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Keywords

fair values, fundamental analysis, IFRS, international accounting, value relevance, valuation, market efficiency, regulation

Disciplines

Accounting | International Business | Marketing

Financial Reporting and Firm Valuation: Relevance Lost or Relevance Regained?

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Abstract

In this study I examine whether balance sheet and income statement numbers have lost or regained their relevance over the last 30 years. Institutional and macroeconomic factors like the global trend towards strengthening regulation and harmonizing financial reporting, the extended use of fair values over historical cost, and the recurring occurrence of accounting scandals, market bubbles, and financial crises make it likely that the role of financial reporting for firm valuation has changed. Following prior research, I estimate four models for the concurrent relation between market value and accounting numbers, and then examine the pattern in explanatory power over time. I find that the loss in relevance of the income statement continues in recent years and is present in a large international sample, in particular in countries with strong institutions. While the overall relevance of the balance sheet remains stable, I find a downward trend during the first sample half, which reverses in the second half, especially in common law countries with strong investor protection, strict disclosure requirements and integrated markets. The results suggest that harmonizing accounting standards, rules, and regulation cannot completely overcome more generic differences in how firms utilize the discretion in the accounting system to communicate with outside stakeholders.

JEL classification: G14, G15, G30, M41, M48

Keywords: international accounting; valuation; fundamental analysis; regulation; market efficiency; IFRS; fair values

1. Introduction and outline

1.1. Motivation

Accounting information plays an important role in valuing economic transactions. It is used to evaluate individual projects, business segments, entire firms, and equity or debt securities. We can witness this vital function of the accounting system in various instances. Exchange-listed firms frequently and regularly release voluminous financial statements containing hundreds of numbers, schedules, and other disclosures to support in valuation issues. Financial institutions and brokerage houses spend large amounts hiring and retaining highly qualified financial analysts to assist in internal decision-making and customers' portfolio choices. Accounting standard setters view providing information that is useful for existing and potential investors, lenders and other creditors to estimate the value of a reporting entity as a primary purpose of financial reporting (e.g., IASB 2010). Originating with Ball and Brown (1968), academics in accounting and finance have extensively studied the relation between capital markets and financial statements, creating a rich body of research on the value-relevance of accounting numbers, equity valuation and fundamental analysis, the processing of accounting information by market participants, etc. (for overviews see e.g., Kothari 2001; Richardson, Tuna, and Wysocki 2010). As an educator, every year on the first day of my introductory accounting class I emphasize the role of accounting for valuation, at our school we offer many specific class sessions or elective courses on this topic, and there exists a series of textbooks with a valuation perspective in mind.

However, the importance of accounting information for valuation purposes is not uncontested. Concerns about the relevance of financial statements to investors, lenders, and other creditors are expressed, with different intensity, on a regular basis (e.g., Dopuch 1971; Levitt 1998; Francis and Schipper 1999). The primary concerns are with regard to the content of financial statements (only a

small subset of the relevant information makes its way into the accounting system, and if so, it is not adequately measured), the timeliness of financial reporting (much of the information released via accounting system is already outdated once it comes out), and the inherent discretion in financial statements (managers can cook the numbers to pursue their own personal goals). More recently, concerns about changes in the institutional and macroeconomic environment have been added to this list. One the one hand, there are attempts to harmonize financial reporting, like the adoption of International Financial Reporting Standards (IFRS) in many countries around the globe, which proponents argue should increase the transparency and comparability of financial reporting (see e.g., Hail, Leuz, and Wysocki 2010 for an overview). This goes along with an increasing reliance on fair value measurements, which under ideal conditions incorporate the investor perspective directly into the financial statements. On the other hand, fair values are also a source of criticism because they are often difficult to obtain and might, on purpose or not, introduce volatility into the accounting system (e.g., Ball 2006). In addition, financial reporting took a lot of blame during the rise and downfall of the dot-com boom in the late 90s, the series of corporate scandals shortly thereafter (e.g., Enron, Parmalat), or the global financial crisis. Consequently, the role of accounting information for firm valuation is subject to an ongoing debate.

1.2. Outline

Against this backdrop, I discuss in this article whether the role of accounting information for firm valuation has fundamentally changed over the last 30 years. In Section 2, I begin with a description of the conceptual underpinnings that relate a firm's value to the accounting numbers it releases. Based on a framework proposed by Beaver (1998), the connection between firm value and current accounting numbers flows through future expected cash flows via dividend discount model as well as future expected accounting earnings via expected payout ratios and fundamental analysis. I

then tie this framework into the large body of research that examines the contemporaneous association between reported accounting numbers and stock prices and returns. I conclude this section by highlighting two crucial assumptions underlying the relation between accounting numbers and firm value, namely that capital markets are informationally efficient and that information is not evenly distributed among firms and investors.

Next, in Section 3, I briefly discuss three institutional and macroeconomic trends with the potential to affect the relation between accounting information and firm value: (i) the global trend towards harmonizing financial reporting, (ii) the extended use of fair values over historical cost, and (iii) the recurring occurrence of accounting scandals, market bubbles, and financial crises. While the effect of the first two developments could go either way, i.e., improve or loosen the contemporaneous relation between accounting numbers and market values, the third rather questions the general suitability of the traditional accounting system to cope with today's economic reality.

In Section 4, I take these arguments to the data and examine the long-term trends in the explanatory power of accounting numbers for measures of market value in a large international sample over the 1981 to 2008 period. More specifically, I show that the proportion explained by the income statement, either in a traditional levels and changes in earnings specification or a Basu (1997)-style reverse earnings relation, has continuously gone down and lost about a third of its explanatory power over the last 30 years. At the same time, the explanatory power of total assets and liabilities and of a combined earnings and book value of equity model have remained stable, on average, but exhibit large variations over the years. The balance sheet measures lost explanatory power in the first half of the sample, but regained it in the second half. These results do not suggest a

general loss of relevance of accounting numbers, but indicate a shift in focus from the income statement to the balance sheet.[1]

I then examine whether these trends in explanatory power vary by several institutional and macroeconomic factors. For instance, using the distinction between countries legal tradition as in Ball, Kothari, and Robin (2000), I show that in common law countries earnings lose their explanatory power more rapidly compared to code law countries, so that by the end of the sample period the two sets of countries are not distinguishable anymore. The reverse holds for the balance sheet relation. Total assets and liabilities explain more of the variation in market values over time in common law countries, but I do not find evidence of such an upward trend in code law countries. The results obtain after including country fixed effects, effectively controlling for unobserved (time-invariant) heterogeneity across countries. I find similar trends for other institutional factors. Specifically, earnings become less relevant in countries with relatively strong disclosure requirements and more integrated markets, while the explanatory power of balance sheet numbers only increases in countries with integrated markets, strong disclosure requirements, and better legal protection of minority shareholders.[2] These results illustrate that the role of accounting numbers for valuation purposes varies substantially (and systematically) with countries' institutional context (e.g., Ball, Kothari, and Robin 2000; Leuz, Nanda, and Wysocki 2003; Burgstahler, Hail, and Leuz 2006).

Before proceeding, a few caveats are in order. First, my tests examining trends in explanatory power over time show mere associations and do not speak to the underlying sources of the changes. Thus, while causality is elusive, the analyses indicate systematic variation over time. This result by itself is important to better understand the relation between accounting numbers and firm value.

[1] This finding is in line with Francis and Schipper (1999) for a sample of U.S. firms over the years 1952 to 1994.

[2] When separately analyzing the U.S. economy, I do not find a distinguishable trend in the explanatory power of earnings, but a reduction (instead of an increase) in the relevance of balance sheet numbers.

Second, the tests allow no inferences about whether the explanatory power of accounting numbers is at a desirable level, or whether this number should be higher. All I do is examine changes in this metric over time, and compare different institutional regimes in a relative sense. Finally, I do not take side in the contentious debate about the relative dominance of the valuation role over other roles of the accounting system like stewardship or contracting. I rather leave this discussion to others (e.g., Holthausen and Watts 2001; Kothari, Ramanna, and Skinner 2010) and, in line with Lambert (2010), argue that valuation is among the several important roles of a multi-attribute system such as accounting and therefore deserves its due attention.

2. Conceptual underpinnings

2.1. Framework for the use of accounting information in firm valuation

To establish a conceptual relation between current firm value (measured as a firm's stock price) and contemporaneous accounting information, we need to develop three separate but interrelated links (Beaver 1998): (i) the link between current stock prices and future expected cash flows, (ii) the link between future expected cash flows and future earnings, and (iii) the link between future earnings and earnings as realized (and reported) today. In this framework, as depicted in stylized form in Figure 1, the primary role of accounting is to improve the third link, i.e., to help generating better estimates of future earnings via fundamental analysis.

The first link builds on the assumption that the current value of the firm reflects the present value of all future cash inflows and outflow between the firm and its investors. If we knew these cash flows with certainty, we could compute the market price of a security at any time by discounting the future payments with the risk-free rate. Under uncertainty, we replace the certain future cash flows with their expected value and adjust the discount rate for risk. The role of information and hence, among other things, financial reporting for this link is to alter investors' beliefs about the input

parameters of the dividend discount model. For instance, information about current earnings might alter the expectations with regard to a firm's ability to pay dividends in the future and lead to an adjustment in stock prices.

The second link stipulates a relation between future expected cash flows and future expected accounting earnings, for instance, in the form of an expected payout ratio. Thus, accounting earnings must have some relation to dividend payments, which under the rules of accrual accounting by construction is the case, at least in the very long run. That is, the distinction between accrual-based and cash-based accounting is that accruals can predate or follow cash payments, but that the difference will reverse over the course of the underlying economic transaction's horizon. Because we can neither observe future cash flows nor future earnings, the relation between the two measures is rather tenuous.[3]

The third link relates future accounting earnings to current accounting earnings. One can approach this relation from a rather methodological perspective and attempt to model the statistical time-series properties of earnings. Alternatively, we can take other sources of information into account like financial analysts' or management's earnings forecasts. Even more broadly, we can decompose earnings (or other aggregate accounting numbers) into its fundamental components. For instance, operating income is the difference between sales revenues and the costs of goods sold. Revenues reflect future quantities and sales prices, which in turn vary depending on a firm's product portfolio, marketing strategy, customer base, the competition in an industry, etc. The costs of goods sold are affected by economies of scale and scope, prices in the raw material markets, technological development, the regulation of labor markets, etc. This approach necessitates a fundamental analysis

[3] The residual income valuation model (Feltham and Ohlson 1995; Ohlson 1995) formalizes the link between expected future earnings and dividends by assuming clean surplus accounting thereby directly tying current book values and future accounting earnings to the current value of the firm.

of accounting information, by means of which investors hope to come up with a better (i.e., less risky or more accurate) idea of future expected earnings with the purpose of identifying mispriced securities. Note that in such a fundamental analysis, financial reporting is but one source of information, albeit arguably an important one.

2.2. Contemporaneous association between accounting information and firm value

With these three links in mind, current accounting earnings and current firm values are conceptually related, and reported accounting numbers contain information relevant for equity valuation. This gives rise to the so-called association or value-relevance studies (see e.g., Francis and Schipper 1999; Holthausen and Watts 2001; Kothari 2001), which test for a contemporaneous positive correlation between accounting numbers and measures of market value. Because investors have access to a multitude of information sources aside from financial disclosures that provide information in a more timely manner and in ways not feasible for the accounting system (i.e., subject to high uncertainty, relying on future instead of past transactions, and difficult to measure), we cannot infer causality from such association studies. Rather they tell us whether and how quickly information reflected in security prices finds its way into the accounting system. Put differently, a positive association is indicative of some underlying common factor (presumably the economics of the firm via the three links outlined above) that ties accounting numbers to current firm values.

