.844	47.8
	public	3,379	12	2.313	0.446	-0.743	0.750	24.1
Mean	private	277,661	152	3.332	0.677	-0.592	0.881	57.9
(Total)	public	9,693	122	1.979 **	0.554 **	-0.651 **	0.834 **	41.5 **
Median	private		152	2.864	0.684	-0.593	0.891	56.1
	public		122	1.183 **	0.541 **	-0.649 **	0.867 #	42.9 **
Standard Deviation	private		152	2.193	0.111	0.104	0.067	18.7
	public		122	2.030	0.155	0.179	0.131	19.9
Within-Country (# higher/# not distinguishable/# lower)				(4/9/0)	(8/4/1)	(9/2/2)	(7/5/1)	

(continued)

**TABLE 1 (continued)***Panel B: Spearman Correlation Coefficients among Earnings Management Scores*

<i>Variables (N = 274)</i>	<i>Earnings Discretion Scores</i>		<i>Earnings Smoothing Scores</i>		<i>Total Score</i>	
		EM1	EM2	EM3	EM4	EM <sub>aggr</sub>
Earnings Discretion Scores	EM1	1.000				
	EM2	0.372 **	1.000			
Earnings Smoothing Scores	EM3	0.244 **	0.458 **	1.000		
	EM4	0.199 **	0.364 **	0.604 **	1.000	
Total Earnings Management Score	EM <sub>aggr</sub>	0.593 **	0.744 **	0.794 **	0.747 **	1.000

The initial sample consists of 287,354 firm-year observations from private and public, non-financial companies over the fiscal years 1997 to 2001 across 13 countries of the European Union. We exclude Ireland and Luxembourg because of insufficient financial and institutional data. Financial data are obtained from the January 2003 version of the Amadeus Top 200,000 database. The computations are at the industry-level using the classification in Campbell (1996), i.e., we calculate each score by country, industry and listing status. We require a minimum of ten firm-year observations per subgroup. We truncate firm-level realizations at the first and 99th percentile before computing the score per subgroup. The table presents mean values by country and listing status and Spearman correlations of four individual earnings management scores and the aggregate earnings management index (see Leuz et al., 2003). EM1 is the number of “small profits” divided by the number of “small losses”. A firm-year observation is classified as small profit (small loss) if positive (negative) net income falls within the range of one percent of lagged total assets. EM2 is the median ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Total accruals are calculated as follows:  $(\Delta \text{ total current assets} - \Delta \text{ cash}) - (\Delta \text{ total current liabilities} - \Delta \text{ short-term debt}) - \text{depreciation expense}$ . Cash flow from operations is equal to operating income minus total accruals. EM3 is the ratio of the cross-sectional standard deviations of operating income and cash flow from operations (multiplied by  $-1$ ). EM4 is the Spearman correlation between the change in total accruals and the change in cash flow from operations (multiplied by  $-1$ ). All accounting items are scaled by lagged total assets. The aggregate earnings management index, EM<sub>aggr</sub>, is the average percentage rank across all four individual scores, EM1 to EM4. EM scores are constructed such that higher values imply higher levels of earnings management. We evaluate sample means (medians) using t-tests (Wilcoxon rank sum tests). In the within-country analysis (Panel A), we assess the statistical significance of the four individual EM scores across the two subsamples of public and private firms using Monte Carlo simulation. The table reports the number of countries where the EM scores for private firms are (1) significantly higher, (2) not distinguishable, and (3) significantly lower than the EM scores for public firms at the 5% level. \*\*, \*, and # indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 2**

