臺大管理論叢 2011/12
第 22 卷第 1 期　67-96

# 超法律制度影響本期股票報酬率：對未來公司盈餘資訊效果之跨國實證研究

# The Informativeness of Current Return about Future Earnings and Extra-Legal Institutions: International Evidence

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*Received 2010/1, Final revision received 2010/6*

**摘 要**

本文研究超法律制度如何影響當期股價報酬率所蘊含之關於未來盈餘的資訊結果。本文樣本係由 1989-1999 期間 8 個東亞及 11 個西歐國家之上市公司所組成，這些國家具有不同的超法律制度。我們發現當期報酬率對未來盈餘的資訊效果如下 : (1) 對於有好消息的企業，此資訊效果隨產品市場的競爭程度增加而減弱；(2) 對於有壞消息的企業，此資訊效果隨著產品市場競爭程度增加而增加；(3) 上述效果在監督越強的國家則越為顯著。我們的多元回歸結果進一步顯示，一個國家層面的超法律和法律制度彼此相輔相成。本研究對於超法律制度在公司治理中的作用提供了實證支持。我們認為，由於政治或歷史原因，要改變一個國家的法律制度，例如法律傳統、司法制度或相關法令等等，成本往往非常高昂，而改進超法律制度則可能讓改革控制在一定可行的範圍之內，其相對效果亦呈顯著 。

【關鍵字】公司治理、超法律制度、盈餘資訊效果

**Abstract**

This study examines the impact of extra-legal institutional factors on the informativeness of current return about future earnings. Using a sample of firm-level observations during the period from 1989 to 1999 in eight East Asian and eleven Western European countries that exhibit different levels of extra-legal institutions, we find evidence that the informativeness of current return about future earnings: (1) decreases with stronger product market competition for good news firms, (2) increases with stronger product market competition for bad news firms; and (3) is more pronounced in countries where there is strong pressure from public opinion. Furthermore, multiple regression results show that country-specific extra-legal and legal institutional features add the incremental contribution above and beyond the others. This study provides empirical support for the role of extra-legal institutions in corporate governance. While changing legal institutions, such as the legal tradition, the judicial system, or the rule of law, may be costly for historical or political reasons, or both, improving the extra-legal institutions is likely to be well within the range of feasible reforms.

【Keywords】corporate governance, extra-legal institution, earnings informativeness

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## 1. Introduction

The role of legal institutions in investor protection has been central focus of corporate governance research. Vast volume of empirical evidence has established that strict, well-functioning legal and judicial systems limit the private control benefits enjoyed by insiders, thus enhancing capital market developments, investments, and firm valuation (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). There is abundant direct and indirect evidence of the effects of legal institutions. Strict, well-enforced minority rights facilitate equity and credit market developments, access to external finance, efficient investments, increased dividends, high firm valuations, and the identification and replacement of dysfunctional executives (Ali & Hwang, 2000; Ball, Kothari, & Robin, 2000). Recent studies look beyond well-established legal institutions and examine extra-legal institutions that can also enhance corporate governance (Dyck & Zingales, 2004; Haw, Hu, Hwang, & Wu, 2004). While extra-legal institutions do not directly relate to the statutory protection of shareholder rights, they can reduce insiders' incentives for private control benefits. This study examines the timeliness of earnings in relation to extra-legal institutions.

The recognition that current period returns incorporate future period earnings information has attracted intense attention in recent years (Liu & Thomas, 2000; Gelb & Zarowin, 2002). While Lundholm and Myers (2002), Ettredge, Kwon, Smith, and Zarowin (2005) and Tucker and Zarowin (2006) examine the price-leading-earnings relation using samples primarily of the U.S. listed firms, Chu and Wu (2009) investigate the relation between current period stock returns and future period earnings across nine East Asian and thirteen Western European countries and find results that are consistent with those of Collins, Kothari, Shanken, and Sloan (1994) that current returns are significantly positively correlated with future earnings for all of the countries studied, except for the Philippines, Indonesia and Thailand. Building on the extant literature that these countries exhibit different levels of institutional features (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998), Chu and Wu (2009) find that the informativeness of prices about future earnings increases with better legal institutions.

In this study, we draw upon recent findings in corporate governance literature to identify the salient country-specific extra-legal institutional features that are likely to influence the timeliness of earnings. We identify two extra-legal institutional factors (i.e., product market competition and public opinion pressure, Dyck & Zingales, 2004) and develop testable hypotheses that predict how each extra-legal institutional factor affects the informativeness of prices about future period earnings information. We hypothesize that: (1)

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the informativeness about future earnings that is contained in current returns decreases with stronger product market competition for good news firms because firms that operate in fierce competition strategically disclose their information about future performance; (2) the informativeness about future earnings that is contained in current returns increases with stronger product market competition for bad news firms because firms that operate in fierce competition strategically disclose their information about future performance; and (3) the relation between current returns and future earnings for bad news firms is pronounced in countries where there is strong pressure from public opinion due to potential legal and reputational sanctions.

We test these hypotheses based on a sample of 29,995 firm-year observations in nine East Asian and thirteen Western European countries from 1989 to 1999. We measure the extent of product market competition by the responses given to the survey questions about whether unfair competition is prevented, as reported by the World Competitiveness Yearbook for 1996, following Dyck and Zingales (2004). The circulations of daily newspapers normalized by the population serve as a proxy for the extent of public opinion pressure (Dyck & Zingales, 2004).

The results from univariate regressions support our hypotheses. We find that the informativeness of current returns about future earnings decreases with stronger product market competition for profitable firms. We also find that the informativeness of current returns about future earnings increases with stronger product market competition for loss firms. The relation between current returns and future earnings is stronger for loss firms in countries where the pressure from public opinion is strong. Multiple regression results from the loss firms suggest that each of the two country-specific extra-legal institutional features is an important determinant of the price-leading-earnings relation and adds the incremental contribution above and beyond the other. Furthermore, we add the legal institutions identified in Chu and Wu (2009) in the multiple regression and find that, for profitable (loss) firms, market competition (public opinion pressure) and legal institutions add the incremental contribution above and beyond the other. Evidence from this study on both the extent of and the potential determinants of price-leading-earnings relation across countries further facilitates an increased understanding of the information environment factors that underlie the price formation process.

This paper proceeds as follows. Section 2 develops hypotheses and Section 3 describes our sample and data. Section 4 reports main empirical results and Section 5 describes the results of additional analyses. We summarize our findings in Section 6.

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## 2. Hypotheses Development

### 2.1 Informativeness of Current Return about Future Earnings

A large body of literature provides empirical evidence to support the notion that stock returns reflect information about future earnings (Warfield & Wild, 1992; Collins et al., 1994). Collins et al. (1994) regard expected future earnings as a correlated omitted variable in the returns-earnings relation, and they develop a future earnings response coefficient model that regresses current stock returns on both current and future earnings surprises. They report that current returns are significantly and positively associated with changes in future earnings and that the explanatory power of the FERC model is three to six times greater than that of the traditional earnings response coefficient (ERC) model. They conclude that it is the accounting system's lack of timeliness, rather than random noise, that gives rise to the low association between returns and contemporaneous earnings. They empirically test whether the low contemporaneous price-earnings association is primarily due to earnings' lack of timeliness.

