THE ACCOUNTING REVIEW
Vol. 82, No. 1
2007
pp. 169–203

The Accrual Anomaly: International Evidence

Morton Pincus
University of California, Irvine

Shivaram Rajgopal
University of Washington

Mohan Venkatachalam
Duke University

ABSTRACT: We consider stock markets in 20 countries to investigate whether the accrual anomaly (Sloan 1996), characterized by U.S. stock prices overweighting the role of accrual persistence, is a local manifestation of a global phenomenon. We explore whether the occurrence of the anomaly is related to country differences in accounting and institutional structures, and examine alternative explanations for its occurrence. We find stock prices overweight accruals in general, with accruals overweighting occurring in countries with a common law relative to a code law tradition. Using firm-level data on a country-by-country basis, we document the occurrence of the anomaly in four countries, Australia, Canada, the U.K., and the U.S., and also in a sample of American Depository Receipts (ADRs) of firms domiciled in countries where we do not detect the anomaly. Using country-level data, we confirm the anomaly is more likely to occur in countries having a common law tradition, and also in countries allowing extensive use of accrual accounting and having a lower concentration of share ownership. Additional analyses reveal that earnings management and barriers to arbitrage best explain the anomaly.

Keywords: *accrual anomaly; operating cash flows; total and abnormal accruals; international accounting.*

Data Availability: *Data used in this study are available from public sources identified in the paper.*

I. INTRODUCTION

Sloan (1996) demonstrates that in the U.S. capital markets, a trading strategy based on a long (short) position in stocks of firms in the lowest (highest) decile of accruals generates significant abnormal security returns in the following year. Sloan's (1996)

We thank the anonymous referees, Patty Dechow (editor), Charles Lee, Steve Penman, Terry Shevlin, Richard Sloan, Feng Tian, Ross Watts, and participants at the Sidney Winter Lecture Series at The University of Iowa for their helpful comments and suggestions.

Editor's note: This paper was accepted by Patricia Dechow.

Submitted January 2005
Accepted May 2006

results are anomalous to capital market efficiency, and a Mishkin (1983) test indicates that investors implicitly assign a higher weight than warranted to accruals in pricing stocks. A number of studies document that the accrual anomaly is robust across various samples of U.S. firms (e.g., Collins and Hribar 2000; Bradshaw et al. 2001; Xie 2001; Zach 2003).

The purpose of our research is threefold: we investigate (1) whether the accrual anomaly generalizes to other countries; (2) whether the occurrence of the accrual anomaly is associated with country-level accounting and institutional structures; and (3) various alternative explanations of the accrual anomaly that have been proposed in the literature.

Regarding our first research objective, we initially pool firm-level data across the 20 countries we consider and conduct Mishkin (1983) tests to document the occurrence of accruals overweighting outside of the U.S. in general, and by a country's legal tradition: common law versus code law (e.g., Ball et al. 2000). We then analyze each country separately. With regard to our second objective, we use country-level data to test a set of conjectures relating the occurrence of the accrual anomaly to cross-country differences in accounting and institutional structures (e.g., Bushman and Smith 2001). More specifically, we base our predictions on three categories of country-level characteristics: (1) legal tradition and extent of constraints on insider trading; (2) extent of accrual accounting permitted and strength of shareholder protections to mitigate earnings management; and (3) characteristics of equity markets, including their importance as a source of capital and the concentration of share ownership. Finally, we use firm-level data on a country-by-country basis and perform a series of abnormal returns tests, first to confirm that accruals overweighting can be exploited through trading—thereby further addressing our first objective—and second to tackle our objective of investigating alternative explanations for the accrual anomaly. In this regard, we examine four alternative explanations for the accrual anomaly that have been proposed in the literature: that it is (1) due to earnings management (Xie 2001); (2) due to barriers to arbitrage (Mashruwala et al. 2006); (3) due to less reliably measured accrual components (Richardson et al. 2005); and (4) a manifestation of the value-glamour anomaly (Desai et al. 2004).

One motivation for our research is similar to that for Fama and French's (1998) study that documents out-of-U.S.-sample evidence about the occurrence and generalizability of the value versus glamour anomaly in finance and also provides evidence on alternative explanations of that anomaly. Anomalies, by their very nature, represent a challenge to existing theory. Hence, investigating the incidence, generalizability, and reason(s) for the accrual anomaly worldwide should provide additional insight into the nature of this challenge to capital market efficiency.

Studies that have examined the role and impact of accounting and institutional structures in diverse economies also motivate our research. Bushman and Smith (2001) argue that cross-country designs present a natural laboratory for testing the relation between accounting regimes and the properties of underlying capital markets and institutions, and one area of research they suggest is to examine the extent to which cross-country differences in institutional structures affect the relation between earnings and stock returns. Bushman and Piotroski (2004) explore how different countries' institutional structures affect the accounting numbers that firms domiciled in those countries report, and they investigate interesting patterns across countries in the returns-earnings relation. Holthausen (2003) calls for the increased use of quantitative measures in the analysis of differences in accounting and institutional structures in cross-country research.

Our research is important for several reasons. First, the accrual anomaly is a direct challenge to capital market efficiency with respect to accounting information. Hence, evidence on the pervasiveness of the anomaly worldwide contributes to the assessment of

extant capital market theory. Second, we test alternative explanations for the accrual anomaly that appear in the literature, and provide evidence on the validity of each in a global setting. Third, by examining the links between the occurrence of the accrual anomaly and cross-country differences in institutional structures and accounting regimes, we gain insight into the informational, corporate governance, and capital market factors most associated with the accrual anomaly occurring, and thus add to our understanding of why the anomaly occurs in the first place. Moreover, identifying the institutional circumstances under which the accrual anomaly is likely to occur is potentially useful in setting and regulating financial accounting and reporting standards. For example, more transparent and timely reporting of accruals might be considered to mitigate the potential for market mispricing of accounting information.

Our analysis examines 20 countries and spans the period 1994–2002. With respect to the question of whether the accrual anomaly, as represented by stock prices overweighting accruals, generalizes to other countries, the results indicate that the anomaly occurs worldwide in pooled samples, but is concentrated in countries having a common law legal tradition, and specifically occurs in only four of the 20 countries we consider: Australia, Canada, the United Kingdom, and the U.S. Regarding a link between the occurrence of the accrual anomaly and country-level institutional structures, we confirm that the anomaly is more likely to occur where a common law legal tradition exists, and also where more extensive use of accrual accounting is permitted, where there is a lower the concentration of share ownership, and possibly where there are weaker outside shareholder rights.

In addition, we document the occurrence of the accrual anomaly in the American Depository Receipt (ADR) market for a sample of firms domiciled in countries where we do not document the occurrence of the accrual anomaly. We note that in addition to having a common law tradition, the U.S. permits the most extensive use of accrual accounting and has the most disperse ownership of shares of the countries represented in our sample. Finally, our investigation of alternative explanations for the accrual anomaly reveals the strongest evidence in favor of the earnings management and limits to arbitrage explanations. That is, the results suggest that the anomaly is due to the use of accruals to manage earnings, and it persists because of an absence of close substitutes for mispriced stocks, which imposes a barrier to arbitrage.

We organize the remainder of the paper as follows. In the next section we state our basic research hypothesis regarding the generalizability of the accrual anomaly, discuss the sample and empirical design, and report the results of pooled and country-specific Mishkin tests of the hypothesis. In Section III we develop predictions and implement our empirical analysis of the relation between cross-country differences in accounting and institutional structures and the occurrence of the accrual anomaly. Section IV presents results of abnormal returns tests, first of the basic research question, and then of additional hypotheses that reflect the alternative explanations for the accrual anomaly that have been proposed. Section V reports ADR results, and we summarize and conclude in Section VI.

II. BASIC HYPOTHESIS: GENERALIZABILITY OF THE ACCRUAL ANOMALY TO OTHER COUNTRIES

In this section, we state our hypothesis on the accrual anomaly's pervasiveness worldwide, describe the sample and empirical design used to test the hypothesis, and present the results.

Basic Research Hypothesis

Our basic hypothesis is whether the overweighting of accruals in securities pricing that Sloan (1996) (hereafter, Sloan) and others have documented generalizes to other countries. Given the variations across countries in business practices, legal, institutional, and capital market structures, accounting regimes, etc., it is not obvious that the accrual anomaly, which has been documented in the context of the U.S. accounting and capital market environment, will also occur in other countries, or if it does, that it will occur in all other countries. Our goal is to determine whether the accrual anomaly is an artifact of U.S. financial reporting and institutional structures, or is a more pervasive phenomenon. The hypothesis (in alternative form) is as follows:

H1: The accrual anomaly, i.e., an overweighting of accruals by U.S. investors in setting prices relative to the weight implied by a forecast of earnings, also occurs in other countries.

We test H1 in several ways. First, we pool firm-level data and conduct Mishkin (1983) tests (hereafter, Mishkin tests) on a sample that spans all countries (excluding the U.S.) followed by tests on the same sample classified by legal tradition (i.e., common law or code law). Second, we use firm-level data and separately examine each of the 20 countries (including the U.S.) in our sample. Third, we also perform abnormal returns tests using firm-level data on a country-by-country basis. This last test indicates whether abnormal returns can be earned by pursuing a trading strategy based on accruals, while Mishkin tests confirm whether the abnormal returns are attributable to the market's overweighting of accruals. We focus on the Mishkin tests in this section and discuss the abnormal returns tests in Section IV.[1]

Sample and Data

We conduct the empirical analysis using all firms with available data over 1994–2002 on the Global Vantage Industrial/Commercial (GVIC) and Global Vantage Issues (GVI) files for 20 countries: Australia, Canada, Denmark, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Malaysia, The Netherlands, Singapore, Spain, Sweden, Switzerland, Taiwan, Thailand, the United Kingdom, and the United States.[2] We focus on these countries because the greatest number of usable observations for our empirical tests is available for these countries, and they cover a substantial proportion of the world's total stock market capitalization and reflect different reporting, regulatory, and corporate governance philosophies. Such variation permits us to examine the sensitivity of the accrual anomaly to a broad range of institutional structures.