Association studies take on different formats. In their most basic form they relate the market value of equity (as the dependent variable) to the book value of equity (as the independent variable) or some derivative (e.g., total assets and total liabilities). Alternatively, the change in market value is correlated to the change in book value or earnings. The underlying assumption here is that in an efficient market security prices only move if new information is released. Thus, in a changes specification the level and year-to-year changes in earnings are often used to proxy for the

unexpected component of firm-specific information contained in the financial statements. To evaluate the value relevance of an accounting system, researchers consider the explanatory power (adjusted R^2) of accounting numbers for the measures of market value, and then identify a loss (gain) of relevance as decrease (increase) in explanatory power over time, or compare the explanatory power across different accounting regimes (e.g., Alford et al. 1993; Francis and Shipper 1999).

In another way to get at the same issue, but based on the insight that accounting numbers systematically lag behind changes in economic income, Ball, Kothari, and Robin (2000) estimate a Basu (1997)-style regression that relates earnings (as the dependent variable) to returns (as the independent variable) and allow this relation to vary between positive and negative returns. They interpret the adjusted R^2 from this regression as a measure of timeliness that indicates how quickly accounting earnings incorporate changes in economic income. They then use the timeliness measure to evaluate accounting systems across legal systems, countries, and over time.

All the association studies have in common that they only allow relative statements, assume that market values are valid proxies for firms' true economics, do not identify the exact means of how information from the accounting system affects investors' common beliefs, are potentially subject to correlated omitted variables like changes in the institutional environment affecting both the price formation process as well as how information is represented in the accounting system, and disregard the many other uses of accounting information not directly tied to equity valuation.

2.3. Market efficiency and unequal information among firms and investors

The valuation function of accounting implicitly assumes efficient capital markets. That is, stock prices should reflect the underlying true economic performance and value of the firm in a timely and unbiased manner, and incorporate all available information as soon as it comes out. As such, stock prices can serve as proxy for economic income and objective benchmark to evaluate the relevance of

accounting systems in the time-series and the cross-section. At the same time and somewhat counterintuitively, one of the purported goals of fundamental analysis is to identify mispriced securities, for which the current stock price is either too low or too high compared with the firm's fundamentals. This idea led to the detection of accounting-based or accrual-based anomalies (Sloan 1996) suggesting that not all information provided by the accounting system is processed efficiently and immediately reflected in security prices. Moreover, the degree of mispricing seems to vary across countries and over time (e.g., Pincus, Rajgopal, and Venkatachalam 2007; Green, Hand, and Soliman 2011). Evidence of market mispricing can impede the interpretation of association studies, in particular if the mispricing correlates with the dimension under study (e.g., across certain institutional features like insider trading in a cross-country context).

A second important feature of the information environment affecting the use and interpretation of financial reports is the unequal distribution of information between firms and investors and among investors (see e.g., Verrecchia 2001 for an overview). Often we cannot simply take information as given (i.e., a new piece of information is released and all investors update their priors accordingly), but have to consider the underlying incentives of the managers releasing the information for proper interpretation. Because the incentives of those producing the information are not necessarily aligned with the users of the information, we might face an adverse selection problem (ex ante) and a moral hazard issue (ex post). For instance, when trying to raise external capital, management has incentives to overstate favorable news and to hide unfavorable news so that the proceeds from the offering are maximized. Once the securities are issued, management might be tempted to increase their share of the firm cash flows (e.g., in the form of higher compensation or via other financial and nonfinancial perks) at the expense of the outside investors. In turn, investors will preempt these actions, and adjust their behavior accordingly. For instance, they might price protect (i.e., demand a higher return for their risk) or require independent monitoring like the use of an external auditor to reduce the

agency costs. As a result of such incentives problems between a firm and its investors prices and disclosures might not always reflect the underlying true economics. This misrepresentation, often referred to as earnings manipulation or earnings management, introduces bias into the accounting system thereby hampering its usefulness for valuation.

3. Institutional and macroeconomic trends

In this section, I discuss institutional and macroeconomic trends with the potential to affect the relation between accounting information and firm value. The idea is to identify drivers of change that could lead to an increase or decrease of the value relevance of accounting information over time or give rise to differences in the cross-section. I discuss three factors: (i) the global trend towards strengthening regulation and harmonizing financial reporting, (ii) the extended use of fair values over historical cost, and (iii) the recurring occurrence of accounting scandals, market bubbles, and financial crises. Unavoidably, this selection is incomplete and subjective, but all three topics have received much attention in recent years and are closely tied to the accounting system.

3.1. Regulation, standard-setting, and harmonization of financial reporting

Regulation is a widespread phenomenon around the world, has grown vastly over the years, and touches all aspects of our lives (see e.g., Shleifer 2005). Arguments in favor of regulation refer, among other things, to the existence of externalities, economy-wide cost savings, commitment problems, and insufficient penalties for individuals. At the same time, regulations can impose substantial costs. For instance, regulators may face serious information problems, are often incompetent or even corrupt, or can be captured by the regulatory process. In addition, regulations need adequate implementation and enforcement in order to be effective (e.g., Christensen, Hail, and Leuz 2011). These features imply that the net benefits of regulations are not a priori obvious, that new regulations can create strong incentives for all parties involved, and that even though the same

on paper the effect of regulations can vary substantially across entities or individuals depending on how they are implemented and enforced.

The trend towards more and more comprehensive regulation extends to the accounting system. The goal of accounting standards is to provide a unified framework for the measurement and disclosure of business transactions relevant to investors, lenders, and other creditors. Thus, standard-setters face a tradeoff between expanding the set of rules to keep up with the changing business environment and protect the interests of investors (in light of the abovementioned adverse selection and moral hazard issues) versus leaving managers with enough room to convey their superior knowledge to corporate outsiders while staying within extant rules and regulations.

Probably the largest regulatory change in accounting history is the global move towards mandatory IFRS reporting (see e.g., Ball 2006; Nobes 2006; Hail, Leuz, and Wysocki 2010; Pope and McLeay 2011). Since the mid-2000s more than 100 countries have either adopted IFRS or are in the process of doing so. Proponents of this change argue that harmonizing and tightening accounting standards improve the transparency and comparability of financial reports. More transparent disclosures and reporting rules, applied consistently across countries and industries, should facilitate benchmarking and the prediction of future earnings. Consequently, we would expect a general increase in the relevance of accounting numbers for valuation purposes that is most pronounced in countries with weaker accounting standards (relative to IFRS). In addition, cross-country differences in accounting should vanish over time (even if we allow for learning to take place).

On the other hand, it is not obvious whether simply mandating new accounting standards is sufficient to change firms' reporting behavior. In light of uniform (and potentially indiscriminating) disclosures fundamental analysis could become even more difficult. Moreover, accounting practices not only reflect rules and regulations, but also managers' reporting incentives that are shaped by firm

attributes (e.g., capital needs, ownership structure, growth prospects) and a country's institutional environment (e.g., its legal tradition, the protection of minority shareholder rights, etc.). Hence, IFRS need to be backed-up by adequate enforcement that ensures proper implementation and follow-up action by the regulator in case of incompliance.[4] Under this view, IFRS might only have an impact on the valuation role of accounting if bundled with supporting enforcement changes or if appropriate enforcement mechanisms are already in place. That said, even though the verdict on the economic effects of IFRS is still out, many studies so far underscore the importance of the institutional environment and changes therein for the observed benefits around the adoption of IFRS.

3.2. Extended use of fair values over historical cost

In synch with the trend of harmonization, accounting standards themselves have become more reliant on fair values over historical cost when measuring assets and liabilities on a firm's balance sheet (see e.g., Barth 2006; Benston, Bromwich, Litan, and Wagenhofer 2006; Laux and Leuz 2009). If quoted prices in active markets are readily available, the measurement is straightforward and overall, the book value of equity should get closer to its market value and react more quickly to changes in price. However, for many assets and liabilities liquid markets do not exist or, if they do, markets might dry up when we need their guidance the most, namely during periods of crisis and financial distress. Management then has to switch to historical cost accounting or, under certain conditions, can use the so-called mark-to-model approach, which requires assumptions about the underlying input parameters of the fair value estimates. This approach brings us back to the discretion inherent in the accounting system whose effect can be twofold: (i) improve the

[4] For instance, in the European Union (EU) the IAS regulation that prescribed mandatory IFRS for listed firms required member states to take appropriate measures to ensure compliance with IFRS. Consequently, several EU countries strengthened the enforcement of financial reporting in conjunction with the IFRS mandate or shortly thereafter. Yet, substantial heterogeneity in how IFRS are enforced remains (see Christensen, Hail, and Leuz 2012).

informativeness and value relevance of accounting numbers, or (ii) incentivize managers to selfishly manipulate accounting numbers thereby introducing bias into the financial statements.

Another issue with fair value accounting is the asymmetric treatment of price changes. While the balance sheet always represents the estimate of an asset or a liability's fair value at period end, the period-to-period change in value does not consistently flow through net income. For instance, depending on the classification of securities as trading or available-for-sale, the unrealized gain or loss ends up either in the income statement or as part of other comprehensive income on the balance sheet. This asymmetry could lead to a reduced relevance of income statement numbers for valuation purposes, but strengthen the position of the balance sheet.

Other problems frequently cited in conjunction with fair value accounting are unwanted short-termism that could cause firms to realize gains before the intended maturity of a project, doubts about the efficiency of market prices, especially in times of low liquidity and crisis (which in the extreme could create a downward spiral), or intensified volatility of earnings due to the procyclical nature of fair values. However, the fact that the accounting system may act as focal point for management incentives is not unique to fair value accounting but applies to many instances, market efficiency is at the core of any association study, and procyclicality could actually increase the timeliness of accounting information instead of just exacerbate value swings. Moreover and as already pointed out in the introduction, the equity perspective is just one of the many facets of financial reporting, and in a world in which frictions and contractual obligations tied to accounting numbers exist, contracting issues are likely to interfere with the equity valuation goal (e.g., Holthausen and Watts 2001).

3.3. Accounting scandals, bubbles, and financial crises

Over the past 15 years, the use of accounting numbers has been marred by numerous scandals (Enron and Parmalat are just two prominent examples), and repeatedly the usefulness of traditional

GAAP reporting for decision-making was questioned, in particular in industries with few economic transactions that pass the reliability and verifiability criteria typically required for recognition in the balance sheet (e.g., during the internet 'bubble' in the late 90s). In addition, we have experienced (and still are experiencing) several financial crises that have severely impacted companies' financial statements thereby casting doubt on the usefulness of accounting information for firm valuation.

One thing these episodes have in common is that stock prices deviate from the true value of the firm, at least in hindsight, until investors' beliefs catch up with the underlying fundamentals at the outbreak of the crisis, the burst of the bubble, or the uncovering of the extreme earnings manipulations.[5] Put differently, we have observed, in different settings and over extended periods of time, a decoupling of fundamental information and quoted prices. This decoupling emerges from both sides. On the one hand, management might misstate earnings and balance sheet numbers to achieve short-term goals. For instance, Enron inflated its revenue by reporting gross instead of net sales figures, recorded long-term energy contracts using mark-to-market accounting (i.e., preempting future unrealized profits at the time of sale), and hid large portions of its debt in special purpose entities that were exempt from consolidation.