Recently, Gelb and Zarowin (2002) and Lundholm and Myers (2002) examine the association between voluntary corporate disclosure and the informativeness of stock prices by measuring corporate disclosure with the AIMR-FAF annual corporate disclosure ratings, Gelb and Zarowin (2002) regress current returns against (current and) future earnings changes, and find that greater disclosure is associated with stock prices that are more informative about future earnings (i.e., higher future ERC). Lundholm and Myers (2002) find a significant positive relation between a firm's disclosure activity, as measured by the AIMR ratings of corporate disclosures, and the amount of future earnings information reflected in the current annual return. They also report that changes in a firm's disclosure activity are positively related to changes in the amount of future earnings news reflected in current returns. Thus, increased disclosure activity at the company level "brings the future forward" into current stock returns. Ettredge et al. (2005) examine the effect of U.S. firms' adoption of SFAS No. 131 segment disclosure rules on the stock market's ability to predict the firms' earnings, as captured by the relation between current returns and future earnings. Consistent with their argument that SFAS No. 131 increased both the quantity and quality of segment disclosure, they document that pre-131 multi-segment firms experience a significant increase in the price-leading-earning relation.

Using an international dataset, Chu and Wu (2009) find that the informativeness of current returns about future earnings increases with better financial disclosure, investor protection, and legal enforcement. Furthermore, they find that each of the country-specific

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legal institutional features is an important determinant of the price-leading-earnings relation and adds the incremental contribution above and beyond the others. While legal institutions likely produce the most binding constraints on insiders, institutions that do not directly focus on shareholder rights protection can also limit insider private control benefits. As business decisions involve a degree of arbitrariness that is difficult to eliminate with certainty, courts only have a limited ability to interfere in insider decisions designed to generate private benefits. Dyck and Zingales (2004) argue that effective product market competition and a high level of diffusion of the press, among others, limit private control benefits.

Below, we develop testable hypotheses on the relation between salient country-specific extra-legal institutional features and the price-leading-earnings effects.

**2.2 Product Market Competition**

The presence of information asymmetries between firms and investors suggests that firms are likely to choose voluntary, direct disclosure such as management earnings or other forward-looking information released to convey private information to the public (Frankel, McNichols, & Wilson, 1995; Brown, Hillegeist, & Lo, 2004). For example, Palepu, Healy, and Bernard (2003) suggest that a firm's segment disclosure decision might be influenced by its concern that disaggregated disclosure might help competitors in their business decision. Similarly, firms might not disclose data on their margins by product line for fear of giving away proprietary information. Furthermore, firms might discourage new entrants by making income-decreasing accounting choice.

The analytical literature demonstrates that the competitive costs of disclosure – imparting proprietary information to existing and potential competitors – are the major cost-based determinants of the extent and timeliness of a firm's disclosure. Verrecchia (1983) suggests that product market competition may provide disincentives for voluntary disclosure via increased proprietary costs. Clinch and Verrecchia (1997) show that the ex ante probability of disclosure by a firm decreases as competition increases. In addition, Harris (1998) finds empirical evidence that the likelihood of segment disclosure decreases as the costs due to proprietary information loss to competitors increase. Bamber and Cheon (1998) report that management earnings forecasts are less precise for firms in more concentrated industries. Botosan and Harris (2000) find that a high level of industry concentration deteriorates the quality of segment reporting.

Dye (1985) demonstrates that an incumbent firm with good news may choose to withhold information whereas a firm with bad news may opt for a policy of disclosure.

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Darrough and Stoughton (1990) also show that a firm's disclosure policy depends on not only the financial market valuation but also the potential entrant's prior beliefs about its private information. Clarkson, Kao, and Richardson (1994) provide the first empirical study to document support for the notion that a firm's concern for product market competition affects its decision to disclose. Specifically, the probability of forecasting by good news firms is found to decrease with the threat of a competitor entering the market to disguise the source of their "rents" and the reverse holds for bad news firms. Guo, Lev, and Zhou (2004) also document three competitive-cost-based determinants in the disclosure strategy of biotech firms that operate in a fiercely competitive environment. [1]

Based on these prior studies, we predict that the degree of product market competition affects the relation between current stock returns and future earnings, leading to the following hypotheses:

***Hypothesis 1:Countries with stronger product market competition have a weaker price-leading-earnings relation for current earnings news firms.***

***Hypothesis 2:Countries with stronger product market competition have a stronger price-leading-earnings relation for bad current earnings news firms.***

Following Dyck and Zingales (2004), the extent of product market competition is based on the responses given to the survey question about whether unfair competition is prevented, as reported by the World Competitiveness Yearbook for 1996. High scores suggest a general agreement that product market competition is effective. This measure captures cross-country differences in the extent to which national policy makers allow for barriers to competition over and above those constraints associated with an industry. It is commonly used by researchers to capture a variety of country-level competitiveness in a product market (Dyck & Zingales, 2004; Haw et al., 2004).

**2.3 Public Opinion Pressure**

Fears of legal sanctions aside, managers are likely to come forward with information of the future performance for the sake of reputations and a fear of social sanctions. In particular,

[1] The degree of product market competition also affects insider opportunities for accruing private benefits (Shleifer & Vishny, 1997; Dyck & Zingales, 2004). First, prices are relatively easy to verify in a competitive market, which makes it difficult for insiders to tunnel out resources by manipulating transfer prices without incurring legal penalties and/or a cost to their reputations. Second, the distortions produced by the extraction of private benefits are more likely to jeopardize the survival of the firm in a competitive market. Competition thus represents a natural constraint on the extraction of private benefits.

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managers face an asymmetric loss function as they bear high reputational and legal costs when they fail to alert investors before large negative earnings news is announced, but not in the case of large positive earnings news. For reputation to work, Zingales (2000) argues that it is necessary to have the backing of "public opinion: that is, a combination of an independent press that publicizes the facts and of a large set of educated investors, who read the newspapers and sanction improper behavior." Dyck and Zingales (2004) find that pressure from public opinion helps to curb the private benefits of control. Haw et al. (2004) find that income management which is induced by control divergence is less pronounced in countries with high levels of diffusion of the press. Following this line of argument, we develop the following hypothesis:[2]

***Hypothesis 3: Strong public opinion pressure increases the informativeness of current returns about future earnings when a firm currently suffers a loss.***

We follow Dyck and Zingales (2004) who capture press-based public opinion with an indicator of newspaper diffusion, as measured by the circulation of daily newspapers normalized by the population.

## 3. Sample and Data

The sample consists of listed firms from twenty economies from 1989 to 1999: nine in East Asia (Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand) and eleven in Western Europe (Austria, Finland, France, Germany, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom).[3] We limit our sample period to 1999 to avoid the noise in stock prices during the internet bubble period. The firms in the sample must have requisite data on financial variables that allow the construction of the earnings timeliness measure. Stock returns and financial data are extracted from the Worldscope database.