**Descriptive Statistics for the Control and Institutional Variables by Country**

<i>Country</i>	<i>Listing Status</i>	<i>Industry Obs.</i>	<i>SIZE</i>	<i>LEV</i>	<i>GROWTH</i>	<i>ROA</i>	<i>Legal Origin</i>	<i>LEGAL</i>	<i>TAX</i>	<i>ACCRUAL</i>
Austria	private	11	62,595	0.0%	5.6%	3.1%	German	9.36	1	0.55
	public	3	233,350	0.0%	13.5%	4.5%				
Belgium	private	12	18,833	40.7%	6.8%	2.1%	French	9.44	1	0.64
	public	9	341,348	37.2%	12.1%	3.8%				
Denmark	private	12	21,887	17.4%	8.2%	4.4%	Scandinavian	10.00	0	0.55
	public	9	183,292	23.9%	11.7%	4.9%				
Finland	private	11	12,866	26.3%	9.0%	5.3%	Scandinavian	10.00	1	0.77
	public	10	427,521	28.8%	14.4%	7.8%				
France	private	12	16,420	15.9%	7.1%	2.9%	French	8.68	1	0.64
	public	12	292,407	31.1%	11.6%	4.5%				
Germany	private	12	50,996	2.4%	3.9%	2.4%	German	9.05	1	0.41
	public	10	307,400	12.2%	7.6%	3.5%				
Greece	private	12	10,771	41.4%	13.1%	3.0%	French	6.82	1	0.41
	public	12	82,866	23.6%	16.7%	7.3%				
Italy	private	12	19,978	35.2%	9.1%	1.1%	French	7.07	1	0.59
	public	11	291,237	19.2%	10.2%	3.2%				
Netherlands	private	12	49,622	31.2%	7.4%	4.0%	French	10.00	0	0.77
	public	11	580,869	35.0%	14.8%	6.6%				
Portugal	private	11	23,906	44.7%	10.9%	2.4%	French	7.19	1	0.55
	public	7	72,063	51.0%	6.5%	2.1%				
Spain	private	12	14,353	33.9%	12.3%	4.4%	French	7.14	1	0.77
	public	12	1,450,759	35.3%	12.3%	5.6%				
Sweden	private	11	12,229	15.0%	8.6%	3.5%	Scandinavian	10.00	1	0.64
	public	4	75,398	16.4%	16.1%	3.8%				
United Kingdom	private	12	23,786	43.2%	11.8%	4.1%	English	9.22	0	0.86
	public	12	209,665	28.4%	14.7%	5.8%				
Mean	private	152	25,969	26.9%	8.8%	3.3%				
	public	122	390,152 **	27.9%	12.5% **	5.1% **				
Median	private	152	14,571	28.0%	8.1%	3.2%				
	public	122	149,609 **	27.2%	11.1% **	4.9% **				
Standard Deviation	private	152	42,675	17.9%	4.0%	1.6%				
	public	122	1,072,473	13.9%	7.4%	2.5%				

The initial sample consists of 287,354 firm-year observations from private and public, non-financial companies over the fiscal years 1997 to 2001 across 13 countries of the European Union. We exclude Ireland and Luxembourg because of insufficient financial and institutional data. Financial data are obtained from the January 2003 version of the Amadeus Top 200,000 database. The analysis is based on country-industry medians by listing status, i.e., private and public firms in a particular industry and country form separate subgroups. We require a minimum of ten firm-year observations per subgroup. We truncate firm-level realizations at the first and 99th percentile before computing the subgroup median. The industry classification is based on Campbell (1996). The table presents means for the control variables by country and listing status. SIZE is the book value of total assets at the end of the fiscal year (in EUR thousands). Financial leverage (LEV) is measured as the ratio of total debt to the sum of total debt plus book value of equity. GROWTH is the annual percentage change in revenue. ROA stands for yearly return on assets and equals bottom-line net income divided by lagged total assets. The legal variables consist of two measures from La Porta et al. (1998): (1) the classification of the legal origin, and (2) the general quality of the legal system and enforcement (LEGAL) measured by the mean of three institutional variables (i.e., efficiency of the judicial system, rule of law, and corruption index). TAX is an indicator variable taking on the value of one if financial accounts for external reporting and tax purposes are highly aligned and zero otherwise (see Alford et al., 1993, and Hung, 2001). We assume a tax status of one for the three countries with missing tax information (Austria, Greece and Portugal). ACCRUAL is the accrual index from Hung (2001) (updated for European countries by Comprix et al., 2003), and captures differences in accrual accounting rules across countries. We evaluate sample means (medians) using t-tests (Wilcoxon rank sum tests). \*\* indicates statistical significance at the 1% level (two-tailed).

**TABLE 3**  
**Univariate Analysis of Earnings Management Indices,**  
**Listing Status and Legal Variables**

*Panel A: Within-Country Analysis of Public versus Private Firms*

Variables	EM <sub>discr</sub>	EM <sub>smooth</sub>	EM <sub>aggr</sub>
Within-Country (# negative/ # insignificant/# positive)	(10/3/0)	(7/5/1)	(8/4/1)

*Panel B: Spearman Correlation Coefficients*

Variables (N = 274)	EM <sub>discr</sub>	EM <sub>smooth</sub>	EM <sub>aggr</sub>
EM <sub>discr</sub>	1.000		
EM <sub>smooth</sub>	0.424 **	1.000	
EM <sub>aggr</sub>	0.812 **	0.862 **	1.000
PUBL	-0.498 **	-0.175 **	-0.362 **
LEGAL	-0.256 **	-0.351 **	-0.375 **