Following Ball et al. (2000), we define accounting income as net income before extraordinary items (GVIC data 32); and operating cash flows as net income before extraordinary items (GVIC data 32) plus depreciation (GVIC data 11) minus the change in noncash current assets (GVIC data 75 minus GVIC data 60) plus the change in current liabilities

[1] A recent working paper by LaFond (2005) addresses the same basic research question we address. Using the Datastream/Worldscope database, LaFond (2005) conducts abnormal returns tests but not Mishkin tests, and thus cannot definitively distinguish between accrual overweighting and operating cash flow underweighting. LaFond (2005, Table 5) provides a summary of results and country characteristics.

[2] Even though Global Vantage covers the period 1993 to 2004, we lose the years 1993, 2003, and 2004 because (1) we require two years of data to estimate accruals using the balance sheet method, (2) we require one-period-ahead stock returns for the empirical analysis, and (3) fiscal years ending in 2004 have incomplete data. Ball et al. (2000) and Bushman and Piotroski (2004) are examples of studies that also use Global Vantage.

other than current portion of long-term debt (GVIC data 104 minus data 94). We scale income, operating cash flows, and accruals (defined as income minus operating cash flows) by average total assets measured as the average of the beginning and end-of-fiscal-year book value of total assets (GVIC data 89). Stock return is the annual holding period return, including dividends, computed from the GVI dataset. Abnormal return (AR) is stock return subtracted by the appropriate country index for the same time-period compiled by the investment bank Morgan Stanley (http://www.msci.com).[3] We accumulate returns differently for various countries based on the timing of availability of financial statements (see Table 4 for the filing deadline for each country). In particular, we identify the reporting requirement for each of the countries in our sample and assume that firms file their financial statements on a timely basis.

We eliminate financial firms, such as banks and insurance companies (SIC codes 6000–6999), because of peculiarities in the accruals for such firms. We obtain all observations for the countries and time period we examine on the Global Vantage databases for which there are sufficient data to compute all variables, resulting in a sample of 62,027 firm-years. Across the 19 foreign countries samples range from 504 observations for Denmark to 13,822 observations for Japan (see Table 1). There are 19,039 firm-years for the U.S.

Descriptive Statistics

We begin with a description of the sample by country in terms of several key financial variables: firm size (*SIZE*), book-to-market (*BM*) ratio, earnings-to-price (*EP*) ratio, return on assets (defined as net income before extraordinary items scaled by average total assets, and denoted *NI*), operating cash flows scaled by average total assets (*OCF*), accruals scaled by average total assets (*ACC*), and annual stock returns including dividends (*Return*). Table 1 shows median values for each variable by country over the sample period.

The data suggest the following. On average, the largest firms are from Taiwan, the U.S., and Spain, and the smallest are from Thailand, Indonesia, Malaysia, Singapore, and Sweden. Firm-years in the U.S., The Netherlands, and the U.K. reflect relatively low *BM*, while firm-years for Hong Kong and Thailand reflect high *BM* values. The highest *EP* ratios are for firm-years in India, and the lowest are for Japan and Sweden. Return on assets is highest in India, The Netherlands, and the U.K., and lowest in Japan. Firm-years for The Netherlands reflect the highest *OCF*s, while the lowest *OCF*s are from Hong Kong, Indonesia, and Japan. Median *ACC*s are negative in all countries, with Hong Kong, India, and Malaysia having the least negative accruals as a percentage of average total assets and Germany and Thailand the most negative. Median stock returns are negative for the firm-years for 14 of the 20 countries, with the most negative returns in Sweden and the most positive in Australia and Spain.

Table 2 presents correlations between earnings, accruals, and operating cash flows. There are reliably negative associations between *ACC* and *OCF* in all 20 countries; the most negative are for Italy and Germany and the least negative are for Sweden and the U.S. *NI* and *OCF* are reliably positively correlated in all of the countries, with Sweden and Hong Kong having the highest correlations and Germany the smallest. *NI* and *ACC* are reliably positively related everywhere except Italy; Indonesia, Taiwan, and the U.S. have the highest correlations.

[3] Size adjustment poses a challenge in a number of countries where the number of firms in a size decile for a given year can be quite low. Hence, we do not compute size-adjusted returns. Instead we use market-adjusted returns and introduce size as an independent variable in our abnormal returns tests.

TABLE 1
Medians of Various Firm-Year Characteristics across Countries

Country	n	*SIZE* (U.S. $ mill)	*BM*	*EP*	*NI*	*OCF*	*ACC*	*Return*
Common Law Countries:								
Australia	1883	122.27	0.58	0.05	0.04	0.07	−0.04	0.03
Canada	2816	196.75	0.50	0.03	0.03	0.07	−0.04	0.01
Hong Kong	553	111.83	1.25	0.06	0.03	0.04	−0.02	−0.06
India	1245	89.54	0.91	0.08	0.06	0.08	−0.02	−0.07
Malaysia	2215	50.75	0.74	0.04	0.03	0.05	−0.02	−0.05
Singapore	1471	62.97	0.83	0.04	0.02	0.05	−0.03	−0.08
Thailand	1369	21.89	1.07	0.07	0.04	0.08	−0.05	0.01
United Kingdom	6482	139.30	0.47	0.05	0.06	0.09	−0.04	−0.01
United States	19039	369.51	0.41	0.04	0.04	0.07	−0.04	0.02
Code Law Countries:								
Denmark	504	88.06	0.80	0.07	0.04	0.07	−0.04	−0.08
France	2782	109.96	0.54	0.04	0.03	0.07	−0.04	−0.02
Germany	2483	142.84	0.50	0.04	0.03	0.07	−0.05	−0.03
Indonesia	839	32.37	0.65	0.04	0.02	0.04	−0.03	−0.14
Italy	785	232.81	0.60	0.04	0.03	0.06	−0.03	−0.08
Japan	13822	122.73	0.94	0.02	0.01	0.04	−0.03	−0.12
The Netherlands	842	208.58	0.43	0.06	0.06	0.10	−0.04	−0.08
Spain	678	338.17	0.59	0.06	0.04	0.09	−0.04	0.03
Sweden	777	71.77	0.52	0.02	0.03	0.05	−0.03	−0.16
Switzerland	815	227.89	0.66	0.06	0.04	0.08	−0.04	0.00
Taiwan	627	413.86	0.61	0.03	0.03	0.06	−0.03	−0.15

Sample consists of 62,027 firm-year observations over the period 1994–2002.
SIZE is the market value of common equity translated into U.S. dollars on the date of the filing deadline for the respective countries (see Table 4). Firm size is denominated here in U.S. dollars solely for the purpose of descriptive statistics; *B/M* is the ratio of the book-to-market ratio; *EP* is earnings-to-price ratio; *NI* is net income before extraordinary items (GVIC data 32) scaled by average total assets measured as the average of the beginning and end of the fiscal year total assets (GVIC data 89); *OCF* is operating cash flows scaled by average total assets. Operating cash flows is determined as net income before extraordinary items (GVIC data 32) plus Depreciation (GVIC data 11) minus the change in Current assets (GVIC data 75 minus data 60) and plus the change in Current liabilities (GVIC data 104 minus data 94); *ACC* is accruals scaled by average total assets determined by *NI* minus *OCF*; *Return* is the annual holding period return, including dividends. Common law (code law) distinction is based on a country's legal tradition (La Porta et al. 1998).

Empirical Design

Sloan introduced the Mishkin framework to the accounting literature, and it has since been used in a number of studies that test for capital market efficiency. We infer overweighting of accruals if market participants attribute a higher valuation coefficient to accruals than the weight implied in the association between accruals and future earnings.

As in prior research, we jointly estimate a forecasting specification for future earnings and the rational expectations pricing specification (we suppress firm-specific subscripts):

$$NI_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* ACC_t - \gamma_2^* OCF_t) + \nu_{t+1} \quad (2)$$

TABLE 2
Correlation Statistics between Earnings and its Components

Country	(*ACC*, *OCF*)	(*NI*, *OCF*)	(*NI*, *ACC*)
Common Law Countries:			
Australia	−0.55**	0.67**	0.08**
Canada	−0.45**	0.69**	0.18**
Hong Kong	−0.49**	0.71**	0.11**
India	−0.66**	0.52**	0.20**
Malaysia	−0.57**	0.53**	0.27**
Singapore	−0.64**	0.49**	0.20**
Thailand	−0.63**	0.59**	0.13**
United Kingdom	−0.51**	0.67**	0.14**
Thailand	−0.63**	0.59**	0.13**
Code Law Countries:			
Denmark	−0.68**	0.53**	0.12**
France	−0.65**	0.49**	0.20**
Germany	−0.75**	0.38**	0.18**
Indonesia	−0.44**	0.64**	0.28**
Italy	−0.78*	0.52**	0.01
Japan	−0.70**	0.50**	0.13**
The Netherlands	−0.61**	0.49**	0.23**
Spain	−0.68**	0.56**	0.09*
Sweden	−0.31**	0.74**	0.27**
Switzerland	−0.57**	0.53**	0.25**
Taiwan	−0.50**	0.59**	0.28**
United States	−0.36**	0.69**	0.28**

**, *, ^ Represents statistical significance at 1 percent, 5 percent, and 10 percent levels, respectively, two-tailed. Sample consists of 62,027 firm-year observations over the period 1994–2002.
NI is net income before extraordinary items (GVIC data 32) scaled by average total assets measured as the average of the beginning and end of the fiscal year total assets (GVIC data 89); *OCF* is operating cash flows scaled by average total assets. Operating cash flows is determined as net income before extraordinary items (GVIC data 32) plus Depreciation (GVIC data 11) minus the change in Current assets (GVIC data 75 minus data 60) and plus the change in Current liabilities (GVIC data 104 minus data 94); *ACC* is accruals scaled by average total assets determined by *NI* minus *OCF*.

where all variables have previously been defined. We winsorize extreme observations of the regression variables at the 5th and 95th percentile values.[4]

Market efficiency with respect to accruals imposes the constraint that γ_1* from the returns Equation (2) is not different than γ_1 from the forecasting Equation (1). This nonlinear constraint requires that the stock market rationally anticipate the implications of current period accruals for future earnings. If the anomaly generalizes to other countries, then $\gamma_1 < \gamma_1$*, implying the market assesses a higher contribution of current period accruals to future earnings than is warranted by the underlying cross-sectional association of current period accruals and future earnings.