On the other hand, market prices can become independent of investors' beliefs about and realizations of firm and macroeconomic fundamentals. For instance, during the dotcom boom firms traded at commonly used valuation ratios like price-to-book or, if already profitable, earnings-to-price in the hundreds, far above long-term means. It was not unusual for startup firms to go public without having earned a single profit or sold a single product. In both of the above cases the

[5] Note that earnings management, even in such extreme cases like Enron or Parmalat, the creation and duration of bubbles, or the extent of crises do not assume irrationality, but can be explained by rationally behaving individuals. For instance, in the case of earnings management we refer to the existence of private information and misaligned incentives (e.g., Watts and Zimmerman 1986; Schipper 1989), for bubbles we often rely on heterogeneous beliefs among investors and the need for a coordination mechanism like a signal of when the bubble is likely to burst (e.g., Abreu and Brunnermeier 2003), and for crises investors' funding constraints can induce co-movement of prices with the market instead of with fundamentals (e.g., Brunnermeier and Pedersen 2009).

decoupling of market prices as quoted on the stock exchange and fundamental values as depicted in the firm's balance sheet and income statement could render the conceptual links between firm value and accounting information moot (see Figure 1). Consequently, the value relevance of accounting information should diminish.[6] In its place, other functions of the accounting system like stewardship, monitoring, or contracting could take on a more prominent role.

4. Empirical Analysis

4.1. Relevance lost or relevance regained over the last 30 years?

Against the backdrop of the conceptual underpinnings and the institutional and macroeconomic forces potentially affecting the relation between accounting information and firm value, I now take these arguments to the data. More specifically, I examine the long-term trends in the explanatory power of accounting numbers for measures of market value in a large international sample over the 1981 to 2008 period. The idea is to provide descriptive evidence on whether aggregate balance sheet and income statement numbers (total assets and liabilities, book value of equity, and net income) explain more or less of the variation in market values and stock returns over time. In a second step, I examine whether the general time trends differ across institutional regimes (e.g., by a country's code law or common law legal tradition) or the state of the economy (e.g., by the extent of market integration).[7] I then use these relative comparisons over time and across countries to measure a loss or increase of relevance of the accounting system as regulated by GAAP.

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[6] In line with these arguments, Lev and Zarowin (1999) find a reduction in the usefulness of reported earnings and book values, and attribute this effect largely to changes in the business environment (e.g., innovation, new technologies, etc.) At the same time, Core, Guay, and Van Buskirk (2003) find only mixed evidence of such a reduction in value relevance during the dotcom boom.

[7] Due to the limitations of association studies I cannot (and do not attempt to) directly assess the marginal effect of the three trends outlined in Section 3 (i.e., IFRS adoption, fair value accounting, and accounting scandals or market bubbles). I use general characterizations of countries' institutional environment and time-varying macroeconomic indicators on their behalf. This should allow me to uncover systematic differences over time and in the cross-section, but also indicates that the interpretation has to be taken with a grain of salt.

My research question follows in the footsteps of earlier studies. Most notably, Francis and Schipper (1999) study the changes in explanatory power for a sample of U.S. firms through the mid-90s. They document a loss in relevance of the income statement (in line with popular claims that accounting has become less useful), but also an increase in relevance of the balance sheet. My analysis extends their research to an international setting and a longer time period. For both dimensions it is not a priori clear whether the U.S. evidence applies. Basu (1997) finds that during periods of high legal liability exposure for auditors, firms recognize bad news on a more timely basis than during periods of low legal exposure. In a similar vein, Ball, Kothari, and Robin (2000) show that the value relevance of earnings (losses) systematically varies across countries' legal regime and decreases (increases) in the second half of their 1985 to 1995 sample period. Both studies illustrate how the accounting system does not function in a vacuum, but is closely tied to the institutional environment and shaped by country-level and firm-level incentives. This insight is important when assessing the value relevance of accounting numbers for a large global sample and a horizon stretching over 30 years.[8]

I will next briefly describe the research design, explain how I measure changes in value relevance, and provide details on the sample selection and composition. I then present results from annual cross-sectional regressions for the entire sample and test for the existence of a simple linear trend in the data. Finally, I partition the sample into various subgroups and examine whether for each subgroup differential time trends in value relevance exist.

[8] Other papers that examine time-series changes in value relevance (mostly for U.S. data) and relate those changes to various firm-specific or industry-wide and country-wide factors include Collins, Maydew, and Weiss (1997); Brown, Lo, and Lys (1999); Lev and Zarowin (1999); Core, Guay, and Van Buskirk (2003). Alford et al. (1993) document international differences in value relevance. Rajgopal and Venkatachalam (2011) show a negative correlation between earnings quality and (idiosyncratic) return risk over the 1962 to 2001 period.

4.2. Test design and sample description

Following prior literature, I measure the relation between market values and accounting numbers using four models, two focusing on the income statement and two on the balance sheet. More specifically, I estimate the following four regression specifications using OLS:

Earnings relation: $$RET = \beta_0 + \beta_1 NI/P + \beta_2 \Delta NI/P + \varepsilon \quad (1)$$

Reverse earnings relation: $$NI/P = \beta_0 + \beta_1 RD + \beta_2 RET + \beta_3 RD*RET + \varepsilon \quad (2)$$

Balance sheet relation: $$P = \beta_0 + \beta_1 AST + \beta_2 LIAB + \varepsilon \quad (3)$$

Book value and earnings relation: $$P = \beta_0 + \beta_1 BV + \beta_2 NI + \varepsilon. \quad (4)$$

I use the annual buy-and-hold stock returns (*RET*) and the market value per share at fiscal year end (*P*) as the market measures. The accounting measures are net income (*NI*) and the yearly change therein (ΔNI), total assets (*AST*), total liabilities (*LIAB*), and the book value of equity (*BV*). To estimate the Basu (1997)-style reverse earnings relation, I also define a binary indicator *RD* set to one in years with negative stock returns and zero otherwise. The raw values are computed on a per share basis and denominated in US$. I truncate all variables at the first and 99th percentile. For further details on the measurement of the variables see the notes to Table 2.

The intuition underlying these models is to relate (undeflated) balance sheet amounts to the market value of the firm or, in the spirit of a changes specification, to correlate stock returns to the (deflated) levels and changes in earnings. For the reverse earnings relation, we use returns as a proxy for changes in economic income and relate them to accounting income, each separately for 'good news' and 'bad news' events. I operationalize value relevance as the explanatory power of the above regressions (measured by the adjusted R^2), i.e., the percentage of the variation in stock returns and price explained by the accounting variables. I interpret changes in explanatory power as gains or

losses in the relevance of financial statement information. To formally test for systematic changes over time, I estimate the following two regression models:

Linear trend model: $$Adjusted\ R^2 = \beta_0 + \beta_1 TIME + \varepsilon \quad (5)$$

Two-period model: $$Adjusted\ R^2 = \beta_0 + \beta_1 POST94 + \varepsilon. \quad (6)$$

I take the adjusted R^2, the dependent variable, from annual cross-sectional regressions of either the entire sample (resulting in one observation per year) or of individual countries (resulting in one observation per country and year). The two trend variables are: *TIME* set to one in the initial sample year, and increasing by one for every year thereafter, and *POST94* set equal to zero in the first sample half, and to one in the second half. These variables allow for a linear trend in value relevance over time, or alternatively break up the entire sample into two equal-length periods, and compare the value relevance across the two subsets. In the cross-sectional tests I will later interact the trend variables with variables for the respective partitions.

The sample consists of all observations between 1981 and 2008 with sufficient accounting data (Worldscope) and stock price data (Datastream) to estimate the four valuation models. I require a minimum market value of 1 US$ million and only include countries with at least 500 observations (25 in any given year). This selection procedure results in a sample of 324,090 firm-years (807 country-years) from 40 countries.

Table 1 provides a breakdown of the sample by country (Panel A) and year (Panel B) together with mean values for a select few market and accounting measures. While there are a several large countries in the firm-year analysis (e.g., U.S., Japan, U.K.), the country-year panel is much more balanced and no single country assumes a dominant role. The average annual stock return over the sample period is 12.6 percent (not adjusted for market returns). However, this number varies largely by country and over time. Stock returns were negative in 46.1 percent of the firm-years, but the

proportion is much higher in times of crisis (e.g., in 2008 or in the early 2000s) and considerably lower in the first half of the sample. This pattern is consistent with a more frequent occurrence of crises in later years, and should be kept in mind when examining whether the accounting system has become more conservative over time (i.e., recognizes economic losses faster). On average, net income (change in net income) before extraordinary items amounts to 2.9 (1.6) percent of price. This number has been steadily decreasing over the years. The table also includes a country-by-country list of the institutional variables discussed later in the cross-sectional analyses. In Table 2, I report distributional characteristics (Panel A) and correlation coefficients (Panel B) for the variables used in the valuation models. Not surprisingly, stock returns are most highly correlated with earnings and security prices with book values of equity.

4.3. General trends in value relevance

I start with estimating the four valuation models in the pooled sample employing a single time-series and cross-sectional regression, and report results in Panel A of Table 3. To mitigate concerns about dependence of the residuals, I assess the statistical significance of the coefficients with robust standard errors clustered by country and year (*t*-statistics in parentheses). Throughout the panel, the coefficient estimates are all significant and in line with prior literature. The earnings model explains about 7 percent of the variation in returns. As expected, the explanatory power of the reverse earnings model is higher, 9.6 percent, and almost all of it stems from the quicker incorporation of 'bad news'. The balance sheet model and, even more pronounced, the combined earnings and book value of equity model explain about 50 percent of the variation in market values.

More to the point than these average numbers is an analysis of explanatory power over time. Thus, in Panel B of Table 3, I report the coefficients and adjusted R^2s for the four valuation models, estimated separately each year from 1981 to 2008. Using country-clustered standard errors, most but

not all coefficients are significant (not tabulated). In Figure 2, I plot the adjusted R^2s from the contemporaneous relations between market and accounting measures over time. Panel A contains the two earnings models, Panel B the balance sheet model and the combined earnings and book value of equity model. A few things are noteworthy: first, the explanatory power of the reverse earnings model almost always exceeds the explanatory power of the traditional earnings model. Thus, the asymmetric recognition of 'good news' and 'bad news' and the delayed incorporation of news in earnings seem better suited to explain the usefulness of the accounting system. Yet, the difference between the two models is never too big, and the respective adjusted R^2s are highly correlated. Second, there is a distinct negative trend in the explanatory power of the two earnings models. The proportion explained by the income statement has continuously gone down, and net income has lost about a third of its explanatory power over the last 30 years. Third, balance sheet numbers have always a substantially higher adjusted R^2 than the income statement, but the former are trumped by the combination of book values and earnings. Thus, both the flow and the stock of accounting information are important for valuation. Finally, the time-series pattern of the two balance sheet models is ambiguous. While the value relevance of the balance sheet seems to go down in the first sample half, it reverses in the second half. Over the entire period, no distinct pattern emerges.