2 Guadalupe and Pérez-González (2005) find evidence indicating that product market competition can help curbing private benefit of control.

3 The sample in Chu and Wu (2009) consists of listed firms from these twenty country and Belgium and Ireland. We exclude Belgium and Ireland because there are no measures for product market competition and public opinion pressure in Dyck and Zingales (2004).

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## Table 1 Sample selection and distribution

**Panel A. Sample Selection Process**

| | No. Deleted | No. Remaining |
|---|---|---|
| Initial sample from the Worldscope database for nine East Asian and eleven European countries for 1989-1999 | | 100,127 |
| After removing observations without five consecutive years of earnings and stock price data | (68,336) | 31,791 |
| After removing observations from Southeast Asian economies after 1994 due to 1997 Financial Crisis | (1,239) | 30,552 |
| After removing observations with absolute change in earnings before extraordinary items, that are greater than the beginning market value of equity | (298) | 30,254 |
| After removing observations with absolute earnings before extraordinary items, that are greater than the beginning market value of equity | (168) | 30,086 |
| After removing observations with an absolute sum of earnings before extraordinary items in the future three years, greater than 300 percent of the beginning market value of equity in year | (93) | 29,995 |

**Panel B. Sample distribution**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | Total |
|---|---|---|---|---|---|---|---|---|
| AUSTRIA | 34 | 46 | 51 | 51 | 61 | 61 | 13 | 317 |
| FINLAND | 29 | 57 | 61 | 63 | 72 | 77 | 26 | 385 |
| FRANCE | 394 | 485 | 531 | 582 | 609 | 606 | 107 | 3,314 |
| GERMANY | 150 | 204 | 216 | 225 | 259 | 264 | 49 | 1,367 |
| HONG KONG | 45 | 88 | 110 | 129 | 133 | 0 | 0 | 505 |
| INDONESIA | 0 | 3 | 42 | 60 | 32 | 0 | 0 | 137 |
| ITALY | 135 | 143 | 144 | 138 | 137 | 134 | 3 | 834 |
| JAPAN | 407 | 1,081 | 1,104 | 1,067 | 1,139 | 1125 | 769 | 6,692 |
| KOREA | 60 | 69 | 83 | 110 | 165 | 0 | 0 | 487 |
| MALAYSIA | 34 | 83 | 125 | 195 | 211 | 0 | 0 | 648 |
| NORWAY | 43 | 55 | 52 | 55 | 81 | 86 | 6 | 378 |
| PHILIPPINES | 4 | 4 | 11 | 23 | 32 | 0 | 0 | 74 |
| PORTUGAL | 30 | 35 | 39 | 38 | 43 | 45 | 0 | 230 |
| SINGAPORE | 36 | 59 | 85 | 101 | 104 | 0 | 0 | 385 |
| SPAIN | 92 | 102 | 110 | 107 | 112 | 104 | 5 | 632 |
| SWEDEN | 41 | 65 | 72 | 82 | 115 | 128 | 31 | 534 |
| SWITZERLAND | 90 | 123 | 130 | 135 | 147 | 147 | 36 | 808 |
| TAIWAN | 2 | 3 | 8 | 16 | 37 | 0 | 0 | 66 |
| THAILAND | 1 | 7 | 44 | 80 | 114 | 0 | 0 | 246 |
| UK | 127 | 1,589 | 1,956 | 1,998 | 2,079 | 2,175 | 2,032 | 11,956 |
| TOTAL | 1,754 | 4,301 | 4,974 | 5,255 | 5,682 | 4,952 | 3,077 | 29,995 |

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Panel A of Table 1 describes the sample selection processes. Our potential sample comprises 100,127 firm-years on Worldscope, of which only 31,791 have five consecutive years of earnings and return data available. We then sequentially delete observations from Southeast Asian economies after 1994 (as earnings data are required for the forthcoming three years) to remove the effect of the 1997 Asian financial crisis (1,239), observations with absolute change in earnings before extraordinary items that is greater than the market value of equity at the beginning of the year (292), observations with absolute earnings before extraordinary items that is greater than the market value of equity (168), and observations with future earnings that are greater than 300 percent of beginning market value (91).[4] The final sample consists of 29,995. Panel B presents the distribution of observations by year across the sample countries. The UK and Japan account for about forty and twenty percent of the final sample, respectively. Our earnings data (unreported) suggest that about fifteen percent of the sample observations (4,560) have a negative income before extraordinary items.

## Table 2 Summary statistics and correlations between returns and earnings

**Panel A. Summary statistics of returns, earnings and firm size**

| Variable | Mean | Std Dev | 25% | Median | 75% |
|---|---|---|---|---|---|
| $R_t$ | 0.0668 | 0.4860 | -0.1933 | -0.0058 | 0.2236 |
| $X_{t-1}$ | 0.0298 | 0.1096 | 0.0139 | 0.0340 | 0.0659 |
| $X_t$ | 0.0325 | 0.1107 | 0.0115 | 0.0334 | 0.0707 |
| $X3_t$ | 0.1395 | 0.3759 | 0.0187 | 0.0983 | 0.2559 |
| $R3_t$ | 0.2461 | 1.1634 | -0.3193 | 0.0155 | 0.4954 |

4 This is in line with Lundholm and Myers (2002), who delete observations with absolute earnings or a change in earnings greater than the market value of equity, observations with future earnings greater than 300 percent of market value, and special items greater than 50 percent of market value. Our sample does not have any observation with special items greater than 50 percent of market value.

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**Panel B. Spearman rank (above the diagonal) and Pearson (below the diagonal) correlation between returns and, earnings (p-values)**

| | $R_t$ | $X_{t-1}$ | $X_t$ | $X3_t$ | $R3_t$ |
|---|---|---|---|---|---|
| $R_t$ | | 0.189 (0.000) | 0.392 (0.000) | 0.364 (0.000) | 0.030 |
| $X_{t-1}$ | 0.050 (0.000) | | 0.666 (0.000) | 0.444 (0.000) | 0.267 (0.000) |
| $X_t$ | 0.269 (0.000) | 0.503 (0.000) | | 0.601 (0.000) | 0.285 (0.000) |
| $X3_t$ | 0.286 (0.000) | 0.186 (0.000) | 0.387 (0.000) | | 0.577 (0.000) |
| $R3_t$ | -0.001 (0.923) | 0.049 (0.000) | 0.076 (0.000) | 0.387 (0.000) | |

This table presents descriptive statistics and correlation matrix for 29,995 observations from 1989 to 1999. Current returns ($R_t$) for year t are the annual returns for the 12-month period during the fiscal year. Lagged earnings ($X_{t-1}$) are net income before extraordinary items for year t-1, and scaled by market value at the end of year t-1. Current earnings ($X_t$) are net income before extraordinary items for year t, and scaled by market value at the end of year t-1. Future earnings ($X3_t$) are the sum of net income before extraordinary items for the three years following the current year (i.e. for years t+1, t+2 and t+3), and scaled by market value at the end of year t-1. Future returns ($R3_t$) are the buy-and-hold returns for the three-year period following the current year.