*Panel C: Pairwise Comparison across Legal Origins*

Legal Origins		English	Scandinavian	French	German
English (N = 24)	Mean	35.9			
	Median	36.1			(Variable = EM <sub>aggr</sub> )
Scandinavian (N = 57)	Mean	(0.19)	36.6		
	Median	(0.38)	39.2		
French (N = 157)	Mean	(4.31) **	(6.18) **	54.8	
	Median	(4.23) **	(5.99) **	56.4	
German (N = 36)	Mean	(6.31) **	(8.28) **	(2.44) *	63.8
	Median	(4.94) **	(6.18) **	(2.23) *	62.1

*Panel D: Pairwise Comparison across Legal Quality/Listing Status Subgroups*

Legal Quality (Variable = EM <sub>aggr</sub> )		Listing Status		Test of Difference
		Public	Private	
High Quality	Mean	33.5	50.3	(5.54) **
	Median	29.0	44.7	(4.67) **
		(N = 58)	(N = 81)	
Low Quality	Mean	48.7	66.6	(5.93) **
	Median	52.2	68.1	(5.20) **
		(N = 64)	(N = 71)	
Test of Difference		(4.56) **	(5.95) **	
		(4.26) **	(5.57) **	

The sample comprises 274 industry-level observations from 13 European countries. The aggregate earnings management index, EM<sub>aggr</sub>, is the average percentage rank across all four individual earnings management scores, EM1 to EM4, as described in Table 1. EM<sub>discr</sub> and EM<sub>smooth</sub> are calculated similarly for the two sub-categories “earnings discretion” (EM1 and EM2) and “earnings smoothing” (EM3 and EM4). EM scores are constructed such that higher values imply higher levels of earnings management. In Panel A, we assess differences in the three aggregate EM indices across public and private firms using regression analysis by country. The panel reports the number of countries where the coefficient on the public/private indicator is (1) significantly negative, (2) insignificant, and (3) significantly positive at the 5% level, indicating either higher, indistinguishable, or lower levels of earnings management among private firms. In Panel B, we report Spearman correlation coefficients for the aggregate EM indices and the incentive variables of interest. PUBL is an indicator variable taking on the value of one if the observation stems from publicly traded firms and zero otherwise. LEGAL stands for the mean of three variables in La Porta et al. (1998), which measure the quality of the legal system and enforcement (i.e., efficiency of the judicial system, rule of law, and corruption index). In Panels C and D, we report means and medians of EM<sub>aggr</sub> by subgroup (i.e., legal origin and legal quality/listing status). We assign observations to the high (low) legal quality subgroup according to the median value of LEGAL. In parentheses, we report t-stats and Z-stats for pairwise differences across groups. \*\* and \* indicate statistical significance at the 1% and 5% levels (two-tailed), respectively.

**TABLE 4**

**Earnings Management and Reporting Incentives: The Role of Listing Status and Institutional Differences**

$$EM_{\text{aggr},i} = \alpha_0 + \alpha_1 \text{PUBL}_i + \alpha_2 \text{LEGAL}_i + \alpha_3 \text{SIZE}_i + \alpha_4 \text{LEV}_i + \alpha_5 \text{GROWTH}_i + \alpha_6 \text{ROA}_i + \sum \alpha_j \text{Industry Controls}_i + \varepsilon_i$$

<i>Variables</i> ( <i>N</i> = 274)	<i>Capital Market Incentives</i>				<i>Legal Incentives</i>				<i>Combined</i>
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model</i>
PUBL	-16.424 ** (-6.99)	-18.218 ** (-4.35)	-8.390 * (-2.20)	-14.945 ** (-3.56)					-20.142 ** (-5.58)
LEGAL					-6.104 ** (-6.69)	-6.244 ** (-6.31)	-5.316 ** (-5.67)	-5.476 ** (-6.07)	-6.300 ** (-6.97)
Intercept	57.880 ** (38.20)	48.956 ** (3.66)	74.009 ** (6.09)	49.150 ** (3.47)	103.700 ** (12.86)	147.828 ** (12.09)	142.493 ** (12.38)	140.394 ** (11.91)	91.701 ** (5.88)
SIZE		0.784 (0.57)	-0.237 (-0.20)	2.430 # (1.72)		-3.751 ** (-5.31)	-2.204 ** (-3.33)	-1.631 * (-2.46)	3.995 ** (3.16)
LEV		4.709 (0.65)	-1.987 (-0.31)	-0.739 (-0.12)		-9.332 (-1.06)	-12.426 # (-1.69)	-10.993 (-1.45)	-11.123 (-1.60)
GROWTH			14.596 (0.63)	16.596 (0.62)			-17.841 (-1.03)	-34.059 # (-1.74)	-7.761 (-0.38)
ROA			-4.434 ** (-7.51)	-4.481 ** (-7.31)			-4.081 ** (-7.65)	-4.052 ** (-7.49)	-3.462 ** (-6.65)
Industry Controls				included				included	included
R <sup>2</sup>	15.4%	15.6%	32.9%	42.8%	12.8%	20.2%	39.9%	48.4%	54.2%