In Panel C of Table 3, I confirm the results of Figure 2 using the 28 annual adjusted R^2s from each valuation model to estimate the linear trend specification in Eq. (5). The *TIME* coefficient is significantly negative in both earnings models. As a separate analysis of the two sub-periods reveals, the loss in relevance primarily occurred during the 1981 to 1994 period, but came to a stop in the later years. At same time, we observe a loss in relevance of the balance sheet in the first sample half, which reverses from 1995 to 2008. In sum, my findings do not suggest a general loss of relevance of accounting numbers, but indicate an ongoing shift in focus from the income statement to the balance

sheet.[9] However, the average results do not allow any insights into the potential drivers behind the change, and might merely conceal more refined patterns correlated with the institutional and economic environment across countries. I will turn to these explanations next.

4.4. Differences in value relevance across institutional and macroeconomic factors

To test for cross-sectional differences, I modify the valuation and time-series models and introduce a (binary or time-varying) partitioning variable, *PART*, which I interact with all the independent variables. This fully interacted specification lets me separately estimate the effects for each subset and assess the statistical significance of the differences across groups. The resulting time-series trend models look like follows:

Linear trend model: $$Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 TIME + \beta_3 PART*TIME + \varepsilon \quad (5a)$$

Two-period model: $$Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 POST94 + \beta_3 PART*POST94 + \varepsilon. \quad (6a)$$

To increase the power of the tests, I estimate these models with the adjusted R^2s from country-year regressions using all observations in a given country and year. I also include country fixed effects, essentially controlling for all unobserved time-invariant factors in a country that contribute to the explanatory power of the model.[10] I define *PART* with six country-level variables: (1) a country's legal tradition, (2) the U.S. economy (versus the remaining countries), (3) an index of the protection of minority shareholder rights, (4) an index of disclosure requirements in securities offerings, (5) an index of market integration, and (6) aggregate growth prospects. I transform the first four partitioning variables into binary indicators using the sample median as cutoff. The last two variables are measured on a yearly basis (and hence time-varying). See the notes to Table 1 for further details on the partitioning variables. The intuition behind the choice of partitioning variables is to select

[9] These results are in line with Collins, Maydew, and Weiss (1997), and Francis and Schipper (1999).

[10] As a consequence of including country fixed effects, the main effect of the partitioning variables (β_1) drops from the model, and we only can estimate the two trend coefficients (β_2 and β_3) when *PART* is a binary indicator variable.

broad characterizations of the institutional and macroeconomic environment that might capture correlated factors of the time-series trends in the value relevance of the accounting system. Because of this nature (and the structure of the tests) causal interpretations are not possible.

I limit the cross-sectional analyses to two models: the earnings relation for the relevance of the income statement (Table 4) and the balance sheet model with total assets and liabilities (Table 5).[11] For completeness, I first estimate pooled time-series and cross-sectional regressions of the valuation models fully interacted with *PART* (using firm-year observations), and report the results in Panel A of Tables 4 and 5. The results show that the overall relation between market values and accounting numbers is fairly stable and does not vary much across the different subsamples (i.e., just a few of the interaction terms are statistically significant). Only aggregate growth seems to have an impact on the balance sheet and the earnings relation.

I next analyze the pattern in explanatory power over time and how it differs across subsets. To illustrate the idea behind this comparison, I plot the adjusted R^2s from 28 annual cross-sectional regressions separately for common law countries and code law countries in Figure 3. As Panel A shows, the negative trend in the relevance of net income is much more pronounced (and only significant) in common law countries than in code law countries. By the end of the sample period the two sets of countries are not distinguishable. The results for the balance sheet relation are mixed. While the explanatory power of total assets and liabilities remains flat in common law countries, I observe a slight upward trend in code law countries (significant at the 10 percent level). Again, by the end of the sample period, the two subsets are indistinguishable from each other. Overall, the graphical analysis suggests that institutional differences have become less important over time, in line with increased harmonization efforts of accounting standards and ongoing market integration.

[11] When I repeat the analyses with the reverse earnings relation and the combined earnings and book value of equity relation, the results are very similar to those tabulated and none of the inferences change.

The analysis of the country-year adjusted R^2s in Panel B of Tables 4 and 5 provide the following insights: first, the decline in the explanatory power of earnings is present in the entire sample and primarily occurred in the second sample half.[12,13] The loss in relevance is more pronounced in markets characterized by strong institutions, i.e., common law countries with strong disclosure requirements and integrated markets. Only where higher growth prospects are present, the negative trend is slightly abated. Second, while insignificant for the entire sample, there exists a distinct upward trend in the relevance of balance sheet data in common law countries with strong investor protection, stricter disclosure requirements and integrated markets. The U.S. economy is a notable exception because there I find a decrease in the explanatory power of total assets and liabilities. No or a slightly negative trend is apparent in countries with generally weaker institutions. The results obtain after including country fixed effects, effectively controlling for unobserved (time-invariant) heterogeneity across countries. Finally, by the end of the sample period the differences across groups are often insignificant. In sum, the results illustrate that the role of accounting numbers for valuation purposes varies substantially (and systematically) with countries' institutional context (e.g., Ball, Kothari, and Robin 2000; Leuz, Nanda, and Wysocki 2003; Burgstahler, Hail, and Leuz 2006).

5. Conclusion

In this study I discuss the role of financial reporting for firm valuation and empirically examine whether balance sheet and income statement numbers have lost or regained their relevance over the last 30 years. To frame my discussion, I use the three conceptual links outlined in Beaver (1998) that tie market values to contemporaneous financial statements via future expected cash flows, dividend

[12] I assess the statistical significance in the country-year analyses using *t*-statistics that account for within country cross-sectional and temporal dependence (Driscoll and Kraay 1998).

[13] The finding of a more pronounced decline in the value relevance of earnings after 1994 somewhat differs from the results using only 28 yearly observations presented in Table 3, Panel C. This might be due to the unbalanced country composition of the firm-year sample.

payouts, and accounting earnings. The accounting system emerges as a particularly important source of information when it comes to analyzing the fundamentals of the firm. I then briefly discuss the general structure of so-called association studies that test for a contemporaneous positive correlation between accounting numbers and measures of market value. The explanatory power of such a specification serves as proxy for the relevance of financial reporting. Increases in the adjusted R^2s indicate a gain in relevance; decreases a loss in relevance. At the same time it is important to acknowledge the limitations of this approach. We assume the price formation process is efficient, and market participants, even though they have different information, pursue similar goals. Both assumptions likely are not always valid. Moreover, association studies do not lend themselves to draw causal inferences and therefore should be interpreted cautiously.

I next discuss three institutional and macroeconomic trends with the potential to affect the relation between accounting information and firm value, namely the global trend towards strengthening regulation and harmonizing financial reporting, the extended use of fair values over historical cost, and the recurring occurrence of accounting scandals, market bubbles, and financial crises. The idea is to identify drivers of change that could lead to an increase or decrease of the value relevance of accounting information over time or give rise to differences in the cross-section. Even though the selection is necessarily subjective and incomplete, it illustrates that there exist plenty of reasons for why the role of financial reporting likely has changed over the last three decades.

Finally, I take the above arguments to the data. I estimate four different valuation models – two focusing on the income statement, two on the balance sheet – and then examine the pattern in explanatory power over time. The analysis provides two general insights: first, the loss in relevance of the income statement, already documented in prior studies, continues over a more recent period and is not just limited to a select few countries but present in a large international sample. If anything, the decline in explanatory power is even more pronounced in countries with a strong

institutional background. Thus, recent changes in the accounting standards but also in the economic environment seem to have rendered earnings numbers less useful for valuation purposes.

Second, with regard to the balance sheet I do not observe much of a change in the overall explanatory power. However, looking more closely, I find that the trend points downwards during the first sample half and in countries with relatively weaker institutions, and upwards in the second half and in common law countries with strong investor protection, strict disclosure requirements and integrated markets. Thus, while stable on average, substantial differences in the value relevance of the balance sheet remain. This suggests that harmonizing accounting standards, rules, and regulation cannot completely overcome more generic differences in how firms utilize the discretion in the accounting system to communicate with outside stakeholders. More research is needed with refined methodologies and improved explanations to help us better understand the complex relation between accounting information and firm valuation.

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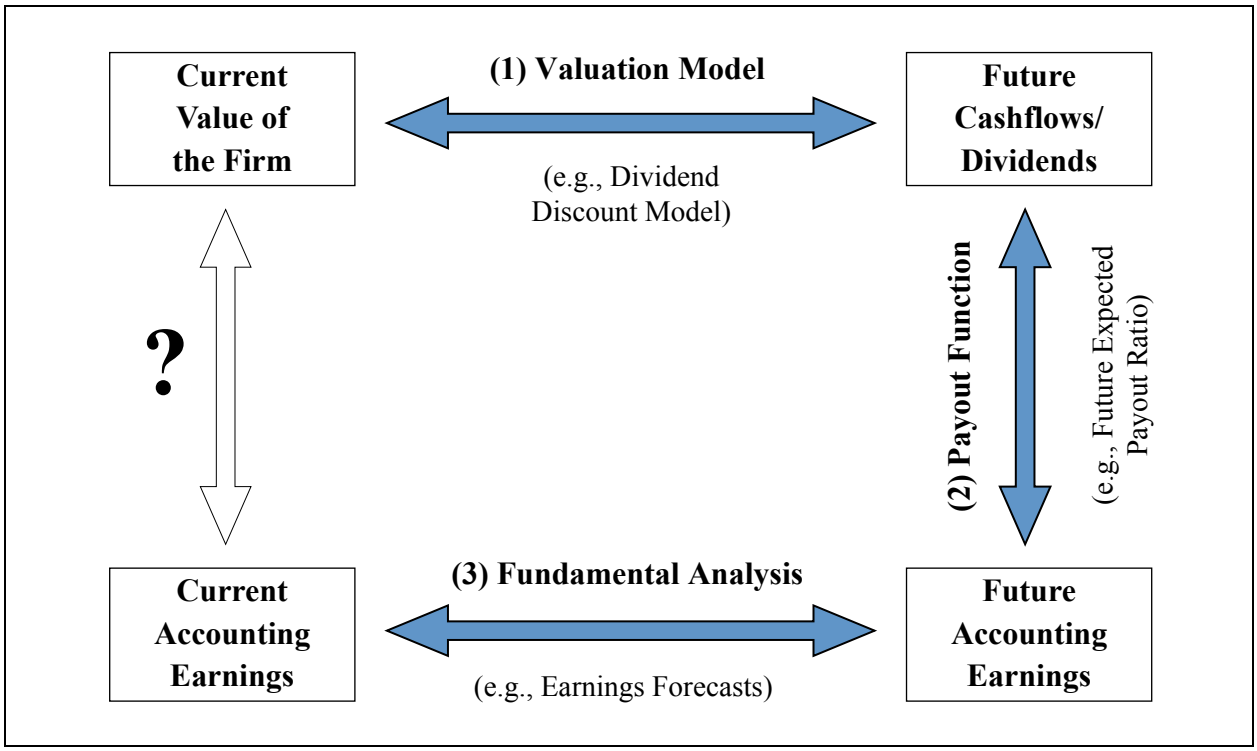
Figure 1