Panel A of Table 2 presents descriptive statistics of returns, earnings, and firm size for our sample. The mean annual stock returns ($R_t$) is 6.95 percent and statistically significant. The mean values of earnings divided by market values at year t-1 ($X_{t-1}$) and t ($X_t$) are 3.04 percent and 3.32 percent respectively, and are statistically significant. The mean (median) future earnings ($X3_t$) for the three years following the current year is 14.43 (10.10) percent and mean (median) future returns ($R3_t$) for the same period is 26.09 (2.70) percent. Both annual and future stock returns are right-skewed (means higher than medians), and considerably more volatile than earnings, which are comparable to prior studies (Ball et al., 2000). The median total asset is US$382.7 million and relatively large. There is a considerable variation in the size of our sample firms with total assets of $113 million for the first quartile and $1.46 billion for the third quartile. Thus, our sample covers small as well as large firms.

Panel B of Table 2 shows both Pearson (shown below the diagonal) and Spearman rank (shown above the diagonal) correlations among earnings, returns, and size. The correlations between the Current Returns ($R_t$) and each of the three earnings variables ($X_{t-1}$, $X_t$, $X3_t$) are

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significantly positive. The future returns ($R3_t$) is not significantly correlated with the current returns but significantly correlated with future earnings ($X3_t$), which is consistent with Collins et al. (1994). Therefore, future returns should not influence the regression results except through their role as a proxy for the measurement error in future earnings.

## Table 3 Summary statistics of extra-legal institutional factors and correlations among earnings, returns, institutional factors and control variables

**Panel A. Summary statistics of country-specific institutional factors**

| Variable | Mean | Std Dev | Q1 | Median | Q3 |
|---|---|---|---|---|---|
| Market Competition | 5.578 | 0.293 | 5.64 | 5.64 | 5.74 |
| Public Opinion Pressure | 4.108 | 1.725 | 3.1 | 3.3 | 5.8 |
| SIZE | 0.442 | 0.188 | 0.306 | 0.426 | 0.562 |
| Growth | 0.085 | 0.231 | -0.020 | 0.043 | 0.131 |

**Panel B. Pearson correlation among institutional factors, control variables, earnings and returns (p-values)**

| | $R_t$ | $X_{t-1}$ | $X_t$ | $X3_t$ | $R3_t$ |
|---|---|---|---|---|---|
| Market Competition | -0.1066 (<.0001) | -0.0396 (<.0001) | -0.0641 (<.0001) | -0.0851 (<.0001) | -0.0841 (<.0001) |
| Public Opinion Pressure | -0.1041 (<.0001) | -0.094 (<.0001) | -0.0952 (<.0001) | -0.1233 (<.0001) | -0.1887 (<.0001) |
| SIZE | 0.1597 (<.0001) | 0.1275 (<.0001) | 0.1580 (<.0001) | 0.1279 (<.0001) | 0.0604 (0.0348) |
| Growth | 0.1886 (<.0001) | 0.1209 (<.0001) | 0.2371 (<.0001) | 0.1275 (<.0001) | 0.0129 (0.0026) |
| Earnings Quality | 0.1256 (<.0001) | 0.0592 (<.0001) | 0.0888 (<.0001) | 0.1960 (<.0001) | 0.2201 (<.0001) |

Market Competition is the effectiveness of product market competition from Dyck and Zingales (2004). Higher scores suggest general agreement that product market competition is effective. Public Opinion Pressure is the circulation of daily newspapers divided by population from Dyck and Zingales (2004). SIZE is a log-linear transformation of market value, log ($MV_i$)-log (Min MV) / [log (Max MV)-log (Min MV), where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth is defined as the percentage growth in a firm's assets from year t-1 to year t. Earnings Quality is the aggregate earnings management score from Leuz, Nanda, and Wysocki (2003) multiplied by -1, which equals the average rank of two earnings smoothing measures and two earnings discretion measures. See Table 3 for definitions of earnings and return variables.

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Table 3 presents the summary statistics of the institutional measures (Panel A) and their correlations with earnings and returns (Panel B). Product market competition exhibits relatively low variation across countries, with a mean score of 5.578 and a standard deviation of 0.293.The public opinion pressure is defined as the newspaper circulations divided by population and represents public opinion, and its mean (median) value is 4.108 (3.3), with the lowest value of 0.2 for Indonesia and the highest value of 8.0 for Hong Kong. We measure size by the proxy used by Hand (1990), which is a log-linear transformation of market value, [log ($MV_i$)-log (Min MV)] / [log (Max MV)-log (Min MV)], where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth is defined as the percentage growth in a firm's assets from year t-1 to year t and capped at 150%.

Panel B of Table 3 presents Pearson correlations among earnings, returns, the extra-legal institutional measures, and control variables including size, growth, sign of current annual return (a dummy variable which equals one if the annual stock return during the fiscal year is positive, and zero other), and earnings quality. We measure earnings quality using the country-level aggregate earnings management score of Leuz et al. (2003) multiplied by -1. This score, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. We multiply the score by -1 so that higher values indicate higher quality, following DeFond, Hung, and Trezevant (2007). Market competition and public opinion pressure correlate negatively with them. Returns and earnings measures significantly correlate with firm size, growth, the sign of current return and earnings quality, suggesting the need of controlling them in regression analyses.

## 4. Empirical Results

We employ the ordinary least-squares method to regress current returns on earnings, institutions, the interactions between institutions and earnings, the control variables, and the interactions between controls and earnings: [5]

$$
\begin{aligned}
R_{it} &= a_0 + a_1 X_{it-1} + a_2 X_{it} + a_3 X3_{it} + a_4 R3_{it} \\
&+ \beta_0 INST + \beta_1 INST*X_{it-1} + \beta_2 INST*X_{it} + \beta_3 INST*X3_{it} + \beta_4 INST*R3_{it} \\
&+ \gamma_0 SIZE + \gamma_1 SIZE*X_{it-1} + \gamma_2 SIZE*X_{it} + \gamma_3 SIZE*X3_{it} + \gamma_4 SIZE*R3_{it}
\end{aligned}
$$

5 We remove the control for the sign of current returns from the model and find similar results.

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$$+\gamma_5 GROW+\gamma_6 GROW*X_{it-1}+\gamma_7 GROW*X_{it}+\gamma_8 GROW*X3_{it}+\gamma_9 GROW*R3_{it}$$
$$+\gamma_{10} SignR+\gamma_{11} SignR*X_{it-1}+\gamma_{12} SignR*X_{it}+\gamma_{13} SignR*X3_{it}+\gamma_{14} SignR*R3_{it}$$
$$+\gamma_{15} EQ+\gamma_{16} EQ*X_{it-1}+\gamma_{17} EQ*X_{it}+\gamma_{18} EQ*X3_{it}+\gamma_{19} EQ*R3_{it}$$
$$+ (Fixed\ effects)+u_{it} \quad (1)$$

Where *INST* is the country-level extra-legal institutional factor, market competition (*Competition*), and public opinion pressure (*Media*), fixed effects are the dummy variables controlling for fixed effects of calendar years and economies, and $u_{it}$ is the error term at year t. Following Lundholm and Myers (2002), we control for size (*SIZE*), growth (*GROW*) and the sign of the current annual return (*SignR*) as they significantly correlate with returns and earnings. We also include country-level earnings quality (*EQ*) following Leuz et al. (2003) and DeFond et al. (2007), who argue that earnings in countries with less earnings management are of "higher quality." Hypothesis 1 on product market competition predicts $\beta_3$ to be negative for the profitable firms. Hypothesis 2 on product market competition predicts $\beta_3$ to be positive for the loss firms. Hypothesis 3 on public opinion pressure predicts $\beta_3$ to be positive for the loss firms.

