Corporate Governance and Conditional Skewness in the World's Stock Markets*

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Abstract

In this paper, we investigate why stock returns in emerging markets tend to be more positively skewed than those in developed markets tend to be. We argue that differences in the quality of corporate governance matter for return skewness. There are two reasons for this phenomenon. First, poorly governed economies facilitate risk sharing among affiliated firms. Second, the lack of mechanisms to govern managerial discretion in poorly governed economies or firms allows managers to have a wider scope to hide bad news. Using return data from more than 14,000 individual stocks in 38 countries around the world, we find that positive skewness is most profound in stocks from markets that have poor corporate governance. In addition, our results are robust to a variety of model specifications, different measures of return asymmetries, and alternative measures of corporate governance. Finally, analogous results are also obtained from aggregate stock market returns.

I. Introduction

It is now well known that stock returns in emerging markets are characterized by higher average returns and higher volatilities than are those in developed markets. Less known is the fact that stock returns in emerging markets are more positively skewed than are those in developed markets. In this paper, we investigate why stock returns in emerging markets tend to be more positively skewed than stock returns in developed markets tend to be.[1]

We argue that differences in the quality of corporate governance matter for stock return skewness. There are at least two reasons why the quality of corporate governance is related to return asymmetries. First, as Morck, Yeung, and Yu (2000) argue, economies that protect public investors' property rights poorly facilitate intercorporate income shifting by controlling insiders. This practice of income shifting in economies that do not protect investors' property rights, in turn, facilitates risk sharing among affiliated firms or business segments by smoothing the performance of affiliated firms or business segments.

Risk sharing appears to be an important motivation for business groups that are ubiquitous in most emerging markets. Friedman, Johnson, and Mitton (2003) argue that entrepreneurs in emerging markets often use resources from other businesses that they control to bail out a troubled company. Chang and Hong (2000) show that business groups in Korea use extensive cross-subsidization such as debt guarantees, equity investments, and internal transactions to support poorly performing firms at the expense of well-performing firms. Mitton (2002) finds evidence of "propping" in diversified firms in Indonesia, the Philippines, Korea, Malaysia, and Thailand during the Asian financial crisis of 1997-98. By studying the takeover market in Korea, Bae, Kang, and Kim (2002) show that financially distressed targets that belong to business

[1] In Section III, we discuss in detail the evidence that stock returns in emerging markets are more positively skewed than are those in developed markets.

groups are likely to be merged with more successful member firms, even when such transactions do not maximize the value of the bidding firms.

Bailing out a distressed firm can create a credible commitment by a business group to prop up the performance of its member firms. This will allow the stock returns of firms belonging to the business groups to be more positively skewed since a negative shock would not be fully reflected in the stock returns of these firms due to the implicit guarantee of a bailout. Put differently, investors may perceive a put option in the form of a potential bailout for firms belonging to the business groups. In contrast, an equally negative shock would be fully reflected in the stock returns of independent firms that do not have such a guarantee.

Second, stock markets in economies characterized by poor corporate governance tend to have poor information disclosure.[2] In the U.S., corporate managers are subject to many governance mechanisms that force them to act in the best interests of shareholders. These corporate governance mechanisms are nonexistent or are not practiced in many of the emerging markets. The lack of mechanisms to govern managerial discretion would allow firm managers in these markets to have more discretionary power over the disclosure of information. Managers would have a wider scope for hiding bad news or releasing bad news slowly.

These two factors — risk sharing and discretionary disclosure by managers — lead to positive skewness in stock markets. As a result, *stock returns in economies characterized by poor corporate governance are likely to be more positively skewed. Furthermore, stock returns of firms with poor governance within a country are also likely to be more positively skewed.*

We find several empirical results that are consistent with our hypothesis. Using firm-level return data from more than 14,000 stocks in 38 countries from 1995 to 2003 and the corporate

[2] An analysis of recent surveys by Credit Lyonnais Securities Asia (2001, 2002) and Standard and Poor's (2002) confirms that disclosure and corporate governance are significantly positively correlated.

governance index constructed by La Porta et al. (1998), we show that positive return skewness is more pronounced in stocks from markets that have lower scores on the good corporate governance index. This evidence is consistent with the risk-sharing hypothesis and/or the discretionary-disclosure hypothesis and underscores the importance of corporate governance in forecasting cross-sectional differences in return asymmetries across countries. We also find that negative skewness is most pronounced in stocks that have experienced more positive returns in the prior 12 months, which is consistent with Blanchard and Watson's (1982) stochastic-bubble theory.

The significance of the corporate governance variable in forecasting stock return skewness is robust to a variety of regression specifications. The results are robust regardless of whether returns are measured in local currencies or in U.S. dollars, whether or not GDP per capita is included in the multivariate regressions, or how return asymmetries are measured. The results are also robust to the use of various indexes of corporate governance from different sources. Analogous results are also obtained when aggregate market returns are used to forecast skewness across countries. Furthermore, negative skewness of aggregate market returns is most pronounced in stock markets that have experienced greater trading volume in the prior 12 months, which is consistent with the differences-of-opinion model of Hong and Stein (2003).

There is now a large literature that highlights the importance of corporate governance on the various aspects of financial markets.[3] La Porta et al. (1997, 1998, 2000, 2002) argue that the legal protection of investors is a particularly important manifestation of effective corporate governance. We contribute to this growing literature by showing that the quality of corporate governance also affects the distributional characteristics of stock returns and by explaining why

[3] Please see Section II.B for detailed discussions.

stock returns in emerging markets tend to be more positively skewed than those in developed markets tends to be.

The remainder of the paper is organized as follows. In Section II, we review the related literature and develop our main hypothesis. In Section III, we describe the data and present the evidence that stock returns are more positively skewed in emerging markets than they are in developed markets. In Section IV, we report our main empirical results from firm-level return data. We also perform a number of robustness checks. In Section V, we use return data from aggregate stock markets for additional robustness checks. Finally, we conclude our paper in Section VI.

II. Related Literature and Hypothesis Development

To motivate our empirical specifications, we review the literature on return asymmetries and suggest a rationale for the linkage between corporate governance and return asymmetries.

A. Related literature on asymmetries in stock returns

Stock return distribution assumptions have been very important in deriving portfolio theory, capital asset pricing models, and option pricing models. The assumption of a mean-variance return distribution, including normal and lognormal distributions, is most commonly adopted in these models. However, it is well documented that stock returns are asymmetrically distributed. Specifically, negative skewness in daily returns has been found in several aggregate stock market indexes, including U.S. market indexes. Previous studies have focused on how skewness affects asset pricing models,[4] while recent research has examined how skewness affects option pricing.[5]

[4] To understand how skewness affects asset pricing models, please see Kraus and Litzenberger (1976), Friend and Westerfield (1980), Sears and Wei (1985), and Harvey and Siddique (2000), among others.

A number of theories have attempted to offer possible explanations for negative asymmetries in aggregate stock market returns and the cross-sectional variation of conditional skewness in individual stocks.[6] The earliest theory to explain negative asymmetries in stock market returns is based on leverage effects as proposed by Black (1976) and Christie (1982). The leverage-effects hypothesis suggests that when a stock price drops, the financial and operating leverage of the firm increases, which increases the subsequent stock return volatility. On the other hand, when a stock price rises, the financial and operating leverage of the firm declines, decreasing subsequent stock return volatility. This asymmetric volatility reaction to the rise and fall of stock prices causes stock returns to be negatively skewed. However, Schwert (1989) and Bekaert and Wu (2000) document that leverage effects are not sufficient enough to explain the magnitude of the observed negative asymmetries in aggregate stock market returns.

A second explanation for the negative skewness in stock market returns is based on the stochastic-bubble model developed by Blanchard and Watson (1982). The stochastic-bubble hypothesis suggests that negative asymmetries in stock market returns are generated from popping the bubble, which produces very large negative returns, although the probability for this is very low.

A third theory to explain negative asymmetries in stock market returns comes from the volatility-feedback hypothesis suggested by Pindyck (1984), French et al. (1987), Campbell and Hentschel (1992), and others. The theory of volatility feedback argues that the arrival of either good news or bad news signals an increase in market volatility, which in turn increases the risk premium. This increase in the risk premium offsets part of the positive effect of the good news

[5] To understand how skewness affects option pricing, please refer to Das and Sundaram (1999) and Chen et al. (2001).

[6] Notice that the previous literature on return asymmetries attempts to explain negative skewness in the aggregate stock market returns in developed markets, whereas our study attempts to explain why stock returns at the firm-level and at the aggregate market-level are more skewed in emerging markets than they are in developed markets.