[4] We winsorize observations in an attempt to prevent contamination of our inferences by measurement error due to the presence of extreme values. Several prior papers that have used the Global Vantage database deleted extreme observations (e.g., Alford et al. 1993; Ali and Hwang 2000; Ball et al. 2000; Land and Lang 2003). In unreported results of our country-specific analyses, we use decile ranks instead of actual values for all variables, except returns. The rank procedure has the advantage of not winsorizing extreme observations. When we do the analyses using ranks and non-winsorized observations, the inferences are similar to those reported.

We estimate Equations (1) and (2) using iterative weighted nonlinear least squares (Mishkin 1983). The test statistic is a likelihood ratio distributed asymptotically Chi-square (q):

$$2 \times n \times \ln(SSR^c/SSR^u) \tag{3}$$

where:

q = the number of constraints imposed by market efficiency;
n = the number of observations in each equation;
SSR^c = the sum of squared residuals from the constrained weighted system; and
SSR^u = the sum of squared residuals from the unconstrained weighted system.

Results of Mishkin Tests of H1

Table 3, Panel A reports the results of estimating Equations (1) and (2) using firm-level data pooled across the 19 countries other than the U.S.[5] Across all these countries, we find that stock prices overweight accruals persistence (i.e., $\gamma_1 = 0.583 < 0.743 = \gamma_1^*$, $F = 17.44$, two-tailed p-value < 0.01). We also find that operating cash flows are underweighted in pricing; $\gamma_2 = 0.639 > 0.566 = \gamma_2^*$ ($F = 8.72$).

To gain initial insight on the pervasiveness of these overall results, we re-run the Mishkin test after decomposing the pooled sample into two groups based on a country's legal tradition: common law or code law. Ball et al. (2000) and Bushman and Piotroski (2004) view legal tradition as the main proxy for cross-country differences in institutional structures. As Ball et al. (2000) discuss, a common law system reflects a ''shareholder model'' of corporate governance, whereas a code law system characterizes a ''stakeholder model'' of corporate governance, and an important difference between these two is how the information asymmetry between corporate insiders and other stakeholders gets resolved. Under a common law system shareholders elect the governing boards of companies, and most stakeholders interact with firms at greater ''arm's length'' (i.e., through markets) than under a code law system. In contrast, in code law countries firms' governing boards include agents representing a diverse set of stakeholder interests (e.g., debtholders, employees, suppliers, customers, and shareholders). This implies that in code law countries a wider range of stakeholders has access to companies' inside information than in common law countries, which suggests that a wider range of stakeholders better understands the accrual components of reported earnings. Hence, to the extent that a stakeholder model of corporate governance leads to a more widespread appreciation of the persistence characteristics of accruals, we expect less overweighting of accruals in code law countries and thus a lower probability the accrual anomaly will occur there.

Using La Porta et al.'s (1998) common and code law country designations, which we detail below in Table 4, we find in pooled sample results (Table 3, Panel A) that the accrual anomaly occurs in the group of non-U.S. common law countries ($\gamma_1 = 0.572 < 0.860 = \gamma_1^*$, $F = 23.11$), but not in the group of code law countries ($\gamma_1 = 0.596 \approx 0.561 = \gamma_1^*$, $F = 0.48$). We also find that the pricing of operating cash flows differs across these two groups of firms. For the group of common law countries, there is no evidence that stock prices underweight operating cash flow persistence ($\gamma_2 = 0.637$ and $\gamma_2^* = 0.682$,

[5] Because the accrual anomaly has been well documented in the U.S., including these firms in the pooled sample will likely cause biased findings. Therefore, we exclude U.S. firms from the pooled analysis.

TABLE 3
Regression Results of Capital Market Weighting of Accrual and Cash Flow Components using the Mishkin (1983) Framework

Panel A: Mishkin Tests of the Components of Earnings—Pooled Samples

$$NI_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* ACC_t - \gamma_2^* OCF_t) + \nu_{t+1} \quad (2)$$

Country	n	β_1	γ_1	γ_1^*	γ_2	γ_2^*	F-statistic for $\gamma_1 = \gamma_1^*$	F-statistic for $\gamma_2 = \gamma_2^*$
All countries pooled[a]	42988	0.902	0.583	0.743	0.639	0.566	17.44**	8.72**
Common law pooled[a,b]	18034	0.899	0.572	0.860	0.637	0.612	23.11**	0.47
Code law pooled[b]	24954	0.909	0.596	0.561	0.644	0.476	0.48	21.83**

Panel B: Mishkin Test of Earnings—Pooled Samples

$$NI_{t+1} = \gamma_0 + \gamma_1 NI_t + \varepsilon_{t+1} \quad (1')$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* NI_t) + \nu_{t+1} \quad (2')$$

Country	N	β_1	γ_1	γ_1^*	F-statistic for $\gamma_1 = \gamma_1^*$
All countries pooled[a]	42988	0.924	0.636	0.602	1.54
Common law pooled[a,b]	18034	0.923	0.635	0.658	0.43
Code law pooled[b]	24954	0.928	0.639	0.501	15.98**

Panel C: Mishkin Tests of the Components of Earnings—By Country

$$NI_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* ACC_t - \gamma_2^* OCF_t) + \nu_{t+1} \quad (2)$$

Country	n	β_1	γ_1	γ_1^*	γ_2	γ_2^*	F-statistic for $\gamma_1 = \gamma_1^*$	F-statistic for $\gamma_2 = \gamma_2^*$
Common Law Countries:								
Australia	1883	2.049	0.460	0.828	0.588	0.579	9.29**	0.02
Canada	2816	1.676	0.590	0.701	0.669	0.712	4.41*	0.34
Hong Kong	553	1.049	0.533	0.482	0.657	0.426	0.03	0.92
India	1245	2.097	0.647	0.722	0.691	0.629	0.21	0.21
Malaysia	2215	0.878	0.612	0.118	0.605	−0.094	7.04**	23.27**
Singapore	1471	1.839	0.631	0.271	0.619	0.289	8.00**	11.99**
Thailand	1369	2.389	0.603	0.632	0.603	0.317	0.07	8.22**
United Kingdom	6482	1.236	0.548	0.985	0.649	0.643	24.81**	0.02
United States	19039	2.089	0.613	0.879	0.717	0.777	33.38**	2.71^
Code Law Countries:								
Denmark	504	1.391	0.592	0.604	0.582	0.500	0.23	0.77
France	2782	1.656	0.713	0.717	0.732	0.509	0.01	6.76**

(*continued on next page*)

TABLE 3 (Continued)

Panel C: Mishkin Tests of the Components of Earnings—By Country (Continued)

Country	n	β_1	γ_1	γ_1*	γ_2	γ_2*	F-statistic for $\gamma_1 = \gamma_1$*	F-statistic for $\gamma_2 = \gamma_2$*
Germany	2483	1.170	0.676	0.365	0.689	0.352	5.60*	12.75**
Indonesia	839	0.515	0.537	−1.173	0.397	1.289	4.81*	2.79^
Italy	785	1.545	0.706	0.460	0.719	0.134	0.79	8.45**
Japan	13822	1.634	0.471	0.538	0.502	0.332	1.38	15.48**
The Netherlands	842	1.219	0.673	0.551	0.656	0.437	0.46	3.01^
Spain	678	0.639	0.625	−1.432	0.669	−0.509	15.95**	9.27**
Sweden	777	1.550	0.703	0.698	0.762	0.454	0.03	9.43**
Switzerland	815	1.796	0.542	0.578	0.587	0.319	0.04	4.00*
Taiwan	627	2.019	0.561	0.379	0.597	0.134	1.19	12.32**

Panel D: Mishkin Test of Earnings—By Country

$$NI_{t+1} = \gamma_0 + \gamma_1 NI_t + \varepsilon_{t+1} \quad (1')$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* NI_t) + \nu_{t+1} \quad (2')$$

Country	n	β_1	γ_1	γ_1*	F-statistic for $\gamma_1 = \gamma_1$*
Common Law Countries:					
Australia	1883	2.165	0.626	0.623	0.01
Canada	2816	1.704	0.718	0.745	0.13
Hong Kong	553	1.060	0.702	0.441	1.05
India	1245	2.779	0.797	0.825	0.09
Malaysia	2215	0.892	0.639	−0.013	22.29**
Singapore	1471	1.999	0.698	0.394	11.17**
Thailand	1369	2.664	0.640	0.462	4.07*
United Kingdom	6482	1.288	0.684	0.743	2.98^
United States	19039	2.252	0.791	0.881	11.80*
Code Law Countries:					
Denmark	504	1.355	0.590	0.467	0.55
France	2782	1.631	0.721	0.508	6.34*
Germany	2483	1.245	0.774	0.452	11.47**
Indonesia	839	0.742	0.458	0.942	1.83
Italy	785	1.780	0.779	0.321	6.48*
Japan	13822	1.681	0.523	0.399	8.36**
The Netherlands	842	1.495	0.804	0.612	2.85^
Spain	678	0.616	0.754	−0.635	10.63**
Sweden	777	1.678	0.790	0.564	6.23*
Switzerland	815	1.866	0.587	0.447	1.18
Taiwan	627	2.072	0.619	0.242	8.21**

**, *, ^ Represents statistical significance of F-statistics at the 1 percent, 5 percent, and 10 percent levels, respectively, two-tailed.
Sample consists of 62,027 firm-years from 1994–2002, with extreme observations winsorized at the 5th and 95th percentile values.