The sample comprises 274 industry-level observations from 13 European countries. The dependent variable, EM<sub>aggr</sub>, is the average percentage rank across all four individual earnings management scores, EM1 to EM4, as described in Table 1. EM scores are constructed such that higher values imply higher levels of earnings management. PUBL is an indicator variable taking on the value of one if the observation stems from publicly traded firms and zero otherwise. LEGAL stands for the mean of three variables in La Porta et al. (1998), which measure the quality of the legal system and enforcement (i.e., efficiency of the judicial system, rule of law, and corruption index). SIZE is the book value of total assets at the end of the fiscal year (in EUR thousands). We use the natural log of the size variable in the analysis. Financial leverage (LEV) is measured as the ratio of total debt to the sum of total debt plus book value of equity. GROWTH is the annual percentage change in revenue. ROA stands for the yearly percentage return on assets. Industry controls based on the classification in Campbell (1996) are included in some regressions where indicated. The table reports OLS coefficient estimates and t-statistics based on robust standard errors (in parentheses). \*\*, \*, and # indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 5**

**Earnings Management and Reporting Incentives: Controlling for the Degree of Tax Alignment and Remaining Differences in Accrual Rules**

$$EM_{\text{aggr},i} = \alpha_0 + \alpha_1 \text{Conditional Variable}_i + \alpha_2 \text{Conditional Variable}_i * \text{PUBL}_i + \alpha_3 \text{PUBL}_i + \alpha_4 \text{LEGAL}_i + \alpha_5 \text{PREDICT}_i + \varepsilon_i$$

Variables (N = 274)	Incremental Effect		Differential Effect		
	Model 1	Model 2	Model 3 (Private Firms)	Model 4 (Public Firms)	Model 5 (Residual Values)
<i>Panel A: Influence of Tax Alignment</i>			(N = 152)	(N = 122)	
TAX	14.201 ** (5.71)	6.371 * (2.43)	9.035 ** (2.71)	2.933 (0.69)	6.289 (1.44)
TAX*PUBL			(t-stat = -1.13)		-10.687 (-1.57)
PUBL		-16.894 ** (-7.88)			-15.903 ** (-7.49)
LEGAL		-5.351 ** (-5.21)	-4.713 ** (-3.44)	-6.244 ** (-4.00)	
PREDICT					28.137 ** (9.15)
R <sup>2</sup>	8.7%	30.9%	19.3%	18.1%	31.6%
<i>Panel B: Influence of Accrual Accounting Rules</i>					
ACCRUAL	-57.621 ** (-7.58)	-41.388 ** (-5.68)	-29.677 ** (-2.72)	-54.504 ** (-5.66)	-12.917 (-0.83)
ACCRUAL* PUBL			(t-stat = -1.71)		-43.039 * (-1.96)
PUBL		-16.595 ** (-8.19)			-15.607 ** (-7.38)
LEGAL		-4.909 ** (-5.37)	-5.140 ** (-4.17)	-4.582 ** (-3.38)	
PREDICT					-75.756 ** (-8.93)
R <sup>2</sup>	14.6%	36.3%	20.1%	31.4%	32.0%

The sample comprises 274 industry-level observations from 13 European countries. The dependent variable,  $EM_{\text{aggr}}$ , is the average percentage rank across all four individual earnings management scores, EM1 to EM4, as described in Table 1. PUBL is an indicator variable taking on the value of one if the observation stems from publicly traded firms and zero otherwise. LEGAL stands for the mean of three variables in La Porta et al. (1998), which measure the quality of the legal system and enforcement (i.e., efficiency of the judicial system, rule of law, and corruption index). TAX is an indicator variable taking on the value of one if financial accounts for external reporting and tax purposes are highly aligned and zero otherwise (see Alford et al., 1993, and Hung, 2001). ACCRUAL is the accrual index from Hung (2001) (updated for European countries by Comprix et al., 2003), and captures differences in accrual accounting rules across countries. The table reports OLS coefficient estimates and t-statistics based on robust standard errors (in parentheses). All regressions include an intercept term. We evaluate the difference between the coefficients on TAX or ACCRUAL across private and public firms with a t-test. Model 5 uses the residuals from a regression of TAX (ACCRUAL) on the legal origins and the natural log of GDP per capita as main effect and to construct interaction terms. To control for the general nature of the institutional environment, the model also includes the predicted values (PREDICT) from this first stage regressions. \*\*, \*, and # indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.