Conceptual link between market measures and accounting measures

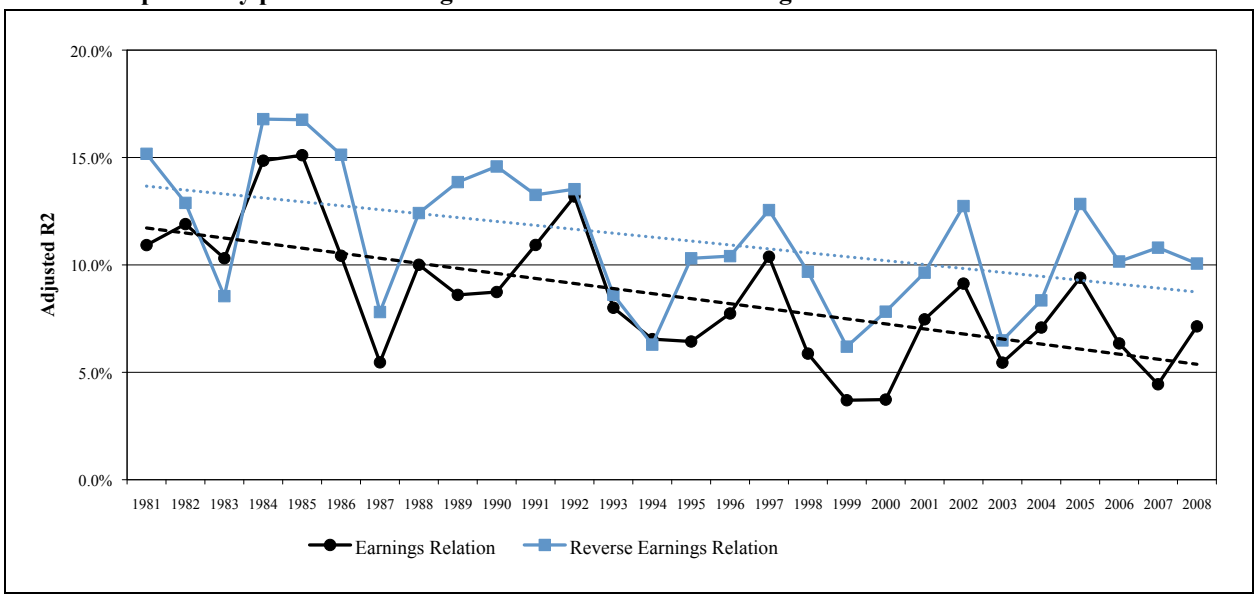


The figure illustrates how contemporaneous accounting numbers are conceptually linked to the value of the firm via future expected earnings, dividends, and cash flows. It is based on Beaver (1998), chapter 4.

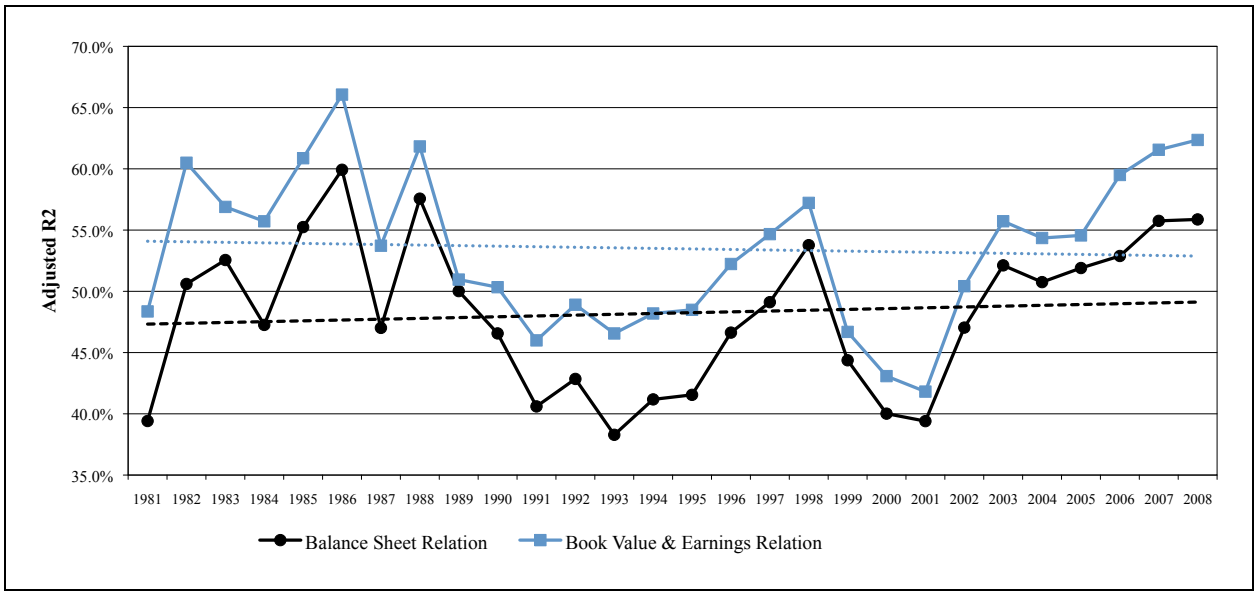
Figure 2

Contemporaneous relation between market and accounting measures over time

Panel A: Explanatory power of earnings relation and reverse earnings relation



Panel B: Explanatory power of balance sheet relation and book value and earnings relation



The figure plots the adjusted R^2s from 28 annual cross-sectional regressions of the (reverse) earnings relation (Panel A), and the balance sheet relation and the book value and earnings relation (Panel B). The sample comprises all firm-year observations from 40 countries over the 1981 to 2008 period with accounting data and stock price data available to estimate the four models (see Table 1). The four regression specifications reflecting the relation between market measures and accounting measures are:

(1) Earnings relation: $RET = \beta_0 + \beta_1 NI/P + \beta_2 \Delta NI/P + \varepsilon$

(2) Reverse earnings relation: $NI/P = \beta_0 + \beta_1 RD + \beta_2 RET + \beta_3 RD*RET + \varepsilon$

(3) Balance sheet relation: $P = \beta_0 + \beta_1 AST + \beta_2 LIAB + \varepsilon$

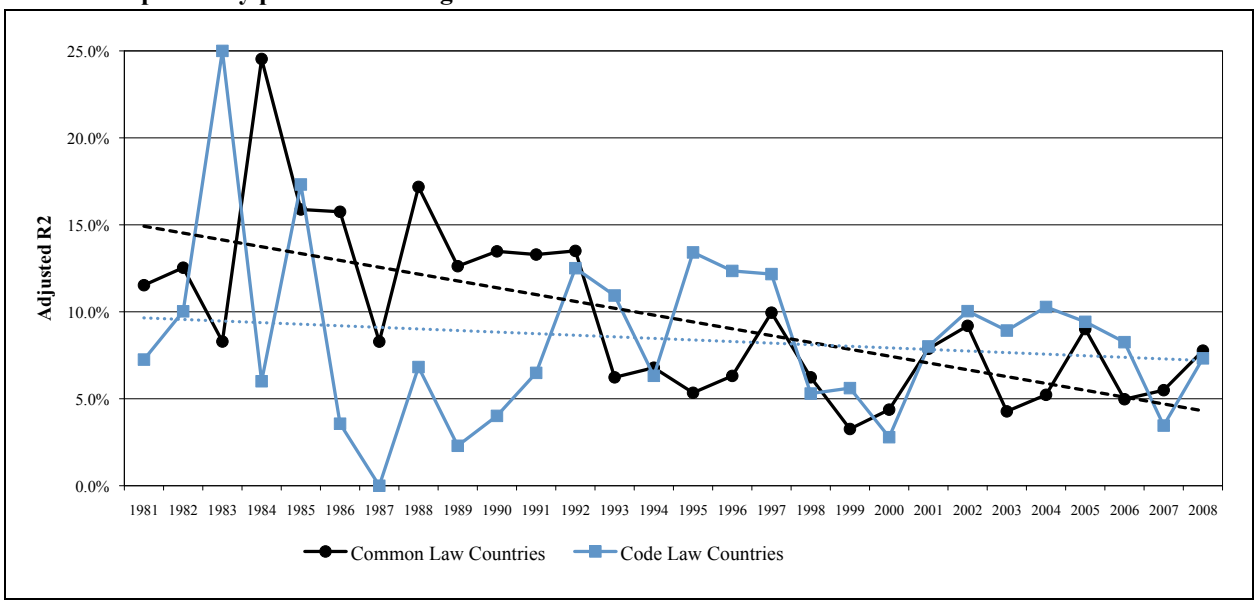
(4) Book value and earnings relation: $P = \beta_0 + \beta_1 BV + \beta_2 NI + \varepsilon$.

For variable details see Table 2. The figure also reports a linear trend line for each model (dashed). The linear trend is statistically significant (at the 1% level) in Panel A, but not in Panel B.

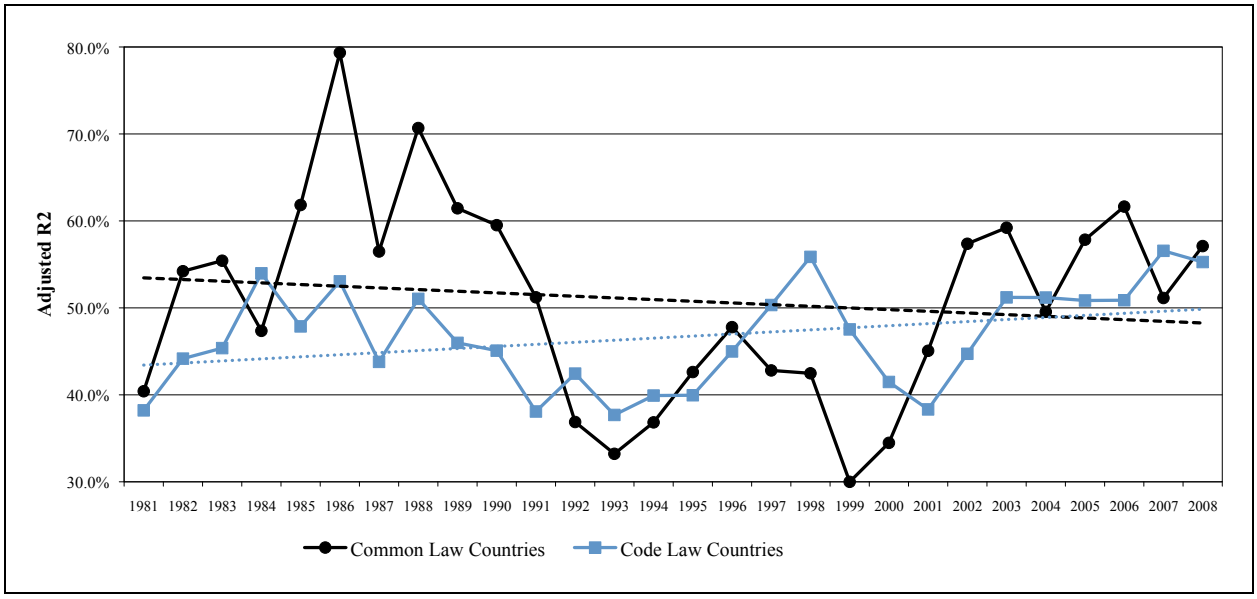
Figure 3

Relation between market and accounting measures conditional on countries' legal tradition

Panel A: Explanatory power of earnings relation across common and code law countries



Panel B: Explanatory power of balance sheet relation across common and code law countries



The figure plots the adjusted R^2s from 28 annual cross-sectional regressions of the earnings relation (Panel A) and the balance sheet relation (Panel B), each separately for countries with common versus code law legal tradition (La Porta et al. 1997; Ball, Kothari, and Robin 2000). The sample comprises all firm-year observations from 40 countries over the 1981 to 2008 period with accounting data and stock price data (see Table 1). The two regression specifications reflecting the relation between market measures and accounting measures are:

(1) Earnings relation: $RET = \beta_0 + \beta_1 NI/P + \beta_2 \Delta NI/P + \varepsilon$

(2) Balance sheet relation: $P = \beta_0 + \beta_1 AST + \beta_2 LIAB + \varepsilon$

For variable details see Table 2. The figure also reports a linear trend line for each model and subset (dashed). The linear trend is statistically significant (at the 1% level) for common law countries in Panel A as well as for code law countries (at the 10% level) in Panel B, but insignificant in the other cases.