(cashflow increase), but it amplifies the negative effect of the bad news (cashflow decrease). As a result, stock prices drop more when there is bad news in the market than when there is good news, which leads to negatively skewed stock returns. Although the theory of volatility feedback is attractive, Poterba and Summers (1986) counter-argue that most market volatility shocks are very short-lived and, hence, changes in market volatility cannot be expected to have an important impact on the risk premium. As a result, volatility feedback cannot account for large proportions of the negative asymmetries in stock market returns.

A recent model developed by Hong and Stein (2003) suggests that investor heterogeneity is the major reason for negative return asymmetries. Using data from the U.S., Chen et al. (2001) have comprehensively examined the cross-sectional determination of conditional skewness in the daily returns of individual stocks and in the time series of the aggregate market daily returns. They find that *negative* skewness is most profound in stocks that have experienced an increase in trading volume relative to the trend over the previous six months and have had higher returns over the previous 36-month period. The first finding appears to support the differences-of-opinion model of Hong and Stein (2003) and the second finding appears to support Blanchard and Watson's (1982) stochastic-bubble theory.

The last and most notable hypothesis, for our purposes at least, is the discretionary-disclosure hypothesis. This hypothesis argues that managers have some degree of discretion over the disclosure of information and that they prefer to announce good news immediately but allow bad news to dribble out slowly. This managerial behavior will then impart a degree of positive skewness in stock returns. Furthermore, this managerial discretion tends to be more pronounced in small-capitalization firms or in firms followed by fewer analysts, since managers of these firms have a wider scope for hiding bad news from the market. In fact, Harvey and Siddique

(2000) and Chen et al. (2001) find that skewness is more positive on average for small-capitalization firms. Moreover, Chen et al. (2001) find that skewness is more positive for firms followed by fewer analysts. Using U.S. data from 1979 to 1983, Damodaran (1987) also finds that firms followed by fewer analysts have higher positively skewed returns.

B. Corporate governance and return asymmetries in stock returns

As discussed at the outset, there are now numerous studies that show the impact of investor protection (or the quality of corporate governance in general) on the various aspects of financial markets. For example, La Porta et al. (1997, 1998) show that stock markets in better corporate governance economies have larger and deeper capital markets, while La Porta et al. (2002) and Claessens et al. (2002) find that stock markets in stronger corporate governance economies have higher firm valuations. In addition, stronger investor protection is also shown to be associated with a higher number of listed firms (La Porta et al., 1997) and greater use of external financing (La Porta et al., 1998). Rajan and Zingales (1998) and Demirgüç-Kunt and Maksimovic (1998) find that stock markets in economies with good corporate governance have larger investments from external funds than do those in economies with poor corporate governance. Johnson et al. (2003) and Mitton (2002) report that strong corporate governance economies can sustain market declines better than poor corporate governance economies can during a financial crisis. Hung (2001), Ball et al. (2003), Fan and Wong (2002), and Leuz et al. (2003) document that good corporate governance economies provide higher quality of accounting information than do poor corporate governance economies.[7] Morck et al. (2000) show that stock prices move together more in poor economies than they do in rich economies and attribute this stock return

[7] From their investigation of the Hong Kong equity market, Brockman and Chung (2003) find that poor investor protection is associated with higher liquidity costs.

synchronicity to the poor property rights protection of public investors, which impedes informed arbitrage to capitalize on firm-specific information. That is, stock markets in good corporate governance economies are more useful as processors of economic information than are stock markets in poor corporate governance economies. However, to the best of our knowledge, no previous study has analyzed the distributional characteristics of stock returns in poor corporate governance economies.[8]

There are at least two reasons why the quality of corporate governance matters to return asymmetries — risk sharing and discretionary disclosure by managers. First, as Morck et al. (2000) argue, economies that protect public investors' property rights do not facilitate intercorporate income shifting by controlling insiders among affiliated firms of business groups or business segments. In contrast, business groups in economies where investors' rights are poorly protected facilitate risk sharing or coinsurance by smoothing income flows and by reallocating resources among affiliated firms.[9] They use extensive cross-subsidization such as debt guarantees, equity investments, and internal transactions to support poorly performing firms at the expense of well-performing firms. This risk-sharing/coinsurance hypothesis suggests that, due to coinsurance or cross-subsidies among group-affiliated firms, earnings or returns of group-affiliated firms are less left skewed than they are for independent firms. Since business groups are a more prevalent organizational form in emerging markets, positive skewness is more pronounced in emerging markets.

Second, stock markets in economies characterized by poor corporate governance tend to have poor information disclosure. This is because the lack of mechanisms to govern managerial

[8] Although Bris et al. (2003) examine the impact of a good government index on return skewness, their focus is on whether short-sale restrictions affect the stock returns, not specifically on whether the quality of governance matters to return skewness.

[9] Please see Khanna and Yafeh (2004) and the references therein.

discretion in these economies allows firm managers to be more opportunistic in disclosing information. Managers in poor corporate governance economies have a wider scope to hide bad news or to release bad news more slowly than have managers in good corporate governance economies. That is, the gradual diffusion of bad information is more of a problem in stock markets with poor corporate governance and bad news is not released instantaneously and fully in these markets.

In the following sections, we document the evidence that stock returns in emerging markets are more positively skewed than are those in developed markets. We then test the predictions of the two hypotheses, the discretionary hypothesis and the risk-sharing hypothesis, using firm-level data from 38 countries around the world.

III. Data and the Construction of Variables

A. Data

We first start with the list of 50 countries covered by Datastream International for which common stock return data are available. Out of these 50 countries, data on the corporate governance index as constructed by La Porta et al. (1998) are available for 40 countries. We drop Egypt and Sri Lanka since these countries have too few firms, leaving us a final sample of 38 countries. For each firm in each of these 38 countries, we collect daily stock returns, trading volume, and market capitalization information during the period from 1995 to 2003.[10] To obtain more reliable estimates for return asymmetries in any calendar year, we require that a firm-year should have at least 200 days of daily returns during any particular year. This sample selection process results in a final sample of 14,136 individual firms from 38 countries.

[10] This is a period that is characterized by financial markets around the world being very volatile. During this period, the Asian financial crisis started in July 1997, the Russian debt crisis occurred in July 1998, the Internet bubble grew prior to the change in the millennium and it burst in mid-2000.

Table 1 presents some distributional characteristics of the daily local-currency, firm-level stock returns of our sample countries. In each year and for each firm in each country, we compute sample statistics (mean, standard deviation, the 1st quartile, and the 3rd quartile) and report the average of a sample statistic for each country. We also partition the sample countries into two groups, emerging markets and developed markets, by a cutoff point of average GDP per capita of US$15,000. The average (median) GDP per capita in emerging markets is US$5,370 (US$3,777), while it is US$25,693 (US$24,231) in developed markets — five (six) times as large as the figure in emerging markets. The average daily returns, expressed in basis points, are higher in emerging markets. Not surprisingly, the average standard deviations are also higher in emerging markets. The average daily standard deviation in emerging markets is 3.28 percent, which translates into an annual volatility of 52.28 percent. The corresponding annual volatility in developed markets is 46.06 percent.[11] The sixth and seventh columns of Table 1 show the 1st quartile and 3rd quartile returns, respectively. The average ranges of these quartiles are larger in emerging markets than in developed markets, confirming that there are higher volatilities in emerging markets.

B. Measures of return asymmetries

The first measure of return asymmetry is the conditional coefficient of skewness, which we call *SKEW*. *SKEW* is computed by taking the sample's third moment of daily returns and dividing it by the sample variance of daily returns raised to the power of 3/2. Specifically, *SKEW* for stock index *i* over the sample period is calculated as follows:[12]

[11] The reason for high volatility in our sample is due to the fact that the financial markets were very volatile during our sample period.

[12] Basically, we follow the measure of skewness used by Chen et al. (2001).

$$SKEW_i = \frac{(n(n-1))^{3/2}\sum_{\tau=1}^{n} R_{i\tau}^3}{(n-1)(n-2)\left(\sum_{\tau=1}^{n} R_{i\tau}^2\right)^{3/2}}, \quad (1)$$

where $R_{i\tau}$ represents the demeaned daily return for stock i on day τ and n is the number of observations on daily returns during the sample period. Daily returns are computed as $ln[(P_{i\tau} + D_{i\tau})/P_{i\tau-1}]$, where $P_{i\tau}$ is the stock price at the close of day τ and $D_{i\tau}$ is the dividend. Scaling the raw third moment by the cubed standard deviation allows us to compare stocks with different volatilities. A larger value in *SKEW* is associated with a stock that has a more right-skewed return distribution.