(*continued on next page*)

TABLE 3 (Continued)

[a] Excludes the U.S.
[b] Common law countries in the sample are Australia, Canada, Hong Kong, India, Malaysia, Singapore, Thailand, United Kingdom, and United States. Code law countries are Denmark, France, Germany, Indonesia, Italy, Japan, The Netherlands, Spain, Sweden, Switzerland, and Taiwan.
NI is net income before extraordinary items (GVIC data 32) scaled by average total assets measured as the average of beginning and end of fiscal year total assets (GVIC data 89); *OCF* is operating cash flows scaled by average total assets. Operating cash flows is net income before extraordinary items plus Depreciation (GVIC data 11) minus change in Current assets (GVIC data 75 minus data 60) and plus change in Current liabilities (GVIC data 104 minus data 94); Accruals is *NI* minus *OCF*, and *ACC* is accruals scaled by average total assets; Abnormal return (*AR*) is annual holding period return, including dividends, minus the appropriate country index compiled by the investment bank Morgan Stanley (http://www.msci.com).

F = 0.47). On the other hand, stock prices underweight *OCF*s in code law countries ($\gamma_2 = 0.644 > 0.476 = \gamma_2^*$, F = 21.83).

Panel C of Table 3 presents results using firm-level data on an individual country basis. Consistent with Sloan (1996), we observe that U.S. stock prices overweight accruals persistence (i.e., $\gamma_1 = 0.613 < 0.879 = \gamma_1^*$, F = 33.38).[6] We also find significant accruals overweighting in only Australia, Canada, and the U.K. Hence, we find evidence of accruals overweighting in four of the 20 countries. Failure to detect the accrual anomaly in other countries could reflect a lack of power due to relatively small country-specific sample sizes. However, we do not observe the accrual anomaly in Japan with a sample size of 13,822 firm-years, but do detect it in Australia with a much smaller sample of 1,883 firm-years, which suggests that lack of power is not a major problem in the analysis.

Also consistent with Sloan, untabulated results indicate that for the forecasting equation, the coefficient on *ACC* is statistically smaller than the coefficient on *OCF* in the pooled results, and in the U.S. and 13 other countries; the exceptions are Denmark, India, Malaysia, The Netherlands, Singapore, and Thailand, which together represent less than 13 percent of the firms in our sample. Hence, in general, firms with high accruals in the current year have lower earnings in the subsequent year, relative to the contribution of current operating cash flows to future earnings.

Unlike Sloan, we find no evidence that stock prices in the U.S. also underweight operating cash flow persistence; $\gamma_2 = 0.717$ and $\gamma_2^* = 0.777$; if anything, *OCF*s are marginally overweighted (F = 2.71). In addition, across the three other countries, Australia, Canada, and the U.K., where we observe accruals overweighting, there is no evidence of *OCF* underweighting. Note that Sloan examines U.S. firm-years over a different time period (1962–1991 versus 1994–2002) and employs a different database than we do. However, in unreported results, we are able to replicate our findings for U.S. firms using CRSP and Compustat data in our sample period, and we also find no evidence of *OCF* underweighting when we compute *OCF* using the income definition (i.e., operating income) considered by Sloan.

Consistent with Sloan, untabulated results indicate that the coefficient on *ACC* in the pricing regression is reliably larger than the coefficient on *OCF* for the U.S. (i.e., $\gamma_1^* = 0.879 < \gamma_2^* = 0.777$), and we find the same result in the pooled samples and separately for Australia and the U.K., but not Canada. Another set of untabulated results, in which

[6] Notice that the coefficient estimates on β_1 across various countries are significantly higher than that obtained in the pooled regression. This is because the coefficient obtained in the pooled regression is not merely a linear combination of the individual β_1s across countries. Rather, it is influenced by the covariances among the independent variables across countries. See Johnston (1984, 207–211).

we use decile ranks instead of actual values for accruals and operating cash flows, indicate that the coefficient on *ACC* in the pricing regression is reliably smaller than that on *OCF* for the U.S., which is also consistent with Sloan, and this result also holds for Canada and the U.K. Note that neither set of results is consistent with a naïve version of functional fixation, which would predict no differences in the pricing of *ACC* and *OCF*.

There are four countries—Germany, Malaysia, Singapore, and Spain—for which we find *under*weighting of *both* accruals and operating cash flows. In addition, *OCF*s are underweighted (but accruals are not) in France, Italy, Japan, The Netherlands, Sweden, Switzerland, Taiwan, and Thailand. Finally, for Indonesia we find both accruals underweighting and *OCF* overweighting. These results suggest that accruals over- or underweighting does not necessarily imply *OCF* under- or overweighting and vice versa (Houge and Loughran 2000).

In Panel B of Table 3 we report Mishkin test results for current year earnings used in forecasting and pricing next year's earnings. There is no evidence of earnings misweighting in the pooled results across all countries or for the group of common law countries, but there is evidence of significant underweighting of current year earnings in the pooled results for the code law group of countries ($\gamma_1 = 0.639$ and $\gamma_1^* = 0.501$, $F = 15.98$). The individual country results (Table 3, Panel D) indicate significant overweighting of current earnings in U.S. stock prices ($F = 11.80$), marginally significant overweighting in the U.K. ($F = 2.98$), and no evidence of misweighting in Australia and Canada. Sloan does not find earnings misweighting in the U.S. We detect earnings underweighting in 11 countries, and these are 11 of the 12 countries where we previously documented *OCF* underweighting (see Panel C of Table 3).[7]

The accounting literature has overwhelmingly emphasized accrual overweighting, and accordingly that is our focus in this paper; hence, we leave an investigation of *OCF* and earnings underweighting to future research.

III. CROSS-COUNTRY DIFFERENCES IN INSTITUTIONAL AND ACCOUNTING STRUCTURES AND THE OCCURRENCE OF THE ACCRUAL ANOMALY

Cross-Country Institutional Structures and the Occurrence of the Accrual Anomaly

The results in the previous section suggest that the occurrence of the accrual anomaly is related to the presence of a common law tradition, although the relation is not a perfect one since we do not detect the anomaly in all of the countries in our sample that have a common law tradition. In this section, we consider a larger set of country-level factors and their possible association with the accrual anomaly. More specifically, we identify three categories of accounting and institutional structures that *a priori* suggest possible systematic differences across countries regarding the occurrence of the anomaly. These are: (1) restrictions on insider trading as well as a country's legal tradition, (2) the extent of accrual usage permitted and shareholder protections, and (3) other characteristics of capital markets. We

[7] It may seem that if the market overweights the accrual component of earnings but does not underweight the operating cash flow component, that overall earnings should not be correctly weighted by the market. However, this can occur depending on the covariance between accruals and cash flows. When earnings is the only variable whose misweighting is being tested, we do not have to worry about the covariance of the earnings components because the income statement linearly aggregates such components. But when we decompose earnings into accruals and operating cash flows, the covariance between accruals and operating cash flows is embedded in the weights assigned by the regression to these two components. Therefore, it is possible that such covariance can create a situation where earnings, by itself, is not misweighted although a component of earnings is misweighted. The proof is available from the authors upon request.

discuss our conjectures for each of these categories and then present the empirical analyses. Given the absence of strong theory in this area, we consider each conjecture independent of the others and view our analysis as exploratory.

A Country's Legal Tradition and Insider Trading Restrictions

As discussed in the previous section, we conjecture that a country's legal tradition, code law versus common law, affects the probability of occurrence of the accrual anomaly. Moreover, consistent with Ball et al. (2000) and Bushman and Piotroski (2004), we view legal tradition as the main proxy for cross-country differences in institutional structure, and thus we investigate the extent to which each of the other country-level factors we consider below is associated with the occurrence of the accrual anomaly incremental to a country's legal tradition. Our conjecture is:

C1: The occurrence of the accrual anomaly is more likely in countries with a common law tradition and than in countries with a code law tradition.

We expect that the more restrictions placed on insider trading, the less able insiders will be to trade on inside information about accruals and their expected persistence and, in turn, the more likely the accrual anomaly will occur. In the absence of insider trading restrictions, insiders can trade on private information and hence more quickly arbitrage away any accrual mispricing. We conjecture:

C2: The occurrence of the accrual anomaly is positively related to the strength of insider trading restrictions in a country.

We use Bhattacharya and Daouk's (2002) measure of insider trading restrictions. They obtained responses to two questions from national regulators of various countries: (1) When, if at all, were insider trading laws established in your exchanges? (2) When, if at all, was the first prosecution under these laws? Because virtually all countries in our sample had insider trading laws by the start of our sample period, we use the responses to the second question as our proxy for insider trading restrictions. In particular, we treat countries where prosecutions under insider trading laws took place prior to 1996 as countries with significant insider trading restrictions.