Table 1

Sample composition by country and year

Panel A: Number of observations, mean market and accounting measures, and institutional variables by country

				Market measures		*Accounting measures*		*Institutional variables*							
Country	*Unique firms*	*Firm-years*	*Country-years*	*RET*	*RD*	*NI/P*	*ΔNI/P*	*Legal tradition*	*U.S. economy*	*Anti-self-dealing*		*Disclosure rqmts.*		*Market integration*	*Growth prospects*
Argentina	83	687	14	0.121	0.456	-0.001	0.023	0	0	0.34	(0)	0.50	(0)	0.55	1.21
Australia	1,832	10,672	28	0.171	0.433	-0.010	0.031	1	0	0.76	(1)	0.75	(1)	0.74	2.43
Austria	145	1,137	21	0.101	0.419	0.045	0.005	0	0	0.21	(0)	0.25	(0)	0.81	2.18
Belgium	181	1,564	21	0.101	0.408	0.056	0.018	0	0	0.54	(1)	0.42	(0)	0.92	2.05
Brazil	254	1,489	14	0.226	0.409	0.117	0.024	0	0	0.27	(0)	0.25	(0)	0.57	1.87
Canada	1,976	13,768	28	0.151	0.444	0.005	0.023	1	0	0.64	(1)	0.92	(1)	0.79	2.39
Chile	177	1,584	17	0.184	0.364	0.073	0.006	0	0	0.63	(1)	0.58	(0)	0.78	1.64
China	1,427	9,030	9	0.206	0.574	0.020	0.003	0	0	0.76	(1)	n.a.	(0)	0.54	3.40
Denmark	245	2,874	21	0.142	0.391	0.069	0.022	0	0	0.46	(0)	0.58	(0)	0.83	1.77
Finland	164	1,318	14	0.117	0.406	0.057	0.014	0	0	0.46	(0)	0.50	(0)	0.86	2.15
France	1,214	10,156	28	0.133	0.418	0.042	0.016	0	0	0.38	(0)	0.75	(1)	0.72	2.24
Germany	1,084	9,033	28	0.081	0.462	0.009	0.023	0	0	0.28	(0)	0.42	(0)	0.69	2.68
Greece	348	2,896	17	0.082	0.544	0.026	0.003	0	0	0.22	(0)	0.33	(0)	0.71	2.50
Hong Kong	994	7,836	25	0.150	0.477	0.046	0.026	1	0	0.96	(1)	0.92	(1)	0.96	1.54
India	826	5,108	16	0.299	0.431	0.095	0.020	1	0	0.58	(1)	0.92	(1)	0.37	2.89
Indonesia	282	1,493	16	0.159	0.472	0.074	0.015	0	0	0.65	(1)	0.50	(0)	0.57	1.35
Ireland	118	937	22	0.148	0.393	0.050	0.009	1	0	0.79	(1)	0.67	(1)	0.91	2.38
Israel	176	1,104	15	0.105	0.458	0.024	0.022	1	0	0.73	(1)	0.67	(1)	0.81	1.96
Italy	417	3,498	21	0.066	0.469	0.019	0.006	0	0	0.42	(0)	0.67	(1)	0.69	1.91
Japan	3,983	52,259	28	0.048	0.546	0.016	0.009	0	0	0.50	(1)	0.75	(1)	0.49	1.89
Korea (South)	980	6,555	20	0.155	0.494	0.055	0.027	0	0	0.47	(1)	0.75	(1)	0.56	1.16
Malaysia	1,099	8,904	22	0.090	0.503	0.026	0.016	1	0	0.95	(1)	0.92	(1)	0.75	1.58
Mexico	164	1,301	16	0.180	0.380	0.058	0.010	0	0	0.17	(0)	0.58	(0)	0.60	1.66
The Netherlands	286	3,070	28	0.144	0.397	0.067	0.015	0	0	0.20	(0)	0.50	(0)	0.90	2.49
New Zealand	146	1,039	17	0.136	0.381	0.056	0.025	1	0	0.95	(1)	0.67	(1)	0.80	2.11
Norway	302	2,260	21	0.166	0.430	0.040	0.030	0	0	0.42	(0)	0.58	(0)	0.79	2.27
Pakistan	114	983	15	0.281	0.363	0.130	0.024	1	0	0.41	(0)	0.58	(0)	0.39	2.07
Philippines	192	1,405	17	0.159	0.409	0.058	-0.002	0	0	0.22	(0)	0.83	(1)	0.56	1.59
Poland	159	969	12	0.224	0.433	0.041	0.022	0	0	0.29	(0)	n.a.	(0)	0.68	2.18
Portugal	119	958	19	0.116	0.425	0.039	0.011	0	0	0.44	(0)	0.42	(0)	0.80	1.73
Singapore	677	5,190	23	0.115	0.502	0.038	0.009	1	0	1.00	(1)	1.00	(1)	0.96	1.57
South Africa	602	4,012	23	0.212	0.378	0.106	0.020	1	0	0.81	(1)	0.83	(1)	0.63	2.24
Spain	209	2,213	21	0.150	0.378	0.052	0.007	0	0	0.37	(0)	0.50	(0)	0.78	2.22
Sweden	448	3,653	22	0.134	0.447	0.036	0.035	0	0	0.33	(0)	0.58	(0)	0.87	2.59
Switzerland	241	2,404	23	0.125	0.413	0.062	0.026	0	0	0.27	(0)	0.67	(1)	0.85	2.27
Taiwan	1,329	8,672	16	0.096	0.499	0.016	0.021	0	0	0.57	(1)	0.75	(1)	0.58	1.57
Thailand	566	4,599	18	0.093	0.517	0.060	0.014	1	0	0.81	(1)	0.92	(1)	0.60	1.56
Turkey	234	1,825	15	0.317	0.398	0.067	0.020	0	0	0.43	(0)	0.50	(0)	0.61	2.17
United Kingdom	3,222	26,815	28	0.113	0.436	0.036	0.016	1	0	0.95	(1)	0.83	(1)	0.77	2.63
United States	11,684	98,820	28	0.141	0.427	0.023	0.016	1	1	0.65	(1)	1.00	(1)	0.64	2.65
Total (mean)	38,699	324,090	807	0.126	0.461	0.029	0.016								

(continued)

Table 1

Sample composition by country and year *(continued)*

Panel B: Number of observations, and mean market and accounting measures by year

Year	*Firm-years*	*Country-years*	*Market measures*		*Accounting measures*	
			RET	*RD*	*NI/P*	*ΔNI/P*
1981	1,992	8	0.187	0.339	0.116	0.006
1982	2,185	8	0.168	0.370	0.087	-0.011
1983	2,338	8	0.461	0.112	0.095	0.024
1984	2,609	9	0.112	0.397	0.088	0.022
1985	2,915	9	0.305	0.218	0.076	0.004
1986	3,490	12	0.286	0.241	0.063	0.010
1987	3,964	15	0.128	0.429	0.059	0.016
1988	4,968	21	0.196	0.322	0.075	0.019
1989	5,896	22	0.253	0.258	0.069	0.009
1990	6,652	23	-0.074	0.646	0.046	-0.009
1991	7,362	25	0.123	0.463	0.039	-0.006
1992	8,279	28	0.033	0.536	0.033	0.008
1993	8,967	32	0.288	0.323	0.036	0.016
1994	9,946	35	0.128	0.418	0.043	0.024
1995	11,496	38	0.091	0.491	0.046	0.014
1996	12,728	38	0.211	0.310	0.044	0.008
1997	13,947	38	0.112	0.461	0.037	0.010
1998	14,302	39	-0.032	0.609	0.021	-0.003
1999	16,214	39	0.168	0.507	0.018	0.019
2000	18,038	40	0.076	0.542	0.024	0.019
2001	19,462	40	0.002	0.556	-0.003	-0.005
2002	20,309	40	-0.020	0.579	-0.008	0.032
2003	20,362	40	0.275	0.357	0.011	0.054
2004	21,003	40	0.309	0.312	0.033	0.046
2005	21,761	40	0.199	0.389	0.032	0.018
2006	22,148	40	0.278	0.303	0.032	0.021
2007	22,029	40	0.190	0.481	0.029	0.016
2008	18,728	40	-0.320	0.862	0.004	-0.017
Total (mean)	324,090	807	0.126	0.461	0.029	0.016

The sample comprises 324,090 firm-year observations from 40 countries between 1981 and 2008, for which we have sufficient accounting data in Worldscope (WS) and stock price data in Datastream to estimate the valuation models. I require firms to have a minimum market value of equity of 1 US$ million, and limit the sample to countries with at least 500 observations (25 in any given year). This results in 807 country-year observations. The table reports the total number of unique firms and the number of firm-years (country-years) by country (Panel A) and year (Panel B). It also includes the means of the following market and accounting measures: *RET* is the annual buy-and-hold stock return inclusive of dividends and computed over a firm's fiscal year. *RD* is a binary indicator set to one if a firm's return *RET* is negative and zero otherwise. *NI/P* is annual earnings per share scaled by the stock price at the beginning of the fiscal year. I compute earnings per share as total net income before extraordinary items (WS 01551) divided by the number of common shares outstanding (WS 05301). Δ*NI/P* is the year-to-year change in earnings per share (*NI*) scaled by the stock price at the beginning of the fiscal year. I truncate all market and accounting measures at the first and 99th percentile. Panel A also lists several country-level institutional and macroeconomic variables used to partition the sample in the cross-sectional analyses: (1) a country's *legal tradition* (1 = common law; 0 = code law) based on La Porta et al. (1997) and Ball, Kothari, and Robin (2000); (2) the *U.S. economy* (= 1) versus the remaining countries (= 0); (3) the *anti-self-dealing* index from Djankov et al. (2008) with above-median sample values reflecting better legal protection of minority shareholders against insider expropriation (= 1); (4) the *disclosure requirements* index in securities offerings from La Porta, Lopez-de-Silanes, and Shleifer (2006) with above-median sample values reflecting better disclosure rules (= 1); (5) *market integration* measured by the KOF index of economic globalization (Dreher, Gaston, and Martens 2008) with higher values reflecting more cross-border flows of goods, capital, and services and fewer trade restrictions; and (6) *growth prospects* equal to the mean market-to-book ratio for all firms in a country and year. The latter two variables are measured on a yearly basis (and hence continuous).