In addition to *SKEW*, we compute an alternative measure of skewness that does not involve the third moment and hence is less likely to be particularly influenced by a small number of extreme returns. This alternative measure of skewness is denoted as *VOLRATIO*, for the "up-to-down volatility ratio." *VOLRATIO* for stock *i* over the sample period is calculated as follows:

$$VOLRATIO_i = \ln\left\{\frac{(n_d - 1)\sum_{\tau \in UP} R_{i\tau}^2}{(n_u - 1)\sum_{\tau \in DOWN} R_{i\tau}^2}\right\}, \quad (2)$$

where n_u and n_d are the number of up and down days, respectively. An up (a down) day is a day on which the stock return is above (below) the sample mean during the sample period. That is, we separate the daily return observations during the sample period into two sub-samples: those returns above the sample mean and those returns below the sample mean. We then calculate the sample variance separately for each sub-sample and take the logarithm of the ratio of the sample variance from the up days to the sample variance from the down days. A larger value in *VOLRATIO* is associated with a stock that has a more right-skewed return distribution.

Another way to look at the phenomenon of positive return asymmetry is to examine the frequency of extreme returns. Our final measure of return asymmetries is *EXTRATIO*, an "extreme-return ratio." *EXTRATIO* for stock *i* over the sample period is calculated as follows:

$$EXTRATIO_i = \ln\left\{\frac{n_{positive}}{n_{negative}}\right\}, \tag{3}$$

where $n_{positive}$ is the number of positive extreme return days and $n_{negative}$ is the number of negative extreme return days. A demeaned daily return, $R_{i\tau}$, is treated as a positive (negative) extreme return if $R_{i\tau} > +2*\sigma_i$ ($R_{i\tau} < -2*\sigma_i$), where σ_i denotes the standard deviation of stock *i*. If the stock returns follow a normal distribution, *EXTRATIO* would be 0. A larger value in *EXTRATIO* is associated with a stock that has a more right-skewed return distribution.

We use non-overlapping one-year observations, from January 1 to December 31, to compute our measures of return asymmetries. The choice of a one-year horizon to measure skewness is to make our skewness measure correspond to the availability of GDP per capita. In each year and for each firm in each country, we compute each measure of return asymmetries and report the average values for each country.

We present our measures of return asymmetries in the last three columns of Table 1. The eighth column in Table 1 presents the skewness (*SKEW*). The average (median) skewness of daily returns in emerging markets is 0.26 (0.25), while it is 0.14 (0.11) in developed markets. The magnitude of average skewness in emerging markets is almost twice as large as that in developed markets. While average individual stock return skewness in both emerging and developed markets is positive, stocks in emerging markets show much more right-skewed return

distributions than do those in developed markets.[13] The results from other two measures of return asymmetries show the same patterns, although the differences in the measures of return asymmetries between emerging markets and developed markets are less significant. More specifically, the average (median) *VOLRATIO* of daily returns is 0.15 (0.14) in emerging markets, whereas it is 0.12 (0.15) in developed markets. The average (median) *EXTRATIO* of daily returns is 0.30 (0.32) in merging markets, while it is 0.27 (0.25) in developed markets.

C. Measures of corporate governance

To test our hypothesis, we need to have a measure for corporate governance. In this paper, we follow La Porta et al. (1998) in using the degree of shareholder rights as a proxy for corporate governance, which we denote as CG_{it}. La Porta et al. (1998) construct the shareholder rights index (anti-director rights) as the sum of the six rights measuring how strongly the legal system favors minority shareholders against controlling shareholders in the corporate decision-making process with the index ranging from 0 to 6.[14] A higher score on this index indicates greater respect for investor protection. CG_{it} is the same for all firms from the same country in all sample years.

To check the robustness of the measure of corporate governance, we also examine five alternative measures of corporate governance: (1) accounting standards, (2) earnings management, (3) corporate boards, (4) insider trading, and (5) stock return synchronicity. The accounting standards index is also taken from La Porta et al. (1998). A high score of accounting standards suggests higher accounting quality. Earnings management is the aggregate earnings

[13] Most theories discussed in Section II are developed to explain the negative skewness found in the U.S. aggregate stock market returns. However, empirical evidence indicates that individual stock returns in the U.S. are positively skewed. For example, see Chen et al. (2001) for the evidence and explanations therein.
[14] No country receives the highest score of 6.

management score reported by Leuz, Nanda, and Wysocki (2003). A higher earnings management score indicates a higher probability of earnings management. The corporate board index is a score compiled by the Institute for Management Development (IMD). The higher the corporate board index score, the more effective the board. The insider trading index is a score also compiled by the IMD. The higher the insider trading index, the less likely there is insider trading. Stock return synchronicity is measured by the regression R^2 taken from Morck et al. (2000). R^2 is the explanatory power from the market model and is a proxy for informational inefficiency. A higher R^2 is associated with a market being less informationally efficient.[15]

Panel A of Table 2 reports the scores for the six different measures of corporate governance for each country and Panel B of Table 2 reports the correlations among these corporate governance measures. The result from Panel A of Table 2 suggests that developed markets have better corporate governance than do emerging markets in all measures of corporate governance, except for anti-director rights. Panel B of Table 2 shows that correlations among these six measures of corporate governance have all the correct signs, although some of them are not statistically significant. The anti-director rights index is significantly negatively associated with the earnings management index. The accounting standards index is significantly positively correlated with the corporate board index, while it is significantly negatively correlated with the earnings management index. The earnings management index is significantly negatively correlated with both the corporate board index and the stock return synchronicity measured by Morck et al.'s (2000) R^2. The corporate board index is significantly positively associated with the insider trading index, whereas it is significantly negatively correlated with stock return

[15] Durnev, Morck, and Young (2004) argue that corporate governance mechanisms depend on stock prices. Where stock prices are more informative, these mechanisms induce better corporate governance – which induces more efficient capital investment decisions. Their empirical evidence supports the hypothesis that more informative stock prices measured by R^2 are associated with more efficient capital investment decisions.

synchronicity. Finally, the insider trading index is significantly correlated with stock return synchronicity.

D. Controlling variables

We construct the following controlling variables for our empirical analysis. $TURNOVER_{it}$ is the average annualized daily turnover for stock *i* in the sample year *t* assuming 254 trading days per year. $CUMRET_{it}$ is the cumulative return on stock *i* measured over the same one-year period *t*. $LNSIZE_{it}$ is the average of the logarithm of market capitalization for stock *i* over the sample year *t*. Market capitalization is expressed in terms of U.S. dollars. $LEVER_{i,t}$ is the leverage ratio measured as the book value of debt over total assets for stock *i* in the sample year *t*. $MTB_{i,t}$ is the market-to-book equity for stock *i* in the sample year *t*. Since we are dealing with international markets, we also include $SIGMACU_{it}$ in our regressions, which is the standard deviation of daily currency returns in the country that stock *i* belongs to over the sample year *t*. $SIGMACUR_{it}$ controls for the possible impact of currency fluctuations on skewness in stock market returns. Exchange rates are expressed in terms of local currencies per U.S. dollar. That is, a positive return on a currency suggests an appreciation in the currency and vice versa. $LNGDP_{it}$ is the logarithm of GDP in U.S. dollars for the country that stock *i* belongs to in the sample year *t*.

Panel A of Table 3 reports the summary statistics of our key variables. Each variable in this table is first computed for each year for each firm in each country and then the statistics are derived from these time series and cross-sectional observations. Our key variable, the corporate governance index, has a mean value of 3.20 out of a full score of 6, ranging from 1 to 5. The average *SKEW* is 0.20, suggesting that our sample firms are, on average, positively skewed.[16]

[16] Chen et al. (2001) also report a positive mean *SKEW* of 0.262 for individual firms in the U.S. during the sample period from July 1962 to December 1998.

The average annual turnover ratio is 1.62 times, while the average cumulative past one-year return is -6.30 percent. The average leverage ratio (*LEVER*) is 0.25, whereas the average market-to-book equity ratio (*MTB*) is 2.66. Finally, the average daily currency volatility is 1.26 percent, which translates into an annual volatility of 20.08 percent.