Table 4 Lead-lag relation and product market competition: Hypothesis 1

| Variables | COEF. | t-STAT. |
|---|---|---|
| Intercept | -0.310*** | -3.42 |
| $X_{t-1}$ | -2.675*** | -4.88 |
| $X_t$ | 4.988*** | 7.29 |
| $X3_t$ | 0.749*** | 5.54 |
| $R3_t$ | -0.040 | -1.12 |
| Competition | -0.044** | -2.70 |
| Competition* $X_{t-1}$ | 0.450*** | 4.87 |
| Competition* $X_t$ | -0.637*** | -5.47 |
| Competition* $X3_t$ | -0.146*** | -6.40 |
| Competition* $R3_t$ | 0.013* | 2.10 |
| SIZE | 0.074*** | 4.54 |
| SIZE * $X_{t-1}$ | 0.300+ | 1.83 |

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|---|---|---|
| SIZE * $X_t$ | -0.466* | -2.21 |
| SIZE * $X3_t$ | 0.484*** | 11.31 |
| SIZE * $R3_t$ | -0.040*** | -4.05 |
| GROW | 0.100*** | 7.71 |
| GROW * $X_{t-1}$ | 0.155+ | 1.76 |
| GROW * $X_t$ | 0.224* | 2.51 |
| GROW * $X3_t$ | 0.054** | 2.76 |
| GROW * $R3_t$ | -0.031*** | -3.40 |
| SIGNR | 0.387*** | 61.28 |
| SIGNR *$X_{t-1}$ | -0.827*** | -13.56 |
| SIGNR *$X_t$ | 1.303*** | 14.84 |
| SIGNR *$X3_t$ | 0.159*** | 9.70 |
| SIGNR *$R3_t$ | -0.037*** | -7.82 |
| EQ | -0.010*** | -8.23 |
| EQ * $X_{t-1}$ | -0.008+ | -1.78 |
| EQ * $X_t$ | 0.064*** | 10.39 |
| EQ * $X3_t$ | 0.005*** | 3.75 |
| EQ * $R3_t$ | 0.002*** | 5.03 |
| ADJ-$R^2$ | 0.5204 | |

The bold letters are our hypothesized variables. Market Competition (*Competition*) is the effectiveness of product market competition from Dyck and Zingales (2004). Higher scores suggest general agreement that product market competition is effective. SIZE is a log-linear transformation of market value, log ($MV_i$)-log (Min MV) / [log (Max MV)-log (Min MV), where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth (*GROW*) is defined as the percentage growth in the firm's assets from year t-1 to year t. The sign of current annual return (*SIGNR*) is the sign of the annual stock return for the 12-month period during the fiscal year. Earnings Quality (*EQ*) is the aggregate earnings management score from Leuz et al. (2003) multiplied by -1, which, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. See Table 3 for definitions of earnings and return variables. The fixed effects of calendar years and/or economies are included, where appropriate, as dummy intercepts in the regressions. For simplicity, they are not reported in the table. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

Table 4 presents the regression results for model (1), testing Hypothesis 1 that countries with stronger product market competition have weaker price-leading-earnings relation for

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good news firms. For the profitable sample of 25,435 observations, the coefficient ( $\beta_3$) for the interaction of *Competition*X3*$_t$ is -0.146 and statistically significant at the 1% level, which is consistent with the hypothesis that countries with stronger product market competition have a weaker price-leading-earnings relation for good current earnings news firms. We also find that the coefficients for the interaction terms between *X3*$_t$ and size, growth, and sign of current return (*SignR*) are all significantly positive, which suggests that the lead-lag relation is stronger for firms that are larger, grow faster, and have a positive return. We also note that the coefficient for the interaction term between *X3*$_t$ and earnings quality (*EQ*) is significantly positive, indicating that the lead-lag relation is stronger in countries with higher quality earnings. Overall, the results are consistent with our first hypothesis that countries with stronger product market competition have a weaker price-leading-earnings relation for good earnings firms.

Table 5 Lead-lag relation and product market competition: Hypothesis 2

| Variables | COEF. | t-STAT. |
|---|---|---|
| Intercept | -0.024 | -0.08 |
| $X_{t-1}$ | -0.242 | -0.33 |
| $X_t$ | -0.360 | -0.41 |
| $X3_t$ | -0.604* | -2.30 |
| $R3_t$ | -0.055 | -0.90 |
| Competition | -0.069 | -1.29 |
| Competition* $X_{t-1}$ | 0.012 | 0.10 |
| Competition* $X_t$ | 0.093 | 0.61 |
| Competition* $X3_t$ | 0.104* | 2.33 |
| Competition* $R3_t$ | 0.006 | 0.50 |
| SIZE | 0.176*** | 3.81 |
| SIZE * $X_{t-1}$ | -0.453* | -2.13 |
| SIZE * $X_t$ | -0.132 | -0.53 |
| SIZE * $X3_t$ | -0.170* | -2.19 |
| SIZE * $R3_t$ | 0.040 | 1.27 |
| GROW | 0.162*** | 4.71 |
| GROW * $X_{t-1}$ | -0.573*** | -4.68 |

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|---|---|---|
| GROW * $X_t$ | -0.150 | -0.96 |
| GROW * $X3_t$ | -0.101** | -2.83 |
| GROW * $R3_t$ | -0.028 | -1.32 |
| SIGNR | 0.501*** | 28.42 |
| SIGNR *$X_{t-1}$ | -0.161* | -2.23 |
| SIGNR *$X_t$ | -0.478*** | -5.27 |
| SIGNR *$X3_t$ | -0.043 | -1.50 |
| SIGNR *$R3_t$ | -0.022+ | -1.64 |
| EQ | 0.004 | 1.14 |
| EQ * $X_{t-1}$ | -0.014* | -2.44 |
| EQ * $X_t$ | -0.003 | -0.43 |
| EQ * $X3_t$ | -0.008*** | -3.80 |
| EQ * $R3_t$ | 0.001 | 1.02 |
| ADJ-$R^2$ | 0.4330 | |