The Extent of Accrual Usage Permitted and Shareholder Protections to Mitigate Earnings Management

Hung (2001) argues that firms have more opportunities to manage earnings in countries that permit a higher use of accrual accounting. She finds that the value-relevance of earnings is negatively related to the extent to which accrual accounting is permitted in a country, which suggests that the opportunities to manipulate accruals dominate the benefits of accruals to reflect a better measure of performance than cash-basis accounting. Given that the accrual anomaly stems from the capital markets' overweighting of the accruals component of earnings, it is reasonable to expect that the accrual mispricing is more likely to occur the more extensively a country permits firms to use accrual accounting. Hence, we expect the occurrence of the accrual anomaly will be positively related to the extent of accrual accounting, and we conjecture:

C3: The occurrence of the accrual anomaly is positively related to the extent of accrual accounting permitted in a country.

We use a country-specific index developed by Hung (2001) to estimate the extent of accrual accounting in different countries (i.e., the extent to which a country's accounting policies depart from a cash basis). The accrual index reflects an equal weighting of 11 accrual-related accounting standards for each country, based on a summary of international accounting standards (Coopers & Lybrand 1993). Higher accrual index values represent a higher proportion of accounting treatments that allow the generation of accruals. For example, allowing capitalization and amortization of R&D yields a higher accrual index than requiring expensing of R&D.

Hung (2001) also finds the presence of investor protections in a country significantly mitigates the negative effect that higher use of accruals has on the value-relevance of earnings. That is, stronger outside shareholder rights and their more rigorous enforcement reduce the ability of managers to manipulate earnings. This leads to the prediction that the accrual anomaly is less likely to occur the stronger are a country's shareholder protections. We conjecture:

C4: The occurrence of the accrual anomaly is negatively related to the strength of shareholder protection in a country.

Consistent with Leuz et al. (2003) and Hung (2001), we use outside investor rights and legal enforcement as determined by La Porta et al. (1998) as proxies for strength of shareholder protection. La Porta et al. (1998) use an anti-director rights index that captures the voting rights of minority shareholders to gauge outside investor rights. Legal Enforcement is measured as the mean score across three variables: (1) an index of the efficiency of the judicial system, (2) an index based on an assessment of the rule of law, and (3) a corruption index.

Characteristics of Countries' Equity Markets

Alford et al. (1993) and Ali and Hwang (2000) find that earnings are more value-relevant in the U.S. vis-à-vis reporting of earnings in other countries. This suggests the possibility that in countries where the importance of earnings for security pricing is greater, managers can have greater incentives to manipulate earnings. If so, then the accrual anomaly should be more prevalent the more important is the role of earnings in security pricing. We expect that earnings are relatively more important in countries where equity markets are a relatively important source of capital. Hence, we predict that the accrual anomaly is more likely to occur the greater the importance of equity markets to an economy. Our conjecture is:

C5: The occurrence of the accrual anomaly is positively related to the importance of the equity markets in a country.

As in Leuz et al. (2003) and Hung (2001), we measure the importance of equity markets following La Porta et al. (1997). It is a country's average rank based on (1) the ratio of the aggregate stock market held by minority shareholders to gross national product, (2) the number of listed domestic stocks in a country relative to its population, and (3) the number of IPOs in a country relative to its population.

Another important characteristic of a country's equity market with regard to the accrual anomaly is likely to be the extent of ownership concentration. In economies where share ownership is dispersed, investors rely relatively more on reported earnings to address the information asymmetry between a firm's managers and equity market participants (Warfield

et al. 1995). We observe security analysts and investors devoting a great deal of attention to firms' reported earnings; earnings forecasts are widely disseminated in the financial press, and revisions in analysts' forecasts are closely followed. However, as suggested above, a greater focus on earnings may increase the incentives to manage earnings and, hence, increase the probability of accrual mispricing. In addition, a greater concentration of ownership increases the probability that holders of large blocks of shares are effectively insiders with greater access to information about the components of earnings. Consistent with this, Beneish and Vargus (2002) find that insiders in the U.S. behave as if they trade on information about the underlying persistence of income-increasing accruals. Thus, to the extent there is greater concentration of ownership, we would expect little if any overweighting of accruals and, hence, a lower probability the accrual anomaly will occur. Our conjecture is:

C6: The occurrence of the accrual anomaly is negatively related to the degree of concentration of share ownership in a country.

We use a country's median percentage of common shares owned by the three largest shareholders in the ten largest nonfinancial firms as our ownership concentration proxy (La Porta et al. (1998).

Descriptive Statistics

We report descriptive statistics for a set of country-level variables in Table 4, and define here the subset of variables we conjecture are possible determinants of the occurrence of the anomaly:

$ComLaw_j$ = Common Law = 1 if country *j*'s legal tradition is common law, and 0 if code law, based on La Porta et al. (1998);

$InsiderTrad_j$ = Insider Trading = 1 if country *j* had at least one prosecution under insider trading laws prior to 1996, and 0 otherwise, based on Bhattacharya and Daouk (2002);

$AccIndex_j$ = Accrual Index = an equally weighted index of 11 accrual-related accounting standards in country *j*, developed by Hung (2001);[8]

$InvRights_j$ = Outside Investor Rights = an aggregate measure for country *j*, varying from 0 to 5, of minority shareholder rights, based on the anti-director rights index developed by La Porta et al. (1998);

$LegEnforce_j$ = Legal Enforcement = the mean score for country *j*, varying from 0 to 10, of three legal variables (efficiency of the judicial system; assessment of rule of law; and corruption index), developed by La Porta et al. (1998);

$ImpEquity_j$ = Importance of Equity Markets = the mean rank for country *j* across three variables (ratio of the aggregate stock market capitalization held by minorities to GNP, number of listed domestic firms relative to the population, and number of IPOs relative to the population) with higher scores indicating greater importance of the stock market, developed by La Porta et al. (1997); and

$OwnConcen_j$ = Ownership Concentration = median for country *j* of the percentage of common shares owned by the three largest stockholders in the ten largest privately owned nonfinancial firms, developed by La Porta et al. (1998).

[8] We obtain data to compute *AccIndex* following Hung's (2001) approach for two countries not in her sample, India and Indonesia, but we have insufficient data to compute *AccIndex* for Malaysia, Taiwan, and Thailand.

TABLE 4
Country Characteristics

Country	Filing Deadline	Outsider Investor Rights	Legal Enforcement	Importance of Equity Market	Ownership Concentration	Accrual Index	Insider Trading Existence	Insider Trading Enforcement	DS%
Common Law Countries:									
Australia	4	4	9.5	24.0	0.28	0.82	1991	1996	99.7
Canada	4	5	9.8	23.3	0.24	0.82	1966	1976	100.0
Hong Kong	6	5	8.9	28.8	0.54	0.64	1991	1994	99.6
India	6	5	5.6	14.0	0.43	0.41	1992	1998	100.0
Malaysia	7	4	7.7	25.3	0.52	—	1973	1996	99.1
Singapore	3	4	8.9	28.8	0.53	0.64	1973	1978	99.5
Thailand	3	2	4.9	14.3	0.48	—	1984	1993	99.6
United Kingdom	6	5	9.2	25.0	0.15	0.82	1980	1981	99.8
United States	3	5	9.5	23.3	0.12	0.86	1934	1961	100.0
Code Law Countries:									
Denmark	6	2	10.0	20.0	0.40	0.55	1991	1996	95.6
France	6	3	8.7	9.3	0.24	0.64	1967	1975	89.0
Germany	8	1	9.1	5.0	0.50	0.41	1994	1995	79.1
Indonesia	4	2	2.9	4.7	0.62	0.59	1991	1996	99.9
Italy	4	1	7.1	6.5	0.60	0.45	1991	1996	72.4
Japan	3	4	9.2	16.8	0.13	0.55	1988	1990	98.7
The Netherlands	5	2	10.0	19.3	0.31	0.73	1989	1994	89.9
Spain	6	4	7.1	7.2	0.50	0.77	1994	1998	99.3
Sweden	6	3	10.0	16.7	0.28	0.59	1971	1990	97.0
Switzerland	6	2	10.0	24.8	0.48	0.32	1988	1995	47.5
Taiwan	4	3	7.4	13.3	0.14	—	1988	1989	100.0

Common law (code law) distinction is based on a country's legal tradition (La Porta et al. 1998). Outside Investor Rights is an aggregate measure ranging from 0 to 5 (5 implies higher minority shareholder rights), based on the anti-director rights index developed by La Porta et al. (1998). Legal enforcement is a mean score, varying from 0 to 10, of three legal variables (efficiency of the judicial system; assessment of rule of law; and corruption index), developed by La Porta et al. (1998). Importance of Equity Markets = the mean rank across three variables (ratio of the aggregate stock market capitalization held by minorities to GNP; number of listed domestic firms relative to the population; and number of IPOs relative to the population) with higher scores indicating greater importance of the stock market, developed by La Porta et al. (1997). Ownership Concentration is the median of the percentage of common shares owned by the three largest stockholders in the ten largest privately owned nonfinancial firms, developed by La Porta et al. (1998). Accrual Index is an equally weighted index of 11 accrual-related accounting standards in each country, developed by Hung (2001). Insider Trading Existence captures when insider trading laws were introduced and insider trading enforcement captures the year in which the first prosecution under insider trading laws took place. Both insider trading variables are obtained from Bhattacharya and Daouk (2002). DS% is the proportion of firms that use domestic accounting standards (Global Vantage codes firms using domestic standards as ''DS'').