Panel B of Table 3 reports the correlation coefficients among our key variables. *SKEW* is significantly negatively correlated with lagged GDP (*LNGDP*), lagged firm-level market capitalization (*LNSIZE*), and the good country-level corporate governance index (*CG*), indicating support for the discretionary-disclosure hypothesis. The discretionary-disclosure hypothesis suggests that stock returns should be more positively skewed for firms with less market scrutiny or monitoring (i.e., small market capitalization or poor corporate governance). *SKEW* is significantly negatively correlated with lagged firm-level cumulative returns (*CUMRET*), which supports the stochastic-bubble model. We also observe that *SKEW* is positively correlated with lagged turnover (*TURNOVER*) but it is not significant. *SKEW* is significantly positively correlated with lagged financial leverage (*LEVER*), while it is significantly positively correlated with *MTB*, which appears to be inconsistent with the leverage-effects hypothesis. *CG* is highly correlated with *LNGDP*. Since GDP per capita is a broad indicator of the differences in wealth in each country, the data suggest that richer countries have better governance quality. It is therefore important to control for GDP per capita in our regression analysis.

While not reported, the three measures of return asymmetries, *SKEW*, *VOLRATIO*, and *EXTRATIO*, are all highly correlated with each other, although they use different approaches to measure return asymmetries. *SKEW* has a correlation coefficient of 0.78 with *VOLRATIO*, while *VOLRATIO* has a correlation coefficient of 0.58 with *EXTRATIO*. *SKEW* has the relatively smaller correlation coefficient of 0.41 with *EXTRATIO*.

In the next section, we discuss our regression model in forecasting return asymmetries in general and develop an argument for the rationale for why return asymmetry is more positively pronounced in emerging markets.

IV. Empirical Results from Firm-Level Data

A. Results from pooled predictive regressions

We employ the following regression model to predict skewness in the daily returns of individual stocks, using pooled data across time and firms:

$$\begin{aligned} SKEW_{i,t+1} = a_0 &+ a_1 SKEW_{it} + a_2 SIGMACUR_{it} + a_3 TURNOVER_{it} \\ &+ a_4 CUMRET_{it} + a_5 LNSIZE_{it} + a_6 LEVER_{it} + a_7 MTB_{it} \\ &+ a_8 LNGDP_{it} + a_9 CG_{it} \\ &+ \sum_{j=1}^{21} b_j Industry_{it}^{j} + \\ &+ \sum_{k=1}^{8} c_k Year_{kt} + e_{i,t+1}, \end{aligned} \tag{4}$$

where all variables are defined in Section III. The currency volatility variable, *SIGMACUR*, is included, since *SKEW* may be influenced by the fluctuation of exchange rates due to changes in a country's fundamentals. The prediction of the signs for the key regression coefficients is as follows. According to the differences-of-opinion model of Hong and Stein (1999), we expect that the regression coefficient on *TURNOVER*, a_3, is negative. Based on the stochastic-bubble theory of Blanchard and Watson (1982), we expect that the regression coefficient on *CUMRET*, a_4, is negative. Based on the leverage-effects hypothesis, we expect the regression coefficients on *LEVER*, a_6, to be negative, while we expect them to be positive for the coefficient on *MTB*, a_7.[17] The leverage-effects hypothesis suggests that the leverage effect induces negative skewness. Based on the discretionary-disclosure hypothesis or the risk-sharing hypothesis, we predict that

[17] Empirical evidence shows that the market-to-book equity ratio is negatively associated with leverage.

the regression coefficient on *CG*, a_9, is negative. Since a firm's market capitalization and a country's GDP per capita may be proxies for corporate governance at the firm level and at the country level, respectively, we expected a_6 and a_7 to be negative. We also include industry dummies to control for the industry effect and year dummies to control for the year effect. We use the SIC codes provided by Datastream International to classify firms into 22 industries. To control for serial-correlation and heteroskedasticity, the heteroskedasticity-consistent estimates of standard errors are used to compute *t*-statistics.

Table 4 presents our multivariate regression results using local-currency returns. Model (1) is our baseline specification. Model (1) includes the following explanatory variables: intercept, lagged variables of *SKEW*, currency return volatility (*SIGMACUR*), turnover (*TURNOVER*), cumulative return (*CUMRET*), firm size (*LNSIZE*), leverage (*LEVER*), and market-to-book equity (*MTB*). The result from Model (1) indicates that stocks that have larger market capitalization (*LNSIZE*) have lower positive skewness (*SKEW*). This result mirrors the findings of Chen et al. (2001) and Harvey and Siddique (2000). They find that skewness is more negative on average among large-cap firms in the U.S. We also find that *negative* skewness is most significant in stocks around the world that have experienced higher returns in the previous 12-month period. This is consistent with the finding by Chen et al. (2001) in the U.S. market and it appears to support Blanchard and Watson's (1982) stochastic-bubble theory. Finally, positive skewness is significantly positively associated with leverage (*LEVER*) and negatively associated with market-to-book equity (*MTB*), which is inconsistent with the leverage-effects hypothesis. In Model (2), we add *LNGDP* to our baseline model. We find that *LNGDP* is significantly negative, while our baseline results remain unchanged.

In Model (3), we add corporate governance (*CG*) to our baseline regression model. The coefficient of interest in this case is a_9, which is also the focus of this paper. We find that a_9 is highly significant and negative with a t-statistic of -9.04, suggesting that positive skewness is most pronounced for firms in the countries that have poor corporate governance. In Model (4), we add both *LNGDP* and *CG* to our baseline model. We document that *LNGDP* and *CG* are both highly significantly and negatively correlated with skewness. Since *LNGDP* is significantly correlated with *CG*, the result in Model (4) suggests that the negative relation between corporate governance and skewness is robust to whether or not GDP per capita is included in the regression.

Looking at other controlling variables, we find that the regression coefficient on lagged *SKEW* is always positive and significant, suggesting the persistence of *SKEW*. The coefficient on currency return volatility (*SIGMASUR*) is positive and significant. This result suggests that high currency volatility in the previous year leads to more positive skewness. This result is perhaps due to the Asian currency crisis and the Russian debt crisis. Many Asian stock markets recovered from the currency shock quickly. Turnover is not significantly correlated with *SKEW*.

B. Regression results using alternative measures of corporate governance

Up to this point we have shown that positive skewness is significantly higher in countries that rank poorly in terms of corporate governance measured by anti-director rights. However, it is still possible that the cross-country relation between skewness and corporate governance measured by anti-director rights could be due to chance. To examine the robustness of our results and in particular the measures of corporate governance, we use five alternative measures of corporate governance that represent different attributes of corporate governance to re-estimate

our full model specification of Equation (4). The results are reported in Table 5. Corporate governance is measured by accounting standards in Model (1), by earnings management in Model (2), by corporate boards in Model (3), by insider trading in Model (4), and by stock return synchronicity in Model (5). The results in Table 5 suggest that our main results that stock return skewness is negatively related to a good corporate governance index remain unchanged. That is, stock return skewness is most pronounced in firms from markets that have poor corporate governance regardless of the measures of corporate governance used. Although the significance levels for most other explanatory variables do not change much, some are reduced substantially when different measures of corporate governance are used. Previous one-year returns, firm size, and market-to-book equity are still highly significantly and negatively associated with skewness regardless of alternative measures of corporate governance. However, leverage becomes insignificant in all cases except when corporate governance is measured by earnings management (which is significant at the 10% level), while GDP per capita is only significantly negative when corporate governance is measured by accounting standards and corporate boards.

C. Results from alternative measures of return asymmetry and alternative model specifications

To check the sensitivity of our results to the choice of currency, we replicate the regression results in Table 4 based on U.S. dollar returns. The results from Model (1) in Table 6 show that our full model results from Table 4 do not change. More specifically, the regression coefficient on the corporate governance index is highly significant and negative with a t-statistic of -7.92. This suggests that stocks in markets with poor corporate governance have greater positive skewness than do stocks in markets with good corporate governance, regardless of the choice of currency in measuring the returns. The results of other regression coefficients remain the same.

To check the sensitivity of our results to the choice of the measures of skewness, we report results from alternative measures of return asymmetries. Models (2) and (3) use *VOLRATIO* and *EXTRATIO* as dependent variables, respectively. Consistent with the previous results using *SKEW*, the estimated coefficients on the corporate governance index (*CG*) in both models are negative and statistically significant, although the significance levels are reduced. Estimates of other variables are also similar to those using *SKEW*, indicating that our results are robust to the measures of return asymmetries.