The bold letters are our hypothesized variables. Market Competition (*Competition*) is the effectiveness of product market competition from Dyck and Zingales (2004). Higher scores suggest general agreement that product market competition is effective. SIZE is a log-linear transformation of market value, log ($MV_i$)-log (Min MV) / [log (Max MV)-log (Min MV), where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth (*GROW*) is defined as the percentage growth in the firm's assets from year t-1 to year t. The sign of current annual return (*SIGNR*) is the sign of the annual stock return for the 12-month period during the fiscal year. Earnings Quality (*EQ*) is the aggregate earnings management score from Leuz et al. (2003) multiplied by -1, which, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. See Table 3 for definitions of earnings and return variables. The fixed effects of calendar years and/or economies are included, where appropriate, as dummy intercepts in the regressions. For simplicity, they are not reported in the table. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

Table 5 presents the regression results for model (1), testing Hypothesis 2 that countries with stronger product market competition have stronger price-leading-earnings relation for bad news firms. For a loss sample of 4,560 observations, the coefficient ($\beta_3$) for the interaction of *Competition*X3*$_t$, is 0.104 and statistically significant at the 2% level, consistent with the hypothesis that countries with stronger product market competition have a stronger price-leading-earnings relation for bad current earnings news firms. In addition, we find the coefficients for the interaction terms between *X3*$_t$ and size, growth, sign of current return (*SignR*) and earnings quality (*EQ*) are all negative and statistically significant

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except for *SignR*. The results suggest that the effects of these controls on the lead-lag relation differ between profitable and loss-making firms. The inclusion of dummy control variable for loss in Chu and Wu (2009) is no sufficient to account for the environmental difference between the profit and loss firms. Overall, the results are consistent with Hypothesis 2 that countries with stronger product market competition have a stronger price-leading-earnings relation for bad earnings firms.

Table 6 Lead-lag relation and public opinion pressure: Hypothesis 3

| Variables | COEF. | t-STAT. |
|---|---|---|
| Intercept | 6.963*** | 8.13 |
| $X_{t-1}$ | -0.121 | -0.84 |
| $X_t$ | 0.246 | 1.43 |
| $X3_t$ | -0.142** | -2.69 |
| $R3_t$ | -0.038* | -1.93 |
| Media | -0.548*** | -8.65 |
| Media* $X_{t-1}$ | -0.013 | -0.51 |
| Media* $X_t$ | -0.019 | -0.62 |
| Media* $X3_t$ | 0.040*** | 4.16 |
| Media* $R3_t$ | 0.002 | 0.62 |
| SIZE | 0.183*** | 4.00 |
| SIZE * $X_{t-1}$ | -0.432* | -2.01 |
| SIZE * $X_t$ | -0.148 | -0.59 |
| SIZE * $X3_t$ | -0.173* | -2.25 |
| SIZE * $R3_t$ | 0.042 | 1.31 |
| GROW | 0.158*** | 4.61 |
| GROW * $X_{t-1}$ | -0.607*** | -4.99 |
| GROW * Xt | -0.204 | -1.32 |
| GROW * $X3_t$ | -0.105** | -2.97 |
| GROW * $R3_t$ | -0.023 | -1.10 |
| SIGNR | 0.500*** | 28.53 |
| SIGNR *$X_{t-1}$ | -0.158* | -2.18 |

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|---|---|---|
| SIGNR *$X_t$ | -0.455*** | -5.05 |
| SIGNR *$X3_t$ | -0.062* | -2.17 |
| SIGNR *$R3_t$ | -0.018 | -1.30 |
| EQ | 0.208*** | 8.53 |
| EQ * $X_{t-1}$ | -0.012* | -2.08 |
| EQ * $X_t$ | -0.001 | -0.19 |
| EQ * $X3_t$ | -0.007*** | -3.57 |
| EQ * $R3_t$ | 0.000 | 0.05 |
| ADJ-$R^2$ | 0.4434 | |

The bold letter is our hypothesized variable. Public Opinion Pressure (*Media*) is the circulation of daily newspapers divided by population from Dyck and Zingales (2004). SIZE is a log-linear transformation of market value, log ($MV_i$)-log (Min MV) / [log (Max MV)-log (Min MV), where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth (*GROW*) is defined as the percentage growth in the firm's assets from year t-1 to year t. The sign of current annual return (*SIGNR*) is the sign of the annual stock return during the fiscal year. Earnings Quality (*EQ*) is the aggregate earnings management score from Leuz et al. (2003) multiplied by -1, which, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. See Table 3 for definitions of earnings and return variables. The fixed effects of calendar years and/or economies are included, where appropriate, as dummy intercepts in the regressions. For simplicity, they are not reported in the table. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

Table 6 presents the regression results for model (1), testing Hypothesis 3 that strong public opinion pressure increases the informativeness of current returns about future earnings, when a firm suffers a current loss. For the loss sample, the coefficient on *Media*X3*$_t$ is 0.04, as predicted, and statistically significant at the 1% level. However, the sum of the coefficients on *Media*X*$_{t-1}$ and *Media*X*$_t$ is statistically insignificant (not reported), which indicates that the effect of current earnings surprise on current returns is not dependent on the degree of public opinion pressure. Consistent with the results in Table 5, the coefficients for the interactions between *X3*$_t$ and size, growth, sign of current return, and earnings quality are all significantly negative. Overall, the results are consistent with our third hypothesis and add to the literature, which suggest that for reputation to work, it is necessary to have the backing of "public opinion: that is, a combination of an independent press that publicizes the facts and of a large set of educated investors, who read the newspapers and sanction improper behavior" (Zingales, 2000; Dyck & Zingales, 2004).

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## 5. Additional Analysis

Table 7 Lead-lag relation and both extra-legal factors together for loss firms

| Variables | COEF. | t-STAT. |
|---|---|---|
| Intercept | 0.823 | 1.07 |
| $X_{t-1}$ | 0.039 | 0.05 |
| $X_t$ | -0.206 | -0.23 |
| $X3_t$ | -0.755** | -2.83 |
| $R3_t$ | -0.100 | -1.42 |
| Competition | -0.268 | -1.53 |
| Competition* $X_{t-1}$ | -0.019 | -0.15 |
| Competition* $X_t$ | 0.073 | 0.48 |
| Competition* $X3_t$ | 0.108* | 2.39 |
| Competition* $R3_t$ | 0.011 | 0.88 |
| Media | 0.032 | 1.15 |
| Media* $X_{t-1}$ | -0.026 | -0.97 |
| Media* $X_t$ | -0.008 | -0.26 |
| Media* $X3_t$ | 0.033*** | 3.44 |
| Media* $R3_t$ | 0.004 | 1.14 |
| SIZE | 0.175*** | 3.80 |
| SIZE * $X_{t-1}$ | -0.480* | -2.21 |
| SIZE * $X_t$ | -0.133 | -0.53 |
| SIZE * $X3_t$ | -0.160* | -2.05 |
| SIZE * $R3_t$ | 0.037 | 1.15 |
| GROW | 0.159*** | 4.62 |
| GROW * $X_{t-1}$ | -0.603*** | -4.92 |
| GROW * $X_t$ | -0.163 | -1.04 |
| GROW * $X3_t$ | -0.100** | -2.82 |
| GROW * $R3_t$ | -0.026 | -1.25 |
| SIGNR | 0.501*** | 28.35 |
| SIGNR *$X_{t-1}$ | -0.140* | -1.92 |