Table 2

Descriptive statistics for market measures and accounting measures

Panel A: Distributional characteristics

(N = 324,090)	*Mean*	*Std. dev.*	*P1*	*P25*	*Median*	*P75*	*P99*
Market measures:							
RET	0.126	0.574	-0.785	-0.221	0.033	0.334	2.368
RD	0.461	0.498					
P	12.62	33.54	0.04	1.22	4.58	12.82	134.26
Accounting measures:							
AST	30.91	80.38	0.05	1.70	7.44	22.82	409.52
LIAB	22.51	68.20	0.01	0.63	3.37	13.00	333.90
BV	7.83	17.97	0.03	0.71	2.98	8.10	87.13
NI	0.52	2.14	-4.31	0.01	0.15	0.68	8.98
NI/P	0.029	0.167	-0.657	0.006	0.050	0.093	0.406
ΔNI/P	0.016	0.198	-0.537	-0.023	0.005	0.033	0.820

Panel B: Pearson correlation coefficients

Variables	*P*	*AST*	*LIAB*	*BV*	*NI*	*NI/P*	Δ*NI/P*
RET	0.066	-0.011	-0.011	-0.010	0.092	0.238	0.177
P		0.496	0.383	0.701	0.545	0.056	-0.009
AST			0.977	0.672	0.423	0.075	-0.014
LIAB				0.506	0.330	0.063	-0.012
BV		*(N = 324,090)*			0.591	0.087	-0.018
NI						0.360	0.106
NI/P							0.292

The sample comprises 324,090 firm-year observations from 40 countries between 1981 and 2008, for which we have sufficient accounting data in Worldscope (WS) and stock price data in Datastream (see Table 1). The table presents descriptive statistics (Panel A) and Pearson correlation coefficients (Panel B) for the firm-level market and accounting measures used to estimate the valuation models. I use the following market measures: *RET* is the annual buy-and-hold stock return inclusive of dividends and computed over a firm's fiscal year. *RD* is a binary indicator set to one if a firm's return (*RET*) is negative and zero otherwise. *P* is the market value of equity per share measured at the end of a firm's fiscal year. The accounting measures are: *AST* and *LIAB* are the per-share numbers of total assets (WS 0299) and total liabilities (WS 03351). *BV* equals a firm's common equity per share (WS 03501). *NI* is the per-share amount of total net income before extraordinary items (WS 01551). *NI/P* is annual earnings per share scaled by the stock price at the beginning of the fiscal year. Δ*NI/P* is the year-to-year change in earnings per share (*NI*) scaled by the stock price at the beginning of the fiscal year. I compute all the per-share amounts by dividing the total values with the number of common shares outstanding (WS 05301). The raw values are translated into US$ using the respective exchange rate at the end of the fiscal year. I truncate all market and accounting measures at the first and 99th percentile. In Panel B, all the correlation coefficients are significant at the 1% level.

Table 3

Contemporaneous relations between market measures and accounting measures over the 1981 to 2008 period

Panel A: Pooled time-series and cross-sectional regressions

		Earnings relation			*Reverse earnings relation*			*Balance sheet relation*			*Book value & earnings relation*		
Period	*N*	*NI/P*	*ΔNI/P*	*Adj. R^2*	*RET*	*RD*RET*	*Adj. R^2*	*AST*	*LIAB*	*Adj. R^2*	*BV*	*NI*	*Adj. R^2*
1981-2008	324,090	0.70***	0.34***	6.9%	0.02**	0.21***	9.6%	1.10***	-1.07***	46.7%	1.09***	3.16***	51.7%
	(*t*-stat)	(13.79)	(6.43)		(2.16)	(6.47)		(8.03)	(-8.00)		(7.79)	(4.48)	

Panel B: Annual cross-sectional regressions

		Earnings relation			*Reverse earnings relation*			*Balance sheet relation*			*Book value & earnings relation*		
Period	*N*	*NI/P*	*ΔNI/P*	*Adj. R^2*	*RET*	*RD*RET*	*Adj. R^2*	*AST*	*LIAB*	*Adj. R^2*	*BV*	*NI*	*Adj. R^2*
1981	1,992	0.99	0.34	10.9%	0.04	0.21	15.2%	0.66	-0.65	39.4%	0.49	3.69	48.4%
1982	2,185	0.71	0.46	11.9%	0.06	0.19	12.9%	0.93	-0.94	50.6%	0.81	2.85	60.5%
1983	2,338	0.69	0.77	10.3%	0.05	0.39	8.5%	1.31	-1.32	52.6%	1.28	1.88	56.9%
1984	2,609	1.34	0.28	14.9%	0.06	0.12	16.8%	1.35	-1.37	47.3%	1.09	4.20	55.7%
1985	2,915	1.22	0.26	15.1%	0.08	0.19	16.8%	1.28	-1.28	55.2%	1.38	1.23	60.9%
1986	3,490	1.06	0.39	10.4%	0.04	0.28	15.1%	1.27	-1.27	59.9%	1.31	2.38	66.1%
1987	3,964	0.77	0.32	5.5%	0.02	0.18	7.8%	0.98	-0.97	47.0%	1.09	1.40	53.7%
1988	4,968	0.95	0.36	10.0%	0.05	0.21	12.4%	0.97	-0.94	57.6%	1.14	0.79	61.8%
1989	5,896	0.81	0.41	8.6%	0.03	0.34	13.9%	1.15	-1.14	50.0%	1.02	3.19	51.0%
1990	6,652	0.63	0.45	8.7%	0.00	0.26	14.6%	1.16	-1.15	46.6%	1.11	3.11	50.3%
1991	7,362	0.89	0.28	10.9%	0.05	0.22	13.3%	1.01	-0.98	40.6%	0.95	4.32	46.0%
1992	8,279	0.85	0.49	13.2%	0.04	0.20	13.5%	0.78	-0.73	42.8%	0.85	3.47	48.9%
1993	8,967	0.80	0.45	8.0%	0.04	0.18	8.6%	0.89	-0.81	38.3%	1.16	3.31	46.6%
1994	9,946	0.71	0.35	6.5%	0.04	0.12	6.3%	0.91	-0.84	41.2%	1.14	3.73	48.2%
1995	11,496	0.64	0.48	6.4%	0.00	0.20	10.3%	0.94	-0.87	41.5%	1.08	3.53	48.5%
1996	12,728	0.88	0.30	7.7%	0.03	0.16	10.4%	1.16	-1.13	46.6%	1.11	3.85	52.2%
1997	13,947	1.22	0.24	10.4%	0.03	0.12	12.6%	1.24	-1.21	49.1%	1.19	3.83	54.7%
1998	14,302	0.62	0.27	5.9%	0.00	0.21	9.7%	1.25	-1.22	53.8%	1.21	3.48	57.2%
1999	16,214	0.42	0.39	3.7%	0.00	0.25	6.2%	1.21	-1.21	44.4%	1.19	2.21	46.7%
2000	18,038	0.53	0.25	3.7%	-0.01	0.22	7.8%	1.22	-1.23	40.0%	1.18	2.30	43.1%
2001	19,462	0.57	0.18	7.5%	0.03	0.20	9.6%	0.98	-0.97	39.4%	0.97	1.95	41.8%
2002	20,309	0.62	0.15	9.1%	0.03	0.28	12.7%	0.88	-0.86	47.0%	0.87	2.62	50.4%
2003	20,362	0.44	0.39	5.5%	0.01	0.26	6.5%	1.05	-1.03	52.1%	0.98	3.34	55.7%
2004	21,003	0.65	0.42	7.1%	0.03	0.22	8.4%	1.29	-1.29	50.8%	1.23	2.88	54.4%
2005	21,761	0.96	0.25	9.4%	0.04	0.22	12.8%	1.26	-1.23	51.9%	1.26	2.47	54.6%
2006	22,148	0.74	0.32	6.3%	0.02	0.23	10.2%	1.30	-1.26	52.9%	1.11	4.48	59.5%
2007	22,029	0.84	0.24	4.4%	0.01	0.26	10.8%	1.31	-1.29	55.8%	1.13	3.87	61.6%
2008	18,728	0.56	0.14	7.1%	0.00	0.21	10.1%	0.91	-0.92	55.9%	0.86	2.38	62.4%
Average		0.79	0.34	8.5%	0.03	0.22	11.2%	1.09	-1.08	48.2%	1.08	2.96	53.5%

(continued)

Table 3

Contemporaneous relations between market measures and accounting measures over the 1981 to 2008 period *(continued)*

Panel C: Over time changes in annual explanatory power

		Earnings relation			*Reverse earnings relation*			*Balance sheet relation*			*Book value & earnings relation*		
Period	*N*	β_0	*TIME*	*Adj.* R^2	β_0	*TIME*	*Adj.* R^2	β_0	*TIME*	*Adj.* R^2	β_0	*TIME*	*Adj.* R^2
1981-2008	28	0.120***	-0.002***	38.1%	0.138***	-0.002***	20.7%	0.473***	0.001	-3.0%	0.541***	-0.000	-3.5%
	(*t*-stat)	(12.68)	(-4.53)		(11.91)	(-2.87)		(18.35)	(0.46)		(21.62)	(-0.28)	
1981-1994	14	0.126***	-0.003**	12.3%	0.151***	-0.003	10.1%	0.529***	-0.007	10.1%	0.603***	-0.008**	24.3%
	(*t*-stat)	(9.74)	(-2.04)		(8.17)	(-1.60)		(11.76)	(-1.49)		(15.51)	(-2.24)	
1995-2008	14	0.074***	-0.000	-7.8%	0.093***	0.000	-8.1%	0.305***	0.008***	34.4%	0.345***	0.009***	26.5%
	(*t*-stat)	(2.72)	(-0.28)		(4.06)	(0.25)		(5.68)	(3.99)		(5.29)	(3.19)	

The sample comprises 324,090 firm-year observations from 40 countries between 1981 and 2008 (see Table 1). The table reports coefficient estimates and adjusted R^2 values for the following four regression specifications reflecting the relation between market measures and accounting measures:

(1) Earnings relation: $RET = \beta_0 + \beta_1 NI/P + \beta_2 \Delta NI/P + \varepsilon$

(2) Reverse earnings relation: $NI/P = \beta_0 + \beta_1 RD + \beta_2 RET + \beta_3 RD*RET + \varepsilon$

(3) Balance sheet relation: $P = \beta_0 + \beta_1 AST + \beta_2 LIAB + \varepsilon$

(4) Book value and earnings relation: $P = \beta_0 + \beta_1 BV + \beta_2 NI + \varepsilon$.

For variable details see Table 2. In Panel A, I report results from a single pooled time-series and cross-sectional regression. The *t*-statistics (in parentheses) are based on robust standard errors clustered by country and year. In Panel B, the results are from models run separately for each year. The row labeled average shows the mean of the yearly coefficient estimates and the yearly adjusted R^2s. Panel C reports results from the following regression, run separately for each valuation model and using the data from Panel B as input:

(5) Linear trend model: $Adj.\ R^2 = \beta_0 + \beta_1 TIME + \varepsilon$.