Although our evidence of a negative relation between stock return skewness and corporate governance implies risk sharing and discretionary disclosure by managers, it is not a direct test. To test our hypothesis of risk sharing and/or discretionary disclosure directly, we need a measure for risk sharing or discretionary disclosure by managers. Since there is no direct measure for either risk sharing or discretionary disclosure by managers, we use concentrated ownership as a proxy for discretionary disclosure by managers. If a firm's ownership is more concentrated, it is more likely that managers have more discretionary power to disclose information, which induces more positive skewness. To test this prediction, in Model (4), we include concentrated ownership (*OWN*) in our *SKEW* regression. Concentrated ownership data are collected from Worldscope. Since not every firm in our sample has ownership data, the firm-years in Model (4) reduce by one third. The result in Model (4) shows that concentrated ownership is significantly and positively correlated with *SKEW*, which supports our prediction. That is, firms with higher concentrated ownership have significantly higher positive skewness. In addition, the variable of our interest, *CG*, is still significantly and negatively correlated with *SKEW*, even when *OWN* is included in the regression and the sample size is reduced substantially.

In their recent paper, Bris et al. (2003) investigate the impact of short-sales restrictions on

stock return distributions. One might argue that in markets where short selling is either prohibited or not practiced, returns should display more positive skewness, while the frequency of extremely negative returns should be lower. Since our results could be driven by the short-sales restrictions that are more popular in emerging markets, we add a short-sales dummy variable that takes the value of one if a country allows and practices short selling and zero otherwise. The results from Model (5) show that even when we include the short-sales dummy, the corporate governance index variable is still highly significant and negative, while the short-sales dummy is not significant.[18]

Overall, based on the evidence presented in Tables 4 to 6, we conclude that stocks in the markets with poor corporate governance are associated with greater positive skewness. Our results are robust to alternative measures of corporate governance, to a variety of regression specifications, and to alternative measures of return asymmetries. The evidence provides support for the discretionary-disclosure or risk-sharing hypothesis and underscores the importance of corporate governance in forecasting cross-sectional differences in return asymmetries across countries.

V. Regression Results using Aggregate Market Index Returns

We now turn to forecasting the cross-sectional skewness in the returns to the aggregate stock markets for additional robustness checks. Table 7 reports the regression results from six different measures of corporate governance. Our results from aggregate stock market returns are consistent with those using firm-level return data. More specifically, negative skewness is more profound in stock markets that have better corporate governance. However, the significance level

[18] Our evidence on the cross-country analysis using market returns is consistent with Bris et al (2003). They find little evidence that short-sales constraints reduce the negative skewness of market-level returns.

is reduced. In particular, when corporate governance is measured by corporate boards or insider trading, the coefficient on corporate governance is no longer statistically significant. Consistent with firm-level evidence, the coefficient on the prior 12-month returns is significantly negative in all six measures of corporate governance, which fits Blanchard and Watson's (1982) stochastic-bubble theory. We also find that the coefficient on *LNGDP* is significantly negative, consistent with the firm-level result. Surprisingly, unlike the evidence from firm-level data, the coefficient on the prior 12-month trading volume turns out to be significantly negative, which is consistent with the differences-of-opinion model of Hong and Stein (1999).

VI. Summary and Conclusion

In this paper, we use stock return data from across the world to examine a number of theories about forecasting the cross-sectional variation of return asymmetries. Using data from more than 14,000 firms in 38 stock markets around the world and the corporate governance index from La Porta et al. (1998), we find that returns are more positively skewed for stocks in markets that have lower scores on the good corporate governance index. Using aggregate market data, we also find that stock markets with poorer quality of corporate governance are more positively skewed. In addition, firms with more concentrated ownership also have greater positive skewness. Our results are robust to different measures of return asymmetries, to alternative measures of corporate governance, and to different model specifications.

Our findings are consistent with the discretionary-disclosure hypothesis. We argue that in poorer governance economies or in more concentrated ownership firms, managers have more discretionary power to disclose good news immediately, while releasing bad news slowly. This managerial behavior will consequently impart a degree of positive skewness to stock returns. Our

results are also consistent with the risk-sharing hypothesis that economies that protect public investor's property rights poorly encourage intercorporate income shifting by controlling insiders, which facilitates risk sharing among affiliated firms. Overall, our results suggest that stock markets in more advanced or well-governed economies are more useful as processors of economic information than are stock markets in developing or poorly governed economies.

We also find that our results are consistent with some of theoretical models in the literature. We find that *negative* skewness is stronger in firms or in markets with more positive returns in the prior 12-month period, which is consistent with Blanchard and Watson's (1982) stochastic-bubble theory. At the aggregate market level, our evidence also indicates that negative skewness is more pronounced in markets that have experienced higher trading volume in the previous 12 months, which fits the differences-of-opinion model of Hong and Stein (2003).

Our study extends the study of Chen, Hong, and Stein (2001) to the global markets around the world. While Chen, Hong, and Stein (2001) document the importance of differences-of-opinion in forecasting return skewness in a cross-section of U.S. firms, we document the importance of country-level corporate governance in forecasting cross-sectional differences in stock return asymmetries around the word.

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Table 1

Distributional characteristics of daily stock returns of sample firms for 38 stock markets

This table presents distributional characteristics of the daily local-currency returns for 14,136 individual stocks from 38 sample countries during the period 1995-2003. In each year and for each firm in each country, we compute sample statistics (mean, standard deviation, 1st quartile, 3rd quartile, skewness, volatility ratio, and extreme return ratio) and report the average of a sample statistic for each country. The sample countries are partitioned into two subgroups, emerging markets (Panel A) and developed markets (Panel B), by a cutoff point of an average GDP per capita of US$15,000. The last three columns present three measures of return asymmetries: (1) skewness (*SKEW*), (2) volatility ratio (*VOLRATIO*), and (3) extreme return ratio (*EXTRATIO*). Skewness is measured as:

$$SKEW_{i,t} = [(n(n-1))^{3/2} \sum_{\tau=1}^{n} R_{i\tau,t}^{3}] \div [(n-1)(n-2)\left(\sum_{\tau=1}^{n} R_{i\tau,t}^{2}\right)^{3/2}],$$

where $R_{i\tau}$ represents the demeaned daily return with dividends for stock *i* on day τ and *n* is the number of observations on daily returns during the sample year, *t.* Daily returns are computed as $ln[(P_{i\tau} + D_{i\tau})/P_{i\tau-1}]$, where $P_{i\tau}$ is the stock price of stock *i* at the close of day τ and $D_{i\tau}$ is the dividend. The volatility ratio is measured as:

$$VOLRATIO_{i,t} = \ln\left\{(n_d - 1)\sum_{\tau \in UP} R_{i\tau,t}^{2} \div (n_u - 1)\sum_{\tau \in DOWN} R_{i\tau,t}^{2}\right\},$$

where n_u and n_d are the number of up and down days, respectively. An up (A down) day is a day on which the stock index return is above (below) the sample mean during the sample year, *t.* The extreme return ratio (*EXTRATIO*) is measured as the log of the ratio of the number of positive extreme return days to the number of negative extreme return days. A demeaned daily return, $R_{i\tau}$, is treated as a positive (negative) extreme return if $R_{i\tau} > 2*\sigma_i$ $(R_{i\tau} < -2*\sigma_i)$, where σ_i denotes the standard deviation of returns of stock *i*. The data are drawn from Datastream International. Mean is in basis points and standard deviation; 1st quartile, and 3rd quartile are in percent.

Country	GDP	Number of firm	Mean return	Standard Deviation	1st Quartile	3rd Quartile	*SKEW*	*VOL-RATIO*	*EXT-RATIO*
Panel A: Emerging markets									
Argentina	6,329	31	0.03	3.11	-1.41	1.36	0.00	0.05	0.10
Brazil	3,777	95	5.26	3.44	-1.57	1.51	0.49	0.31	0.31
Chile	4,930	42	0.98	1.82	-0.74	0.64	0.23	0.11	0.30
Greece	10,711	221	-1.35	3.42	-1.94	1.90	0.04	0.03	0.24
India	439	238	4.68	3.46	-1.75	1.58	0.29	0.20	0.37
Indonesia	903	109	-3.27	4.81	-1.54	0.96	0.41	-0.09	0.34
Korea	10,438	702	-4.52	4.07	-2.10	1.79	0.17	0.07	0.34
Malaysia	3,918	534	-3.34	3.39	-1.48	1.14	0.47	0.33	0.41
Pakistan	439	31	8.00	3.04	-1.26	1.24	0.21	0.28	0.32
Peru	2,186	20	-1.15	2.66	-1.12	0.88	0.25	0.14	0.12
The Philippines	994	68	-8.98	3.81	-1.64	1.05	0.20	-0.21	0.41
Portugal	10,812	47	0.09	2.21	-0.95	0.79	0.49	0.26	0.27
South Africa	3,018	249	-1.08	3.60	-1.19	1.05	-0.02	-0.07	0.17
Spain	14,655	109	3.63	2.03	-0.96	0.91	0.50	0.38	0.41
Taiwan	12,876	433	-3.36	2.96	-1.78	1.58	0.13	0.12	0.23
Thailand	2,199	204	-0.28	3.51	-1.60	1.36	0.38	0.26	0.39
Turkey	2,671	147	12.08	4.35	-2.15	2.19	0.26	0.33	0.32
Mean	***5,370***	***193***	***0.44***	***3.28***	***-1.48***	***1.29***	***0.26***	***0.15***	***0.30***
Median	***3,777***	***109***	***-0.28***	***3.42***	***-1.54***	***1.24***	***0.25***	***0.14***	***0.32***