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|---|---|---|
| SIGNR *$X_t$ | -0.487*** | -5.36 |
| SIGNR *$X3_t$ | -0.053+ | -1.86 |
| SIGNR *$R3_t$ | -0.016 | -1.16 |
| EQ | -0.001 | -0.25 |
| EQ * $X_{t-1}$ | -0.012+ | -2.12 |
| EQ * $X_t$ | -0.002 | -0.37 |
| EQ * $X3_t$ | -0.009*** | -4.45 |
| EQ * $R3_t$ | 0.000 | 0.66 |
| ADJ-$R^2$ | 0.4346 | |

The bold letter is our hypothesized variable. Market Competition (*Competition*) is the effectiveness of product market competition from Dyck and Zingales (2004). Public opinion pressure (*Media*) is the circulation of daily newspapers divided by population from Dyck and Zingales (2004). SIZE is a log-linear transformation of market value, log ($MV_i$)-log (Min MV) / [log (Max MV)-log (Min MV), where Max MV and Min MV are, respectively, the maximum and minimum market value of equity of a country at the end of a year. Growth (*GROW*) is defined as the percentage growth in the firm's assets from year t-1 to year t. The sign of current annual return (*SIGNR*) is the sign of the annual stock return during the fiscal year. Earnings Quality (*EQ*) is the aggregate earnings management score from Leuz et al. (2003) multiplied by -1, which, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

Table 7 presents the multiple regression results with both of the two extra-legal institutional factors in the model, showing the incremental contribution of each extra-legal institutional factor above and beyond each other. For the loss sample, both coefficients for *Competition*X3*$_t$ and *Media*X3*$_t$ are in expected signs and statistically significant. The coefficients for the interactions between *X3*$_t$ and size, growth, sign of current return, and earnings quality are still all significantly negative. Overall, the thrust of our main results does not change when we put both extra-legal institutional factors together in one regression. Our findings imply that each country-specific extra-legal institutional feature is an important determinant of the price-leading-earnings relation and adds the incremental contribution above and beyond the others.

Chu and Wu (2009) suggest that price-leading-earnings relation varies with the extent of financial disclosures, legal protections, and legal enforcement. To examine the incremental contribution of each extra-legal institutional factor above and beyond legal institutions, we run a multiple regression results with both of the two extra-legal institutional factors in the model with the legal institutions. To be consistent with Chu and Wu (2009) we

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include three legal institutions. Disclosure quality (*Disclosure*) is proxied by the ratings of disclosure standards based on the measurement of the inclusion or omission of 90 items in the annual report from La Porta et al. (1998). Legal Protection (*Protection*) combines the legal origin and anti-director rights from La Porta et al. (1998) to form a single proxy for shareholder protection, which is equal to one if a country's legal system is common law and the anti-director rights score is more than three (sample country median), equal to -1 if the legal system is code law and the rights score is less than three, and otherwise equal to 0. *Enforcement* is measured as the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. We aggregate the legal institutions by defining that *Legal* equals one if *Disclosure* is above the sample country median, *Protection* equals 1 and *Enforcement* is above the sample country median, and equals -1 if *Disclosure* is equal or less than sample country median, *Protection* is -1 and *Enforcement* is equal or less than sample country median, and equals 0 otherwise.

Table 8 Controlling for legal institutions

| Variables | COEF. | t-STAT. | Variables | COEF. | t-STAT. |
|---|---|---|---|---|---|
| Intercept | -0.358*** | -3.90 | Intercept | 0.947 | 1.21 |
| $X_{t-1}$ | -3.352*** | -5.82 | $X_{t-1}$ | 0.179 | 0.22 |
| $X_t$ | 6.650*** | 9.11 | $X_t$ | -0.636 | -0.67 |
| $X3_t$ | 0.898*** | 6.20 | $X3_t$ | -0.373 | -1.32 |
| $R3_t$ | -0.053 | -1.41 | $R3_t$ | -0.398*** | -3.78 |
| Competition | -0.025 | -1.48 | Competition | -0.287 | -1.61 |
| Competition* $X_t$ | 0.634*** | 6.08 | Competition* $X_{t-1}$ | -0.056 | -0.37 |
| Competition* $X_t$ | -1.058*** | -7.93 | Competition* $X_t$ | 0.203 | 1.15 |
| Competition* $X3_t$ | -0.184*** | -6.82 | Competition* $X3_t$ | 0.005 | 0.10 |
| Competition* $R3_t$ | 0.017* | 2.31 | Competition* $R3_t$ | 0.085*** | 3.60 |
| | | | Media | 0.031 | 1.11 |
| | | | Media* $X_{t-1}$ | -0.030 | -1.10 |
| | | | Media* $X_t$ | -0.011 | -0.35 |
| | | | Media* $X3_t$ | 0.037*** | 3.80 |
| | | | Media* $R3_t$ | -0.002 | -0.56 |

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|---|---|---|---|---|---|
| Legal | 0.005 | 0.35 | Legal | -0.028 | -0.40 |
| Legal * $X_{t-1}$ | -0.302*** | -3.51 | Legal * $X_{t-1}$ | 0.052 | 0.42 |
| Legal * $X_t$ | 0.751*** | 6.43 | Legal * $X_t$ | -0.219 | -1.51 |
| Legal * $X3_t$ | 0.051* | 2.11 | Legal * $X3_t$ | 0.139*** | 3.27 |
| Legal * $R3_t$ | -0.006 | -0.79 | Legal * $R3_t$ | -0.077*** | -3.87 |
| Controls included | | | Controls included | | |
| ADJ-$R^2$ | 0.5218 | | | 0.4366 | |

The bold letters are our hypothesized variables. Market Competition (*Competition*) is the effectiveness of product market competition from Dyck and Zingales (2004). Higher scores suggest general agreement that product market competition is effective. Public opinion pressure (*Media*) is the circulation of daily newspapers divided by population from Dyck and Zingales (2004). Legal Institution (*Legal*) aggregates the legal institutions which equals one if *Disclosure* is above median, *Protection* is 1 and Enforcement is above median, and equals -1 if Disclosure is equal or less than sample country median, *Protection* is -1 and *Enforcement* is equal or less than sample country median, and equals 0 otherwise. Disclosure Quality (*Disclosure*) are the ratings of disclosure standards based on the measurement of the inclusion or omission of 90 items in the annual report from La Porta et al. (1998). Legal Protection (*Protection*) combines the legal origin and anti-director rights created by La Porta et al. (1998) to form a single proxy for shareholder protection, which is equal to one if a country's legal system is common law and the anti-director rights score is more than three (sample country median), equal to -1 if the legal system is code law and the rights score is less than three, and otherwise equal to 0. Enforcement is measured as the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. Included controls are Size, Growth, Sing of current annual return, and Earnings quality as in Table3-7. See Table 3 for definitions of earnings and return variables. The fixed effects of calendar years and/or economies are included, where appropriate, as dummy intercepts in the regressions. For simplicity, they are not reported in the table. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

Table 8 presents the multiple regression results controlling for the legal institutional effect. For the profitable sample, both coefficients for Competition*$X3_t$ and Legal*$X3_t$ are in expected signs and statistically significant. For the loss sample, the coefficient for Competition*$X3_t$ is statistically insignificant but both coefficients for Media*$X3_t$ and Legal*$X3_t$ are in expected signs and statistically significant. Overall, the thrust of our main results does not change when we put both extra-legal institutional factors together in one regression. Our findings imply that each country-specific extra-legal institutional feature is an important determinant of the price-leading-earnings relation and adds the incremental contribution above and beyond the others.