Nine of the 20 countries have a common law tradition, while 11 have a code law tradition. Seven countries had no prosecutions under insider trading laws prior to 1996, with India and Spain bringing their first prosecutions in 1998.

Accrual accounting is permitted to the greatest extent in the U.S. (*AccIndex* = 0.86), with Australia, Canada, and the U.K. also ranking high. The median *AccIndex* across the 17 countries for which we have *AccIndex* data is 0.59; the lowest score is 0.32 in Switzerland, with Germany and India also allowing only limited use of accrual accounting. Table 4 also includes data on the percentage of firms domiciled in a given country that adhere to that country's domestic accounting standards (DS%). Overwhelmingly, firms follow their domestic GAAP. The median percentage of firms using domestic GAAP is 99.2 percent and DS% is below 80 percent for only three countries, with Switzerland being the outlier at 47.5 percent.[9] Our two shareholder rights variables are Outsider Investor Rights and Legal Enforcement. Canada, Hong Kong, the U.K. and the U.S. each have the highest ranking (5) on *InvRights*, whereas Germany and Italy have the lowest ranking (1). The median is 3.5. The countries with the highest enforcement of shareholder rights are Denmark, The Netherlands, Sweden, and Switzerland, while Indonesia has the lowest level. The median *LegEnforce* value is 9, suggesting that rigorous enforcement is generally widespread.

Importance of Equity Markets ranges from 28.8 for Hong Kong and Singapore to 5 for Germany; the median *ImpEquity* value is 18. The countries with the most concentrated ownership of shares are Indonesia and Italy (*OwnConcen* of 62 percent and 60 percent, respectively). The median is 41.5 percent. The U.S. has the lowest *OwnConcen* value (12 percent), followed closely by Japan, Taiwan, and the U.K.

Table 5, Panel A presents correlations of country-level variables across our sample of 20 countries (17 for *AccIndex*). *ComLaw* is positively associated with *InvRights*, *ImpEquity*, and *AccIndex*. *InvRights* is negatively related to *OwnConcen* and positively related to *ImpEquity* and *AccIndex*. *InvRights* is not significantly correlated with *LegEnforce*, which suggests that outside investor rights and legal enforcement reflect different aspects of shareholder protections. *LegEnforce* is positively associated with *ImpEquity* and *InsiderTrad* enforcement, and negatively associated to *OwnConcen*. Finally, *OwnConcen* is negatively related to *InsiderTrad* enforcement and the *AccIndex*. The presence of significant correlations between various country-level characteristics hints at potential collinearity problems for our multivariate analysis.

Country-Level Results

We use correlation and regression analyses to investigate our cross-country conjectures about accounting and institutional factors associated with the occurrence of the accrual anomaly. We create an accrual anomaly variable (*AccAnom*) that equals 1 for each country—Australia, Canada, the U.K., and the U.S.—for which we find significant support for accrual overweighting in the Mishkin tests (Table 3, Panel C).[10]

In the correlation analysis, we separately examine the association between *AccAnom* and each of the seven accounting and institutional structure variables. The results are in the first row of Table 5, Panel A, and as expected indicate the occurrence of the accrual anomaly is significantly and positively correlated with *ComLaw* tradition (ρ = 0.55),

[9] Ashbaugh and Pincus (2001) report that Switzerland had relatively few accounting measurement choice restrictions in the early 1990s, and Swiss firms were more likely to adopt International Accounting Standards than firms from any of the other 12 non-U.S. countries they examine.

[10] The results of abnormal returns tests reported below in Table 6, Panel B, confirm the Mishkin test results.

TABLE 5
Correlation Statistics and Regression Analysis

Panel A: Correlation Statistics

	ComLaw	***InvRights***	***LegEnforce***	***ImpEquity***	***OwnConcen***	***AccIndex***	***InsiderTrad***
AccAnom.	0.55	0.54	0.32	0.41	−0.54	0.72	0.10
Significant (1,0)	(0.01)	(0.01)	(0.16)	(0.07)	(0.01)	(0.00)	(0.66)
ComLaw		0.69	−0.03	0.64	−0.05	0.48	0.03
		(0.00)	(0.92)	(0.00)	(0.84)	(0.05)	(0.89)
InvRights			0.17	0.57	−0.42	0.58	0.09
			(0.86)	(0.01)	(0.07)	(0.01)	(0.72)
LegEnforce				0.55	−0.48	0.20	0.44
				(0.01)	(0.03)	(0.42)	(0.05)
ImpEquity					−0.22	0.35	0.28
					(0.33)	(0.17)	(0.23)
OwnConcen						−0.53	−0.47
						(0.03)	(0.04)
AccIndex							0.11
							(0.65)

Panel B: Regression Analysis

$$AccAnom_j = \beta_0 + \beta_1 ComLaw_j + \beta_2 InsiderTrad_j + \beta_3 AccIndex_j + \beta_4 InvRights_j + \beta_5 LegEnforce_j + \beta_6 ImpEquity_j + \beta_7 OwnConcen_j + \varepsilon_j \quad (5)$$

	Predicted Sign	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**	**Coefficient (t-statistic)**
ComLaw	+	0.44**	0.36*	0.28^	0.45**	0.39*	0.42**	0.77**
		(2.74)	(2.28)	(1.29)	(3.04)	(1.87)	(3.32)	(3.07)
InsiderTrad	+	0.07						−0.12
		(0.43)						(−0.76)
AccIndex	+		1.38**					0.99*
			(2.85)					(1.97)

(*continued on next page*)

TABLE 5 (Continued)

InvRights	+/−			0.09				−0.17*
				(1.10)				(−1.90)
LegEnforce	+/−				0.07^			0.00
					(1.82)			(0.02)
ImpEquity	+					0.01		−0.00
						(0.38)		(−0.30)
OwnConcen	−						−1.27**	−1.47*
							(−3.26)	(−2.38)
Adjusted R^2		0.23	0.59	0.28	0.35	0.23	0.52	0.69
n		20	17	20	20	20	20	17

**, *, ^ Represents statistical significance at 1 percent, 5 percent, and 10 percent levels, respectively, one- (two-) tailed when the coefficient is predicted (not predicted) t-statistic in parentheses.

$AccAnom_j$ is 1 for Australia, Canada, the U.K., and the U.S., the countries for which we found significant support for accrual overweighting in the Mishkin (and subsequent abnormal accruals) tests, and 0 otherwise; *ComLaw* is a dummy variable that takes on the value of 1 for common law countries, and 0 for code law countries (based on a country's legal tradition per La Porta et al. 1998); *AccIndex* is an equally weighted index of 11 accrual-related accounting standards in each country, developed by Hung (2001); *InvRights* is an aggregate measure of outside investor rights ranging from 0 to 5 (5 implies higher minority shareholder rights), based on the anti-director rights index developed by La Porta et al. (1998); *LegEnforce* measures the legal enforcement in a country. It is a mean score, varying from 0 to 10, of three legal variables (efficiency of the judicial system, assessment of rule of law, and corruption index), developed by La Porta et al. (1998); *ImpEquity* captures the importance of equity markets in a country and is the mean rank across three variables (ratio of the aggregate stock market capitalization held by minorities to GNP; number of listed domestic firms relative to the population; and number of IPOs relative to the population) with higher scores indicating greater importance of the stock market, developed by La Porta et al. (1998); *OwnConcen* measures the level of ownership concentration as the median of the percentage of common shares owned by the three largest stockholders in the ten largest privately owned nonfinancial firms, developed by La Porta et al. (1998); *InsiderTrad* is a dummy that takes on the value of 1 if a country had prosecuted a case under insider trading laws prior to 1996, and 0 otherwise, based on data in Bhattacharya and Daouk (2002).

AccIndex ($\rho = 0.72$), and *ImpEquity* ($\rho = 0.41$), and significantly and negatively correlated with *OwnConcen* ($\rho = -0.54$). Surprisingly, *AccAnom* and *InvRights* are positively related ($\rho = 0.54$), as are *AccIndex* and *LegEnforce* ($\rho = 0.32$), although the latter correlation is not significant.

As noted earlier, Ball et al. (2000) and Bushman and Piotroski (2004) suggest that legal tradition is the primary proxy for cross-country differences in institutional structure. Hence, we investigate the extent to which each of the other institutional factors is associated with the occurrence of the accrual anomaly incremental to *ComLaw*. We do this by estimating the following model using OLS (the subscripts indicate the *j*th country):[11]

$$AccAnom_j = \beta_0 + \beta_1 ComLaw_j + \beta_i Institutional\ factor_j + \varepsilon_j \quad (4)$$

where *Institutional factor*$_j$ is, in turn, *InsiderTrad*$_j$, *AccIndex*$_j$, *InvRights*$_j$, *LegEnforce*$_j$, *ImpEquity*$_j$, or *OwnConcen*$_j$, each of which has previously been defined. We also estimate a full model with all of the institutional factors included:

$$AccAnom_j = \beta_0 + \beta_1 ComLaw_j + \beta_2 InsiderTrad_j + \beta_3 AccIndex_j + \beta_{4a} InvRights_j + \beta_{4b} LegEnforce_j + \beta_5 ImpEquity_j + \beta_6 OwnConcen_j + \varepsilon_j. \quad (5)$$

Based on the conjectures we develop above, we expect positive coefficients for *ComLaw*$_j$, *InsiderTrad*$_j$, *AccIndex*$_j$, and *ImpEquity*$_j$, and negative coefficients for *OwnConcen*$_j$, *InvRights*$_j$, and *LegEnforce*$_j$. However, recall Table 5, Panel A reports generally positive correlations for the shareholder rights variables (*InvRights* and *LegEnforce*) with each of the factors expected to be positively related to *AccAnom*, and negative correlations for the shareholder rights variables and *OwnConcen*, which is expected to be negatively related to *AccAnom*. Observing such correlations in the absence of strong theory argues for modifying C4 to allow for a positive or negative relation between the strength of a country's shareholder protections and occurrence of the anomaly.