Table 1 (continued)

Country	GDP	Number of firm	Mean return	Standard Deviation	1st Quartile	3rd Quartile	*SKEW*	*VOL-RATIO*	*EXT-RATIO*
				Panel B: Developed markets					
Australia	19,906	605	0.22	3.21	-1.35	1.21	0.10	0.01	0.22
Austria	25,714	51	-0.68	1.96	-0.81	0.76	0.06	0.03	0.07
Belgium	23,949	70	-1.30	2.21	-1.01	0.92	0.11	-0.01	0.15
Canada	21,996	833	-0.08	3.76	-1.80	1.58	0.26	0.17	0.30
Denmark	31,984	73	-0.77	2.14	-0.94	0.88	-0.03	0.11	0.17
Finland	24,195	79	-1.52	2.83	-1.31	1.17	0.24	0.23	0.25
France	24,144	521	-0.60	2.93	-1.32	1.16	0.28	0.18	0.31
Germany	24,231	331	-10.75	3.67	-1.81	1.40	0.33	0.08	0.22
Hong Kong	24,317	407	-3.66	3.72	-1.49	1.17	0.02	-0.01	0.37
Ireland	27,429	22	1.69	3.15	-1.36	1.28	-0.11	0.15	0.23
Israel	17,234	64	-2.32	2.67	-1.34	1.23	-0.12	0.09	0.24
Italy	20,016	209	0.11	2.39	-1.24	1.06	0.51	0.33	0.53
Japan	35,382	2,458	-3.39	2.92	-1.39	1.14	0.23	0.00	0.32
The Netherlands	24,761	160	-0.53	2.54	-1.18	1.05	0.18	0.19	0.30
New Zealand	15,001	65	3.34	2.05	-0.82	0.79	0.11	0.15	0.20
Norway	35,857	107	-1.55	3.22	-1.58	1.39	0.12	0.19	0.36
Singapore	22,730	284	-1.97	3.44	-1.51	1.18	0.28	0.06	0.41
Sweden	27,325	276	-1.94	3.19	-1.59	1.35	0.33	0.19	0.33
Switzerland	37,770	125	0.89	2.42	-1.11	1.06	0.07	0.22	0.18
U.K.	23,226	1,128	-1.45	2.57	-0.63	0.48	-0.15	-0.01	0.24
U.S.	32,397	2,988	1.74	3.75	-1.85	1.74	0.09	0.15	0.28
Mean	***25,693***	***517***	***-1.17***	***2.89***	***-1.31***	***1.14***	***0.14***	***0.12***	***0.27***
Median	***24,231***	***209***	***-0.77***	***2.92***	***-1.34***	***1.17***	***0.11***	***0.15***	***0.25***

Table 2
Corporate governance variables
This table presents various corporate governance variables used for our 38 sample countries. The anti-director rights (shareholder rights) index is taken from La Porta et al. (1998). A high score on this index indicates better protection of shareholder rights. The accounting standards index (with high scores indicating high accounting quality) is also taken from La Porta et al. (1998); the earnings management index (with high scores indicating more earnings management) is the aggregate earnings management score reported by Leuz, Nanda, and Wysocki (2003); the corporate boards index (with high scores indicating more effective boards) is a score compiled by the Institute for Management Development International (IMD); the insider trading index (with high scores indicating less insider trading) is a score also compiled by IMD; R^2 is a measure of stock return synchronicity and is taken from Morck et al. (2000). R^2 is the explanatory power from the market model and is a proxy for the informational efficiency with a higher R^2 being less informationally efficient.

Panel A: Corporate governance indices

Country	Anti-director rights	Accounting standards	Earnings management	Corporate boards	Insider trading	R^2 from Morck et al. (2000)
			Emerging markets			
Argentina	4.00	45.00	-	4.81	5.05	-
Brazil	3.00	54.00	-	5.71	5.85	0.16
Chile	5.00	52.00	-	7.18	6.15	0.21
Greece	2.00	55.00	28.30	5.07	4.20	0.19
India	5.00	57.00	19.10	4.77	4.23	0.19
Indonesia	2.00	-	18.30	5.73	4.40	0.14
Korea	2.00	62.00	26.80	4.45	4.09	0.17
Malaysia	4.00	76.00	14.80	5.22	4.25	0.43
Pakistan	5.00	-	17.80	-	-	0.18
Peru	3.00	-	-	-	-	0.29
The Philippines	3.00	65.00	8.80	5.10	3.37	0.16
Portugal	3.00	36.00	25.10	5.74	5.96	0.07
South Africa	5.00	70.00	5.60	6.52	5.27	0.20
Spain	4.00	64.00	18.60	6.06	5.91	0.19
Taiwan	3.00	65.00	22.50	6.20	3.90	0.41
Thailand	2.00	64.00	18.30	5.63	4.51	0.27
Turkey	2.00	51.00	-	5.18	3.93	0.39
Mean	***3.35***	***58.28***	***18.67***	***5.56***	***4.74***	***0.23***
Median	***3.00***	***59.50***	***18.45***	***5.63***	***4.40***	***0.19***

Table 2 (continued)

Country	Anti-director rights	Accounting standards	Earnings management	Corporate boards	Insider trading	R^2 from Morck et al. (2000)
			Developed markets			
Australia	4.00	75.00	4.80	6.84	7.48	0.06
Austria	2.00	54.00	28.30	6.64	5.88	0.09
Belgium	0.00	61.00	19.50	5.88	6.09	0.15
Canada	5.00	74.00	5.30	6.98	7.19	0.06
Denmark	2.00	62.00	16.00	7.55	8.20	0.08
Finland	3.00	77.00	12.00	7.55	7.85	0.14
France	3.00	69.00	13.50	5.67	5.82	0.08
Germany	1.00	62.00	21.50	6.29	6.96	0.11
Hong Kong	5.00	69.00	19.50	6.50	6.19	0.15
Ireland	4.00	-	5.10	6.64	7.16	0.06
Israel	3.00	64.00	-	6.41	6.47	-
Italy	1.00	62.00	24.80	5.41	4.95	0.18
Japan	4.00	65.00	20.50	4.88	6.16	0.23
The Netherlands	2.00	64.00	16.50	7.44	7.25	0.10
New Zealand	4.00	70.00	-	7.28	6.42	0.06
Norway	4.00	74.00	5.80	6.04	4.37	0.12
Singapore	4.00	78.00	21.60	7.19	7.61	0.19
Sweden	3.00	83.00	6.80	7.27	6.42	0.14
Switzerland	2.00	68.00	22.00	6.39	6.98	-
U.K.	5.00	78.00	7.00	6.34	6.53	0.06
U.S.	5.00	71.00	2.00	6.38	6.55	0.02
Mean	***3.14***	***69 .00***	***14.34***	***6.55***	***6.60***	***0.11***
Median	***3.00***	***69.00***	***16.00***	***6.50***	***6.53***	***0.10***

Table 2 (continued)

Panel B: Correlations among corporate governance indices

	Anti-director rights	Accounting standards	Earnings management	Corporate boards	Insider trading	R^2 from Morck et al. (2000)
Anti-director rights	1.000					
Accounting standards	0.216 (0.22)	1.000				
Earnings management	-0.490 (0.01)	-0.541 (0.00)	1.000			
Corporate boards	0.140 (0.42)	0.407 (0.02)	-0.354 (0.05)	1.000		
Insider trading	0.079 (0.65)	0.255 (0.15)	-0.230 (0.22)	0.758 (0.00)	1.000	
R^2 from Morck et al. (2000)	-0.153 (0.38)	-0.105 (0.57)	-0.596 (0.00)	-0.428 (0.01)	-0.589 (0.00)	1.000