We perform a number of sensitivity tests to ascertain the documented relations.

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### 5.1 Definition of Good and Bad Earnings News

Table 9 Sensitivity test: Good earnings news defined when $X_t > X_{t-1}$

| Variables | COEF. | t-STAT. | Variables | COEF. | t-STAT. |
|---|---|---|---|---|---|
| Intercept | -0.176 | -1.37 | Intercept | 0.679** | 2.62 |
| $X_{t-1}$ | -3.895*** | -6.08 | $X_{t-1}$ | 2.021** | 2.82 |
| $X_t$ | 6.256*** | 7.26 | $X_t$ | -0.483 | -0.80 |
| $X3_t$ | 1.084*** | 5.63 | $X3_t$ | 0.407* | 2.52 |
| $R3_t$ | -0.319*** | -5.74 | $R3_t$ | -0.100* | -2.44 |
| Competition | -0.060* | -2.54 | Competition | -0.216*** | -3.67 |
| Competition* $X_{t-1}$ | 0.720*** | 6.14 | Competition* $X_{t-1}$ | -0.456** | -3.50 |
| Competition* $X_t$ | -1.029*** | -6.46 | Competition* $X_t$ | 0.244* | 2.21 |
| Competition* $X3_t$ | -0.212*** | -5.93 | Competition* $X3_t$ | -0.135*** | -4.42 |
| Competition* $R3_t$ | 0.066*** | 6.09 | Competition* $R3_t$ | 0.030*** | 3.31 |
| | | | Media | 0.025** | 2.67 |
| | | | Media* $X_{t-1}$ | -0.009 | -0.38 |
| | | | Media* $X_t$ | -0.042* | -2.11 |
| | | | Media* $X3_t$ | 0.018** | 3.19 |
| | | | Media* $R3_t$ | -0.009*** | -4.76 |
| Legal | 0.051* | 2.22 | Legal | -0.032+ | -1.64 |
| Legal * $X_{t-1}$ | -0.302** | -3.08 | Legal * $X_{t-1}$ | 0.197+ | 1.82 |
| Legal * $X_t$ | 0.691*** | 5.03 | Legal * $X_t$ | -0.224* | -2.47 |
| Legal * $X3_t$ | 0.057+ | 1.86 | Legal * $X3_t$ | 0.201*** | 7.59 |
| Legal * $R3_t$ | -0.032** | -3.17 | Legal * $R3_t$ | -0.036*** | -3.91 |
| Controls included | | | Controls included | | |
| ADJ-$R^2$ | 0.5018 | | | 0.4635 | |

The bold letters are our hypothesized variables. Market Competition (*Competition*) is the effectiveness of product market competition from Dyck and Zingales (2004). Higher scores suggest general agreement that product market competition is effective. Public opinion pressure (*Media*) is the circulation of daily newspapers divided by population from Dyck and Zingales (2004). Legal Institution (*Legal*) aggregates the legal institutions which equals one if *Disclosure* is above median, *Protection* is 1 and *Enforcement* is above median, and equals -1 if *Disclosure* is equal or less than sample country median, *Protection* is -1 and *Enforcement* is equal or less than sample country median, and equals 0

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otherwise. Disclosure Quality (*Disclosure*) are the ratings of disclosure standards based on the measurement of the inclusion or omission of 90 items in the annual report from La Porta et al. (1998). Legal Protection (*Protection*) combines the legal origin and anti-director rights created by La Porta et al. (1998) to form a single proxy for shareholder protection, which is equal to one if a country's legal system is common law and the anti-director rights score is more than three (sample country median), equal to -1 if the legal system is code law and the rights score is less than three, and otherwise equal to 0. *Enforcement* is measured as the mean score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. Included controls are Size, Growth, Sing of current annual return, and Earnings quality as in Table3-7. See Table 3 for definitions of earnings and return variables. The fixed effects of calendar years and/or economies are included, where appropriate, as dummy intercepts in the regressions. For simplicity, they are not reported in the table. ***, **, * and + indicate statistically significance at the 0.1%, 1%, 5%, and 10% levels, respectively, two-tailed.

We re-estimate the full model regressions for 11,478 good earnings news firms (when $X_t > X_{t-1}$) and 12,311 bad earnings news firms (when $X_t < X_{t-1}$), separately. The thrust of our main results remains unchanged, as reported in Table 9.

### 5.2 Collapsing the Firm-Year Observations

Since each firm in a country has the same governance variables, the independent variables are repeated many times in each regression and standard errors can be under-estimated, rendering the t-statistics overstated. To address this concern, we collapse the firm-year observations for a given firm into one observation (based on mean values) and re-estimate the regressions. Our main findings remain unchanged, mitigating the concerns on potentially over-stated t-statistics from the pooled regressions.

### 5.3 Excluding the U.K. and Japan Sample

The U.K. and Japan represent a much larger number of observations than other countries in our sample (Table 1, Panel B). Thus, this large weight on the U.K. and Japan sample might drive the results in our tests. To address this concern, we repeat our full model regressions in Table 9 after sequentially excluding the U.K. and Japanese firms from our sample. The analysis (not tabulated) finds similar results, which suggest that our results are not driven by the U.K. or Japanese firms.

### 5.4 Capital Market Development

Capital market development might influence our findings as a less developed capital market may have characteristics, such as a weak communication infrastructure or poor

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trading environment, that reduce the market's ability to anticipate future earnings. Less developed capital markets may also have characteristics, such as fewer alternative information sources, which decrease the market's incorporation of future performance. Thus, we repeat our analysis after adding a variable that captures capital market development. We use the natural logarithm of gross national product per capita in constant dollars of 1994 from La Porta et al. (1998). The analysis (not tabulated) shows results consistent with those in Table 9. In addition, the coefficient on the capital market development is insignificant at the conventional level. Therefore, our overall results are not sensitive to capital market development.

## 6. Conclusion

The purpose of this study is to examine the impact of extra-legal institutional features on future earnings response coefficients. We appeal to the literature on corporate governance and identify salient country-specific extra-legal institutional variables that we find to be associated with the informativeness of current returns about future earnings. Specifically, we find that the informativeness of current returns about future earnings decreases in product market competition for profitable firms and increases for loss firms. We also find that the relation between current returns and future earnings is stronger in countries with strong public opinion pressure for loss firms. Furthermore, multiple regression results show that product market competition and public opinion pressure are important determinants of the price informativeness about future earnings and add the incremental contribution above and beyond the others. Our findings indicate that these extra-legal institutional factors are incrementally significant after controlling for the effects of legal institutions.

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