TIME takes on the values of 1 through 28 for the sample years 1981 to 2008, respectively. The *t*-statistics (in parentheses) are based on robust standard errors. In Panels A and C, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 4

Differences in the earnings relation across various legal and economic factors

Panel A: Pooled time-series and cross-sectional regressions with interaction terms

Earnings relation		*Legal tradition*	*U.S. economy*	*Anti-self-dealing*	*Disclosure requirements*	*Market integration*	*Growth prospects*
Firm-years (N = 324,090)	*Benchmark case*	*(1=Common; 0=Code)*	*(1=U.S.; 0=Rest)*	*(1=High; 0=Low)*	*(1=Strong; 0=Weak)*	*(High = Better integrated)*	*(High = Higher growth)*
NI/P	0.700***	0.766***	0.734***	0.758***	0.774***	0.913***	0.690***
	(13.79)	(12.58)	(15.14)	(9.49)	(9.57)	(4.95)	(17.29)
ΔNI/P	0.340***	0.291***	0.292***	0.303***	0.342***	0.418***	0.312***
	(6.43)	(5.73)	(7.22)	(3.93)	(4.15)	(2.88)	(6.49)
PART*NI/P	–	-0.100**	-0.103	-0.071	-0.091	-0.316	0.053***
		(-2.20)	(-1.32)	(-1.34)	(-1.53)	(-1.13)	(2.63)
PART*ΔNI/P	–	0.076*	0.167***	0.047	-0.002	-0.113	0.007***
		(1.83)	(3.49)	(0.72)	(-0.03)	(-0.64)	(2.79)
Adj. R^2	6.9%	7.0%	7.0%	6.9%	6.9%	6.9%	13.4%

Panel B: Over time changes in the explanatory power of the earnings relation with interaction terms

Linear trend		*Legal tradition*	*U.S. economy*	*Anti-self-dealing*	*Disclosure requirements*	*Market integration*	*Growth prospects*
Country-years (N = 807)	*Benchmark case*	*(1=Common; 0=Code)*	*(1=U.S.; 0=Rest)*	*(1=High; 0=Low)*	*(1=Strong; 0=Weak)*	*(High = Better integrated)*	*(High = Higher growth)*
β_0	0.190***	0.187***	0.190***	0.189***	0.187***	0.204***	0.273***
	(12.44)	(11.98)	(12.21)	(12.29)	(11.63)	(3.71)	(10.31)
PART	–	–	–	–	–	-0.026	-0.043***
						(-0.26)	(-4.36)
TIME	-0.004***	-0.003***	-0.004***	-0.003***	-0.003***	-0.003	-0.006***
	(-5.40)	(-2.92)	(-5.12)	(-3.43)	(-2.42)	(-0.80)	(-4.47)
PART*TIME	–	-0.002**	-0.000	-0.001	-0.002	-0.000	0.001***
		(-2.01)	(-0.31)	(-0.51)	(-1.59)	(-0.09)	(2.71)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	5.9%	6.5%	5.9%	5.9%	6.1%	5.9%	7.8%
F-test for differences [p-value]:							
TIME + PART*TIME = 0		[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
PART + PART*TIME = 0		–	–	–	–	[0.79]	[0.00]
Two non-overlapping periods							
β_0	0.162***	0.159***	0.162***	0.161***	0.159***	0.190***	0.227***
	(17.91)	(18.53)	(17.88)	(18.16)	(18.39)	(4.04)	(8.88)
PART	–	–	–	–	–	-0.048	-0.032***
						(-0.68)	(-3.18)
POST94	-0.055***	-0.035***	-0.055***	-0.047***	-0.039**	0.005	-0.092***
	(-4.29)	(-2.60)	(-4.17)	(-3.04)	(-2.47)	(0.19)	(-2.86)
PART*POST94	–	-0.049***	-0.011	-0.015	-0.027*	-0.073**	0.019
		(-2.96)	(-0.80)	(-1.02)	(-1.90)	(-2.07)	(1.59)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	6.1%	7.3%	6.1%	6.2%	6.4%	6.5%	8.3%
F-test for differences [p-value]:							
POST94 + PART*POST94 = 0		[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
PART + PART*POST94 = 0		–	–	–	–	[0.17]	[0.00]

(continued)

Table 4

Differences in the earnings relation across various legal and economic factors *(continued)*

The sample comprises 324,090 firm-year (807 country-year) observations from 40 countries between 1981 and 2008 (see Table 1). The table reports coefficient estimates for the following three regression specifications reflecting the relation between market measures and accounting measures as well as the trends in explanatory power over time:

(1) Earnings relation: $RET = \beta_0 + \beta_1 PART + \beta_2 NI/P + \beta_3 \Delta NI/P + \beta_4 PART*NI/P + \beta_5 \text{PART}*\Delta NI/P + \varepsilon$

(2) Linear trend model: $Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 TIME + \beta_3 PART*TIME + \sum \beta_j COUNTRY_j + \varepsilon$

(3) Two-period model: $Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 POST94 + \beta_3 PART*POST94 + \sum \beta_j COUNTRY_j + \varepsilon.$

PART is one of the six (binary or continuous) country-level institutional and macroeconomic partitioning variables described in Table 1. *TIME* takes on the values of 1 through 28 for the sample years 1981 to 2008, respectively. *POST94* is a binary indicator set equal to zero in the years 1981 to 1994, and one in the years 1995 to 2008. *COUNTRY* is a vector of country fixed effects (coefficients not tabulated). For details on the market and accounting measures see Table 2. In Panel A, I report results from a single pooled time-series and cross-sectional regression of the earnings relation fully interacted with *PART*. The *t*-statistics (in parentheses) are based on robust standard errors clustered by country and year. Panel B reports results from estimating the linear trend or two-period model, again fully interacted with *PART*. The adjusted R^2s from 807 country-year regressions of the earnings relation serve as the dependent variable. The *t*-statistics (in parentheses) account for within country cross-sectional and temporal dependence (Driscoll and Kraay 1998). The panel also reports p-values from *F*-tests comparing coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 5

Differences in the balance sheet relation across various legal and economic factors

Panel A: Pooled time-series and cross-sectional regressions with interaction terms

Balance sheet relation		*Legal tradition*	*U.S. economy*	*Anti-self-dealing*	*Disclosure requirements*	*Market integration*	*Growth prospects*
Firm-years (N = 324,090)	*Benchmark case*	*(1=Common; 0=Code)*	*(1=U.S.; 0=Rest)*	*(1=High; 0=Low)*	*(1=Strong; 0=Weak)*	*(High = Better integrated)*	*(High = Higher growth)*
AST	1.097***	1.091***	1.075***	1.076***	1.390***	1.525***	0.219**
	(8.03)	(6.78)	(7.17)	(5.72)	(4.76)	(2.62)	(2.22)
LIAB	-1.074***	-1.054***	-1.036***	-1.040***	-1.355***	-1.482***	-0.227**
	(-8.00)	(-6.90)	(-7.28)	(-5.80)	(-4.77)	(-2.61)	(-2.08)
PART*AST	–	-0.030	0.056	-0.027	-0.410	-0.583	0.613***
		(-0.16)	(0.38)	(-0.13)	(-1.35)	(-0.92)	(10.45)
PART*LIAB	–	-0.003	-0.107	0.000	0.389	0.552	-0.599***
		(-0.02)	(-0.76)	(0.00)	(1.31)	(0.89)	(-8.81)
Adj. R^2	46.7%	46.9%	47.0%	47.1%	48.4%	46.9%	79.2%

Panel B: Over time changes in the explanatory power of the balance sheet relation with interaction terms

Linear trend		*Legal tradition*	*U.S. economy*	*Anti-self-dealing*	*Disclosure requirements*	*Market integration*	*Growth prospects*
Country-years (N = 807)	*Benchmark case*	*(1=Common; 0=Code)*	*(1=U.S.; 0=Rest)*	*(1=High; 0=Low)*	*(1=Strong; 0=Weak)*	*(High = Better integrated)*	*(High = Higher growth)*
β_0	0.519***	0.527***	0.514***	0.526***	0.527***	0.861***	0.501***
	(26.05)	(25.43)	(24.57)	(25.94)	(25.90)	(8.33)	(7.62)
PART	–	–	–	–	–	-0.534***	0.009
						(-2.78)	(0.32)
TIME	0.001	-0.002	0.002	-0.003*	-0.001	-0.010*	0.002
	(0.95)	(-0.98)	(1.37)	(-1.73)	(-0.89)	(-1.96)	(0.41)
PART*TIME	–	0.006***	-0.010***	0.008***	0.004***	0.018***	-0.000
		(3.14)	(-2.81)	(4.93)	(3.37)	(2.84)	(-0.15)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.2%	1.7%	1.0%	2.2%	0.7%	1.7%	0.2%
F-test for differences [p-value]:							
TIME + PART*TIME = 0		[0.00]	[0.02]	[0.00]	[0.02]	[0.00]	[0.57]
PART + PART*TIME = 0		–	–	–	–	[0.01]	[0.74]
Two non-overlapping periods							
β_0	0.529***	0.532***	0.527***	0.533***	0.533***	0.736***	0.461***
	(53.73)	(52.72)	(50.62)	(52.72)	(53.10)	(10.59)	(16.78)
PART	–	–	–	–	–	-0.316***	0.033***
						(-2.80)	(3.19)
POST94	0.014	-0.011	0.021	-0.034	-0.013	-0.114***	0.101**
	(0.76)	(-0.50)	(1.16)	(-1.52)	(-0.54)	(-3.04)	(2.40)
PART*POST94	–	0.059**	-0.174***	0.085***	0.042**	0.209***	-0.042**
		(1.97)	(-3.02)	(4.31)	(2.06)	(3.06)	(-2.31)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.1%	0.7%	1.0%	1.3%	0.4%	1.1%	0.8%
F-test for differences [p-value]:							
POST94 + PART*POST94 = 0		[0.06]	[0.01]	[0.01]	[0.12]	[0.01]	[0.03]
PART + PART*POST94 = 0		–	–	–	–	[0.28]	[0.44]

(continued)

Table 5

Differences in the balance sheet relation across various legal and economic factors *(continued)*

The sample comprises 324,090 firm-year (807 country-year) observations from 40 countries between 1981 and 2008 (see Table 1). The table reports coefficient estimates for the following three regression specifications reflecting the relation between market measures and accounting measures as well as the trends in explanatory power over time:

(1) Balance sheet relation: $P = \beta_0 + \beta_1 PART + \beta_2 AST + \beta_3 LIAB + \beta_4 PART*AST + \beta_5 \text{PART}*LIAB + \varepsilon$

(2) Linear trend model: $Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 TIME + \beta_3 PART*TIME + \sum \beta_j COUNTRY_j + \varepsilon$

(3) Two-period model: $Adj.\ R^2 = \beta_0 + \beta_1 PART + \beta_2 POST94 + \beta_3 PART*POST94 + \sum \beta_j COUNTRY_j + \varepsilon.$

PART is one of the six (binary or continuous) country-level institutional and macroeconomic partitioning variables described in Table 1. *TIME* takes on the values of 1 through 28 for the sample years 1981 to 2008, respectively. *POST94* is a binary indicator set equal to zero in the years 1981 to 1994, and one in the years 1995 to 2008. *COUNTRY* is a vector of country fixed effects (coefficients not tabulated). For details on the market and accounting measures see Table 2. In Panel A, I report results from a single pooled time-series and cross-sectional regression of the balance sheet relation fully interacted with *PART*. The *t*-statistics (in parentheses) are based on robust standard errors clustered by country and year. Panel B reports results from estimating the linear trend or two-period model, again fully interacted with *PART*. The adjusted R^2s from 807 country-year regressions of the balance sheet relation serve as the dependent variable. The *t*-statistics (in parentheses) account for within country cross-sectional and temporal dependence (Driscoll and Kraay 1998). The panel also reports p-values from *F*-tests comparing coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).