The regression results are in Table 5, Panel B. The adjusted R^2s for the seven models we estimate range from 23 percent to 69 percent. As expected, the coefficient on *ComLaw*$_j$ is reliably positive in all of the regressions. After controlling for *ComLaw*$_j$, separate regression results indicate, as predicted, a reliably positive coefficient on *AccIndex*$_j$ (one-tailed p-value < 0.01) and a reliably negative coefficient on *OwnConcen*$_j$ (one-tailed p-value < 0.01). In the full model, which includes all of the institutional factors, as predicted there are significantly positive coefficients on *ComLaw*$_j$ and *AccIndex*, and significantly negative coefficients on *OwnConcen*$_j$ and *InvRights*$_j$. Thus, the accrual anomaly is more likely to occur in countries with a common law tradition, where more extensive use of accrual accounting is permitted, and where ownership of shares is more widely dispersed. There is also evidence (in the full model only) that the occurrence of the accrual anomaly is also related to the presence of weak outside shareholder rights.

Collinearity diagnostics reveal condition indices in excess of 18 for *OwnConcen* and *InsiderTrad* and over 50 for *AccIndex*, suggesting the presence of multicollinearity. Because multicollinearity is generally viewed as a concern if one does not detect significant results as predicted (e.g., Belsley et al. 1980), we conclude that it does not appear to be a major

[11] Country-level factors presumably are determined endogenously. However, with complete data for only 17 countries, econometric techniques such as 2SLS that would account for that are unlikely to yield reliable estimates.

problem in our sample, although it can induce incorrect coefficient signs.[12] We also note $AccAnom_j$ is a 0,1 dependent variable, and thus Logit (or probit) estimation is preferred over OLS. However, we are unable to get convergence using Logit or probit to estimate the full model, probably because we only have 17 countries with the required data to estimate the model and also perhaps because of multicollinearity.[13]

IV. ABNORMAL RETURNS TESTS: FURTHER ANALYSIS OF H1 AND AN INVESTIGATION OF ALTERNATIVE EXPLANATIONS FOR THE ACCRUAL ANOMALY

In this section we conduct abnormal returns tests using firm-level data from each of the 20 countries in our sample. We begin by outlining the methodology and reporting the results of abnormal returns tests of our basic research hypothesis. We then turn to our primary purpose, which is to investigate alternative explanations for the accrual anomaly and thus provide evidence on the ability of each alternative to explain the anomaly in an international setting.

Abnormal Returns Tests of H1

While the Mishkin test results provide evidence on the generalizability of accrual overweighting in stock prices, following Sloan (1996) we also assess whether abnormal returns can be earned by taking trading positions on the accruals variable to provide additional, confirmatory evidence on H1. Given the Mishkin test results of accrual overweighting in Australia, Canada, the U.K., and the U.S., we expect that accruals will predict future returns in those countries.

The strategy we implement relies on the construction of zero-investment portfolios (Fama and MacBeth 1973). First, we calculate each firm's accrual decile rank separately for each year from 1994 through 2002, and follow the same procedure to determine decile ranks for operating cash flows. Next, we form portfolios using the decile ranks. More specifically, we calculate scaled-decile rank for accruals for each firm in each year by annually ranking accrual values into deciles (0 to 9) and dividing the decile number by 9 such that each observation related to accruals takes a value ranging between 0 and 1. We denote the variable as $ACC^{dec}{}_t$, where the ''dec'' superscript indicates a scaled decile rank. Because we have a maximum of nine years of data and often very few observations each year, it would be very difficult to estimate the relation between abnormal returns and the

[12] The regression findings of a positive coefficient on *ComLaw* and a negative coefficient on *InvRights* would seem to be contradictory since strong investor protection is generally an outcome of common law legal systems. As noted, the correlations in Table 5, Panel A indicate *ComLaw* and *InvRights* are highly positively correlated, as are the correlations between the occurrence of accrual anomaly and *ComLaw* and *InvRights*, respectively. A high degree of multicollinearity in a multivariate regression model can cause coefficients to have the wrong sign (Greene 1993), and this may be the reason for the contradictory results. However, we view our conjectures as *ex ante* theoretical arguments based on plausible economic ideas, regardless of how we empirically measure the underlying constructs, and it is conceivable that the relation between *AccAnom* and *InvRights* could be negative after controlling for common law tradition. *Ex post*, we may have a multicollinearity problem suggesting that the readers interpret our results with caution, especially regarding C4. But poor measures (i.e., correlation between the proxies for common law tradition and investor rights, etc.) do not, in our view, invalidate the theoretical conjectures.

[13] We constructed a variable that the captures relative accrual overweighting across countries. In particular, we take a country's F-statistic of accrual misweighting from the Mishkin tests (Table 3, Panel C) and multiply it by 1 (-1) if the country exhibits accruals over- (under-)weighting. We then use the relative rank of this variable as our *LHS* variable. A higher (lower) rank indicates accruals over- (under-)weighting. Untabulated results are similar except *ComLaw* is not significant in two of the separate regressions and *AccIndex* is not significant in the full model. Such weaker results likely reflect measurement error in the constructed *LHS* variable.

ACC^{dec} variable on an annual basis. Therefore, we estimate Equation (4) below using the Generalized Method of Moments procedure with Newey and West (1987) correction for autocorrelation for one lag.

The basic idea behind Fama and MacBeth (1973) regressions is to project abnormal returns on an intercept and the $ACC^{dec}{}_t$ variable. The coefficient on $ACC^{dec}{}_t$ represents the country-adjusted abnormal return to a zero-investment portfolio optimally formed to exploit the information in the accruals variable, where the weights assigned to each firm in the $ACC^{dec}{}_t$ variable, represented by the rows of the matrix $(X'X)^{-1}X'$ where $X = [1, ACC^{dec}{}_t]$, sum to zero. Our strategy involves taking positions in firms beginning with the month after their country-specific filing deadline following fiscal year-end to allow for the determination of portfolio weights from $(X'X)^{-1}X'$ used to ascertain the investment positions. Firms receiving negative weights are sold short and firms with positive weights are bought, and the long and short positions are closed after one year. Abnormal returns to this strategy are comparable to abnormal returns to a zero-investment portfolio with long and short positions, respectively, in firms within the lowest and highest deciles of accruals (Bernard and Thomas 1990).

Fama and French (1998) show that future abnormal returns are associated with other variables, including firm size, the book-to-market ratio, and the earnings-to-price ratio, for most countries we examine. It is plausible that potential abnormal returns related to accruals are not independent of returns observed in connection with these variables. Hence, we control for these factors by including them in the model and estimate the following regression (suppressing firm-specific subscripts):

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_t + \delta_4 BM^{dec}{}_t + \varphi_{t+1} \quad (6)$$

where $SIZE^{dec}{}_t$, $EP^{dec}{}_t$, and $BM^{dec}{}_t$ relate to scaled-decile ranks (ranging from 0 to 1) for the size, earnings-to-price, and book-to-market portfolios, respectively. In the regression specification (6), coefficient δ_1 represents the *incremental* abnormal return to a zero-investment portfolio in the accruals variable. Recalling that $ACC^{dec}{}_t$ ranges from 0 to 1, if accruals overweighting predicts future returns, then long (short) positions in firms within the lowest (highest) deciles of accruals implies that δ_1 should be negative (i.e., $\delta_1 < 0$).

The ACC^{dec} column in Table 6, Panel A displays the results of estimating Equation (6). Consistent with Sloan, a zero-investment portfolio in accruals of U.S. firms earns an abnormal return of 8.4 percent over the next year ($\delta_1 < 0$, p-value < 0.01). Consistent with our Mishkin test results, Australia, Canada, and the U.K. also have a negative and significant δ_1.

There are several countries (Hong Kong, India, The Netherlands, Sweden, and Switzerland) where the abnormal returns (δ_1) are negative but not statistically significant at the 10 percent level. One plausible explanation for the insignificant results is lack of power of our abnormal returns tests. To assess the power of our tests, we include in Panel A of Table 6 a column indicating the sample size needed for the observed abnormal return to achieve statistical significance at the 5 percent level. Statistical significance indicating accrual overweighting would have been achieved for Sweden only with a more than doubling of the sample size, and it would require a quadrupling of the sample sizes for India and Switzerland. Hence, in general, sample size does not appear to be a major impediment to reaching statistical significance.