Table 3

Summary statistics of variables

This table presents summary statistics of the variables used in the empirical analysis. The corporate governance index (CG_t) is the anti-director rights (shareholder rights) index taken from La Porta et al. (1998). A high score on the *CG* index indicates better protection of shareholder rights. $SKEW_t$, $VOLRATIO_t$ and $EXTRATIO_t$ are defined in Table 1. All variables are obtained by using returns in the one-year period for each sample firm in each sample country. Thus, for each sample firm in each sample country, nine yearly observations are obtained for each variable. Turnover$_t$ ($TURNOVER_t$) is the average daily turnover in the sample year *t*. Cumulative return$_t$ ($CUMRET_t$) is the cumulative return over the sample year *t*. $LNSIZE_t$ is the average (of the logarithm of) market capitalization (in U.S. dollars) in the sample year *t*. $LEVER_t$ is the leverage ratio measured as the book value of debt over total assets in the sample year *t*. MTB_t is the market-to-book equity in the sample year *t*. Currency volatility ($SIGMACUR_t$) is the standard deviation of daily currency returns in the sample year *t*. $LNGDP_t$ is the (logarithm of) GDP (in U.S. dollars) in the sample year *t*. Panel A reports means, medians, standard deviations, the 1st quartiles, and the 3rd quartiles and Panel B reports the correlations.

Panel A: Summary statistics

	CG_t	$SKEW_t$	$VOL\text{-}RATIO_t$	$EXT\text{-}RATIO$	$TURN\text{-}OVER_t$	$CUM\text{-}RET_t$	$LNSIZE_t$	$LEVER_t$	MTB_t	$SIGMA\text{-}CUR_t$	$LNGDP_t$
All sample countries											
Mean	3.24	0.20	0.13	0.28	1.62	-6.30	6.86	0.25	2.66	1.26	9.22
Median	3.00	0.20	0.14	0.30	0.70	-7.59	5.86	0.25	2.50	0.76	9.82
Standard deviation	1.32	0.18	0.13	0.10	2.54	12.75	2.68	0.05	0.97	2.04	1.27
1st Quartile	2.00	0.07	0.03	0.22	0.50	-11.43	5.11	0.21	1.99	0.46	8.27
3rd Quartile	4.00	0.29	0.22	0.34	1.22	-1.48	7.46	0.28	3.06	0.99	10.10

Table 3 (continued)

Panel B: Correlations among variables

	$SKEW_{t+1}$	$SKEW_t$	$TURNOVER_t$	$CUMRET_t$	$LNSIZE_t$	$LEVER_t$	MTB_t	$SIGMACUR_t$	$LNGDP_t$	CG_t
$SKEW_{t+1}$	1.000									
$SKEW_t$	0.055	1.000								
	(0.00)									
$TURNOVER_t$	0.006	-0.001	1.000							
	(0.14)	(0.78)								
$CUMRET_t$	-0.062	0.384	0.002	1.000						
	(0.00)	(0.00)	(0.65)							
$LNSIZE_t$	-0.048	0.016	0.013	0.146	1.000					
	(0.00)	(0.00)	(0.00)	(0.00)						
$LEVER_t$	0.011	-0.017	0.014	-0.064	0.176	1.000				
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)					
MTB_t	-0.054	0.072	0.008	0.215	0.001	-0.031	1.000			
	(0.00)	(0.00)	(0.04)	(0.00)	(0.72)	(0.00)				
$SIGMACUR_t$	0.036	-0.000	0.002	-0.030	0.203	0.107	-0.029	1.000		
	(0.00)	(0.98)	(0.68)	(0.00)	(0.00)	(0.00)	(0.00)			
$LNGDP_t$	-0.038	-0.025	-0.035	0.006	-0.096	-0.008	0.042	-0.198	1.000	
	(0.00)	(0.00)	(0.00)	(0.10)	(0.00)	(0.00)	(0.00)	(0.00)		
CG_t	-0.034	-0.027	-0.045	0.008	-0.194	-0.194	0.051	-0.189	0.220	1.000
	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	

Table 4

Pooled regressions of conditional skewness on the corporate governance index

This table presents the results of pooled regressions to explain return asymmetries across firms and across countries. The dependent variable is $SKEW_{i,t+1}$, the coefficient of skewness for stock *i* in year *t*+1 computed using daily returns from each sample firm in each sample country. $SIGMACUR_t$ is currency volatility measured as the standard deviation of daily currency returns for the country that stock *i* belongs to in year *t*. $TURNOVER_{i,t}$ is the average daily turnover for stock *i* in year *t*. $CUMRET_{i,t}$ is the cumulative return for stock *i* in year *t*. $LNSIZE_{it}$ is the average of the logarithm of market capitalization (in U.S. dollars) for stock *i* in year *t*. $LEVER_{i,t}$ is the leverage ratio measured as the book value of debt over total assets for stock *i* in year *t*. $MTB_{i,t}$ is the market-to-book equity for stock *i* in year *t*. $LNGDP_{i,t}$ is the logarithm of GDP (in U.S. dollars) for the country that stock *i* belongs to in year *t*. The corporate governance index (*CG*) is the shareholder rights index taken from La Porta et al. (1998). A higher score on the index indicates better protection of shareholder rights. Numbers in parentheses are the heteroskedasticity-consistent *t*-statistics. The F-value is the F-statistic used to test the null hypothesis that all slope coefficients are equal to 0.

Independent variables	(1)	(2)	(3)	(4)
Intercept	0.285	0.690	0.525	0.834
	(11.93)	(12.75)	(15.39)	(14.79)
Skewness	0.091	0.091	0.090	0.090
($SKEW_{i,t}$)	(12.41)	(12.29)	(12.26)	(12.19)
Currency return volatility	0.034	0.030	0.030	0.026
($SIGMACUR_t$)	(13.10)	(11.34)	(12.03)	(10.59)
Trading volume	0.001	0.001	0.001	0.001
($TURNOVER_{i,t}$)	(0.47)	(0.41)	(0.39)	(0.34)
Cumulative return	-0.160	-0.160	-0.159	-0.159
($CUMRET_{i,t}$)	(-17.16)	(-17.09)	(-17.00)	(-16.97)
Firm size	-0.019	-0.020	-0.021	-0.021
($LNSIZE_{i,t}$)	(-12.80)	(-13.20)	(-14.16)	(-14.32)
Leverage	0.051	0.046	0.038	0.035
($LEVER_{i,t}$)	(2.16)	(1.96)	(1.60)	(1.50)
Market-to-book	-0.011	-0.011	-0.011	-0.010
($MTB_{i,t}$)	(-9.18)	(-9.06)	(-9.00)	(-8.92)
GDP per capita		-0.040		-0.033
($LNGDP_{i,t}$)		(-8.37)		(-6.94)
Corporate governance index			***-0.137***	***-0.119***
(*CG*)			***(-9.04)***	***(-7.77)***
Time dummy variables	Yes	Yes	Yes	Yes
Industry dummy variables	Yes	Yes	Yes	Yes
Adjusted R^2	0.031	0.032	0.032	0.032
F-value	57.78	59.21	58.62	59.27
No. of observations	69,546	69,546	69,546	69,546

Table 5
Pooled regressions: Alternative corporate governance indices
This table presents the results of cross-sectional regressions to explain return asymmetries across firms and across countries. All variables are defined in Table 3. The corporate governance index includes: (1) accounting standards, (2) earnings management, (3) corporate boards, (4) insider trading, and (5) the R^2 measure. The accounting standard index (with high scores indicating high accounting quality) is taken from La Porta et al. (1998); the earnings management index (with high scores indicating more earnings management) is the aggregate earnings management score reported by Leuz, Nanda, and Wysocki (2003); the corporate boards index (with high scores indicating more effective boards) is the score compiled by IMD; the insider trading index (with high scores indicating less insider trading) is a score compiled by IMD; the R^2 from Morck et al. (2000) is a measure of stock return synchronicity and is the R^2 from the market model. It is a proxy for informational efficiency with a higher R^2 being less informationally efficient. Numbers in parentheses are the heteroskedasticity-consistent *t*-statistics. The F-value is the F-statistic used to test the null hypothesis that all slope coefficients are equal to 0.

Independent variables	Accounting standards (1)	Earnings management (2)	Corporate boards (3)	Insider trading (4)	R2 from Morck et al. (2000)
Intercept	2.476	0.295	1.820	0.827	0.719
	(10.23)	(5.12)	(20.72)	(14.77)	(13.24)
Skewness ($SKEW_{i,t}$)	0.091	0.086	0.086	0.090	0.080
	(12.23)	(11.41)	(11.59)	(12.26)	(10.57)
Currency return volatility ($SIGMACUR_t$)	0.052	0.022	0.029	0.031	0.029
	(11.09)	(9.63)	(11.90)	(11.86)	(12.35)
Trading volume ($TURNOVER_{i,t}$)	0.001	0.001	0.001	0.001	0.001
	(0.34)	(0.41)	(0.34)	(0.32)	(0.49)
Cumulative return ($CUMRET_{i,t}$)	-0.158	-0.146	-0.145	-0.157	-0.137
	(-16.70)	(-15.26)	(-15.40)	(-16.82)	(-14.48)
Firm size ($LNSIZE_{i,t}$)	-0.027	-0.040	-0.037	-0.023	-0.038
	(-16.44)	(-20.58)	(-19.77)	(-15.10)	(-20.79)
Leverage ($LEVER_{i,t}$)	0.033	0.046	0.009	0.038	0.034
	(1.37)	(1.88)	(0.39)	(1.60)	(1.46)
Market-to-book ($MTB_{i,t}$)	-0.010	-0.009	-0.009	-0.010	-0.009
	(-8.70)	(-7.92)	(-7.94)	(-8.85)	(-7.51)
GDP per capita ($LNGDP_{i,t}$)	-0.026	-0.007	-0.028	-0.010	0.001
	(-4.97)	(-1.34)	(-5.87)	(-1.56)	(0.25)
Corporate governance index (CG)	***-0.443***	***0.107***	***-0.625***	***-0.220***	***0.116***
	(-7.52)	***(18.70)***	***(-17.36)***	***(-7.02)***	***(20.93)***
Time dummy variables	Yes	Yes	Yes	Yes	Yes
Industry dummy variables	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.033	0.038	0.035	0.033	0.037
F-value	57.44	66.78	67.50	60.01	68.40
No. of observations	68,940	67,567	69,359	69,359	68,569

Table 6
Pooled regressions: Alternative tests
This table presents the results of pooled regressions to explain return asymmetries across firms and across countries using alternative measures of return asymmetries and regression specifications. All variables are defined in Table 3. The first regression uses dollar-currency returns. The second and third regressions use *VOLRATIO* and *EXTRATIO* as the dependent variables, respectively. The fourth regression uses *SKEW* as the dependent variable and adds concentrated ownership as a control variable. Concentrated ownership in each country is obtained from Worldscope. The fifth regression uses *SKEW* as the dependent variable and adds a short-sales dummy that takes the value of 1 if a country allows and practices short selling. Numbers in parentheses are the heteroskedasticity-consistent *t*-statistics. The F-value is the F-statistic used to test the null hypothesis that all slope coefficients are equal to 0.

Independent variables	Dollar returns (1)	*VOLRATIO* (2)	*EXTRATIO* (3)	*SKEW* (4)	*SKEW* (5)
Intercept	0.747	0.601	0.465	0.915	0.943
	(13.61)	(15.79)	(15.01)	(12.03)	(11.57)
Skewness ($SKEW_{i,t}$)	0.089	0.159	0.125	0.099	0.098
	(12.28)	(18.18)	(31.28)	(10.66)	(10.57)
Currency return volatility ($SIGMACUR_t$)		0.029	0.013	0.025	0.025
		(11.73)	(7.05)	(8.94)	(8.89)
Trading volume ($TURNOVER_{i,t}$)	0.000	-0.000	0.000	-0.001	-0.001
	(0.26)	(-0.36)	(0.73)	(-2.04)	(-2.02)
Cumulative return ($CUMRET_{i,t}$)	-0.150	-0.101	-0.078	-0.169	-0.168
	(-17.19)	(-12.69)	(-20.25)	(-13.81)	(-13.70)
Firm size ($LNSIZE_{i,t}$)	-0.021	-0.019	-0.006	-0.020	-0.019
	(-14.96)	(-18.17)	(-8.61)	(-11.33)	(-10.67)
Leverage ($LEVER_{i,t}$)	0.049	-0.070	0.049	0.020	0.023
	(2.15)	(-4.59)	(4.02)	(0.69)	(0.78)
Market-to-book ($MTB_{i,t}$)	-0.011	-0.007	-0.000	-0.013	-0.013
	(-9.21)	(-10.18)	(0.16)	(-8.13)	(-8.23)
GDP per capita ($LNGDP_{i,t}$)	-0.020	-0.031	-0.014	-0.045	-0.050
	(-4.33)	(-9.65)	(-4.94)	(-6.91)	(-6.52)
***Corporate governance index* (*CG*)**	***-0.118***	***-0.028***	***-0.014***	***-0.109***	***-0.117***
	(-7.92)	***(-2.96)***	***(-1.73)***	***(-5.37)***	***(-5.43)***
Concentrated ownership (OWN_t)				0.181	0.185
				(6.16)	(6.25)
Short-sales constraints (*Short-sales dummy*)					0.026
					(1.40)
Time dummy variables	Yes	Yes	Yes	Yes	Yes
Industry dummy variables	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.034	0.073	0.045	0.038	0.038
F-value	59.87	129.20	82.35	45.88	44.64
No. of observations	69,546	69,546	67,932	46,659	46,446

Table 7
Regression results using country index returns
This table presents the results of pooled regressions to explain return asymmetries across countries. The dependent variable is $SKEW_{t+1}$, the coefficient of skewness in the year t+1 computed using daily market index returns from each sample country. $SIGMACUR_t$ is the currency volatility measured as the standard deviation of daily currency returns in year t. $TURNOVER_t$ is the average daily market turnover in year t. $CUMRET_t$ is the cumulative market return over year t. $LNGDP_t$ is the logarithm of GDP (in U.S. dollars) in year t. The corporate governance index (CG) includes anti-director rights, accounting standards, earnings management, corporate boards, insider trading, and the R^2 measure. Anti-director rights (with high scores indicating better shareholder rights) and accounting standards (with high scores indicating high accounting quality) are taken from La Porta et al. (1998); earnings management (with high scores indicating more earnings management) is the aggregate earnings management score reported by Leuz, Nanda, and Wysocki (2003); corporate boards (with high scores indicating more effective boards) and insider trading (with high scores indicating less inside trading) are index scores compiled by IMD; the R^2 from Morck et al. (2000) is a measure of stock return synchronicity and is the R^2 from the market model. It is a proxy for informational efficiency with a higher R^2 being less informationally efficient. Numbers in parentheses are the heteroskedasticity-consistent t-statistics. The F-value is the F-statistic used to test the null hypothesis that all slope coefficients are equal to 0.

Independent variables	Anti-director rights (1)	Accounting standards (2)	Earnings management (3)	Corporate boards (4)	Insider trading (5)	R^2 from Morck et al. (2000)
Intercept	2.096	4.823	0.557	1.509	1.353	1.411
	(5.19)	(3.69)	(1.28)	(2.70)	(3.16)	(4.29)
Skewness ($SKEW_{i,t}$)	0.145	0.148	0.157	0.158	0.159	0.133
	(2.99)	(3.01)	(2.23)	(3.17)	(3.20)	(3.01)
Currency return volatility ($SIGMACUR_t$)	-0.022	-0.050	-0.007	-0.013	-0.013	-0.008
	(-1.78)	(-2.25)	(-0.76)	(-1.22)	(-1.20)	(-0.82)
Trading volume ($TURNOVER_{i,t}$)	-0.015	-0.018	-0.015	-0.016	-0.016	-0.014
	(-2.13)	(-1.66)	(-2.45)	(-1.41)	(-1.38)	(-2.03)
Cumulative return ($CUMRET_{i,t}$)	-0.457	-0.509	-0.579	-0.485	-0.482	-0.401
	(-3.13)	(-3.12)	(-3.71)	(-3.11)	(-3.10)	(-2.68)
GDP per capita ($LNGDP_{i,t}$)	-0.171	-0.109	-0.107	-0.124	-0.109	-0.111
	(-5.20)	(-2.31)	(-3.20)	(-2.97)	(-2.73)	(-3.11)
Corporate governance index (CG)	***-0.341***	***-0.913***	***0.158***	***-0.188***	***-0.183***	***0.181***
	(-2.66)	***(-2.73)***	***(1.98)***	***(-0.63)***	***(-0.85)***	***(2.39)***
Time dummy variables	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.323	0.310	0.318	0.293	0.294	0.320
F-value	15.28	15.62	17.02	15.41	15.46	15.50
No. of observations	330	302	269	312	312	303