Unexpectedly, there are also significantly negative abnormal returns for Denmark, France, Germany, Italy, Japan, Malaysia, and Thailand, even though the Mishkin test results do not indicate accrual overweighting for these countries. We conjecture that the reason for

significant abnormal returns obtained for these countries is more consistent with returns to operating cash flow underweighting than to accruals overweighting because (1) the results of the Mishkin analysis suggest that in these countries, taking positions on operating cash flows, should obtain abnormal returns; and (2) *ACC* and *OCF* are more negatively correlated for these countries than for most of the other countries (see Table 2). To investigate this conjecture, we augment Equation (6) by including OCF^{dec} as an additional control variable; i.e., we estimate:

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_t + \delta_4 BM^{dec}{}_t + \delta_5 OCF^{dec}{}_t + \varphi_{t+1}. \quad (6a)$$

The evidence presented in the ACC^{dec} column of Table 6, Panel B is highly consistent with our conjecture. The significantly negative coefficients on ACC^{dec} for Australia, Canada, the U.K., and the U.S. remain after including *OCF* as an additional variable in the abnormal returns regression, ranging in value from −0.069 to −0.151. Moreover, δ_1 is no longer significantly negative for any other country. Similar to Panel A, we also assess the power of our tests in Panel B. There are five countries with negative coefficients on ACC^{dec}, yet

TABLE 6
Regression Tests of Abnormal Returns

Panel A: Abnormal Returns on Accruals

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_i + \delta_4 BM^{dec}{}_i + \varphi_{t+1} \quad (6)$$

Country	n	ACC^{dec}	n to Achieve Statistical Significance at 5% level	$SIZE^{dec}$	EP^{dec}	BM^{dec}
Common Law Countries:						
Australia	1883	−0.179**	606	−0.136*	0.131*	0.005
Canada	2816	−0.083*	2733	−0.325**	0.115*	−0.206**
Hong Kong	553	−0.050	6022	−0.087	0.137	0.142
India	1245	−0.047	5887	−0.064	0.035	0.041
Malaysia	2215	−0.086*	1089	−0.082*	0.154**	0.108**
Singapore	1471	0.014	68555	−0.066	0.187**	0.143**
Thailand	1369	−0.206**	438	−0.171*	0.282**	0.243**
United Kingdom	6482	−0.099**	998	−0.142**	0.026	−0.081*
United States	19039	−0.084**	4491	−0.278**	−0.018	−0.076**
Code Law Countries:						
Denmark	504	−0.085^	834	0.189*	0.057	0.092
France	2782	−0.082^	3159	0.059	0.128**	0.016
Germany	2483	−0.066^	3828	0.088**	0.149**	0.025
Indonesia	839	0.126	2021	−0.114	−0.122	0.411**
Italy	785	−0.117^	913	−0.043	0.125^	0.091
Japan	13822	−0.058**	1431	0.031**	0.094**	0.134**
The Netherlands	842	−0.022	12396	0.016	0.068	−0.027
Spain	678	0.070	1042	0.037	0.241**	0.034
Sweden	777	−0.092	1615	−0.076	0.269**	−0.119
Switzerland	815	−0.049	3575	−0.064	0.061	−0.105
Taiwan	627	0.005	273391	−0.065	0.197**	0.022

(*continued on next page*)

TABLE 6 (Continued)

Panel B: Abnormal Returns on Accruals after Controlling for Operating Cash Flows-to-Assets

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_i + \delta_4 BM^{dec}{}_i + \delta_5 OCF^{dec}{}_i + \varphi_{t+1} \quad (6a)$$

Country	n	ACC^{dec}	n to Achieve Statistical Significance at 5% level	$SIZE^{dec}$	EP^{dec}	BM^{dec}	OCF^{dec}
Common Law Countries:							
Australia	1883	−0.151*	1530	−0.123*	0.198**	−0.013	−0.118
Canada	2816	−0.084*	2821	−0.325**	0.116^	−0.206**	−0.002
Hong Kong	553	−0.005	852434	−0.102	0.097	0.148	0.075
India	1245	0.031	43397	−0.078	−0.006	0.093	0.112
Malaysia	2215	0.049	10483	−0.099*	0.047	0.132**	0.186**
Singapore	1471	0.233**	502	−0.093^	0.034	0.177**	0.293**
Thailand	1369	−0.009	3682	−0.188*	0.204*	0.257**	0.142
United Kingdom	6482	−0.107*	3364	−0.140**	0.033	−0.085*	−0.013
United States	19039	−0.069**	6195	−0.298**	−0.111**	−0.051*	0.077**
Code Law Countries:							
Denmark	504	0.031	16758	0.166*	−0.009	0.134	0.153^
France	2782	0.029	76951	0.049	0.058	0.057	0.153*
Germany	2483	−0.028	37105	0.086*	0.128**	0.033	0.048
Indonesia	839	0.268*	702	−0.149	−0.263	0.406*	0.228^
Italy	785	0.043	8445	−0.044	0.040	0.134*	0.208*
Japan	13822	−0.017	41677	0.033	0.102	0.132	0.071**
The Netherlands	842	0.051	7021	0.013	0.029	0.013	0.104
Spain	678	0.056	3270	0.038	0.250**	0.028	−0.020
Sweden	777	0.013	87964	−0.106	0.131	−0.088	0.208*
Switzerland	815	−0.004	1687995	−0.068	0.027	−0.076	0.064
Taiwan	627	0.238**	195	−0.083	0.010	0.141	0.363**

**, *, ^ Represents statistical significance of t-statistics at 1 percent, 5 percent, and 10 percent levels, respectively, one- (two-) tailed for ACC^{dec} and OCF^{dec} (other variables). We estimate Equations (6) and (6a) using the Generalized Method of Moments procedure with Newey and West (1987) correction for autocorrelation for one lag.

Sample consists of 62,027 firm-year observations from 1994–2002.

NI is the decile rank related to net income before extraordinary items (GVIC data 32) scaled by average total assets measured as the average of beginning and end of fiscal year total assets (GVIC data 89); OCF^{dec} is the decile rank of operating cash flows scaled by average total assets. Operating cash flows is net income before extraordinary items plus Depreciation (GVIC data 11) minus change in Current assets (GVIC data 75 minus data 60) and plus change in Current liabilities (GVIC data 104 minus data 94). Accruals is *NI* minus *OCF*, while ACC^{dec} is the decile rank of accruals scaled by average total assets; $SIZE^{dec}$ is market value of common equity measured in a country's own currency at the beginning of the return accumulation period, then ranked within the country, and transformed to a scaled-decile variable ranging from 0 to 1. Thus currency translation issues do no pose a concern for our analysis; EP^{dec} is earnings-to-price ratio (stock price measured at the beginning of the return accumulation period), transformed to a scaled-decile variable ranging from 0 to 1; BM^{dec} is the natural logarithm of the book-to-market ratio measured at the beginning of the return accumulation period, transformed to a scaled-decile variable ranging from 0 to 1. Abnormal return (*AR*) is the annual holding period return, including dividends, minus the appropriate country index compiled by the investment bank Morgan Stanley (http://www.msci.com).

sample size does not appear to be an impediment to reaching statistical significance. For example, Germany has the largest magnitude coefficient of the five countries (−0.028), but it would take a 14-fold increase in sample size for its coefficient to become significant.

We note a *positive* and significant δ_1 for Indonesia, Singapore, and Taiwan after controlling for *OCF*. The Mishkin tests for Indonesia and Singapore indicate accrual *under*-weighting, although this is not the case for Taiwan (see Table 3, Panel C). Hence, there is evidence of positive returns for an accrual underweighting strategy in Indonesia and Singapore.

In summary, it is only for Australia, Canada, the U.K., and the U.S. that Mishkin tests indicate the presence of accruals overweighting in pricing, and abnormal returns tests indicate that abnormal returns can be earned based on an accruals overweighting trading strategy after controlling for firm size, book-to-market, earnings-to-price, and operating cash flows.

Sensitivity Tests

Our results of separate country abnormal returns (and Mishkin) tests of H1 are robust to several sensitivity checks summarized below. First, the accruals measure we use is estimated using data from successive balance sheets as opposed to using reported operating cash flows under SFAS No. 95. While this is typical in international accounting research (e.g., Bhattacharya et al. 2003; Land and Lang 2003; Leuz et al. 2003), Hribar and Collins (2002) show that accruals derived from balance sheet data contain significant measurement error, especially for firms involved in mergers and divestitures. Global Vantage has no analog to SFAS No. 95 disclosures of operating cash flows for the foreign countries we examine. However, to ensure that our results are robust to this problem, we eliminate observations Global Vantage flags as firms that experience mergers during our sample period. In particular, we eliminate firm-year observations for which there is a disclosure of the acquisition method, and our results (not tabled) are virtually unchanged.

Second, we control for potential measurement error due to the omission of affiliate information. In some countries, parent companies are not required to account for their share of income from affiliates, and this creates measurement error in the *NI*, *ACC*, and *OCF* variables. To examine the robustness of our results to this measurement error we replicate our analysis for observations where Global Vantage specifically identifies whether a company's financial statements reflect consolidation. Unreported results using the reduced sample yield no change in inferences.

Third, our inferences are unaltered if we accumulate abnormal returns from two months after the filing deadline for various countries. Also, as with Fama and French (1998) and Alford et al. (1993), we consider accumulating returns six months after the fiscal year for all countries. Once again, our results are robust.

Finally, we split our sample into two subperiods, 1994–1997 and 1998–2002. We do this to assess whether the reported results are sensitive to time periods, and because Land and Lang (2003) report that EP ratios across many of the countries we examine converged in the second half of the 1990s, and the convergence was driven by the market's pricing of accruals, not operating cash flows. Results (unreported) yield similar inferences to those reported above on the occurrence or the lack thereof of the accrual anomaly in both subperiods.

Alternative Explanations for the Accrual Anomaly

We turn now to abnormal returns tests of alternative explanations that have been proposed in the literature for the accrual anomaly. We report detailed results of our investigation of two explanations below, and summarize our analysis of several others.

The first alternative explanation we consider is the possibility that the accrual anomaly is linked to earnings management. Xie (2001) demonstrates that the accrual anomaly in the U.S. is due mostly to the abnormal component of total accruals. Abnormal (or discretionary) accruals have been linked to earnings management in numerous studies (e.g., Dechow and Schrand 2004), and we consider whether the accrual anomaly is associated with abnormal accruals in a global setting. We hypothesize:

H2a: The accrual anomaly is due to earnings management.

To test H2a, we replace ACC^{dec} in Equation (6a) with Jones (1991) model discretionary accruals ($DACC^{dec}$) and nondiscretionary accruals ($NDACC^{dec}$), after transforming discretionary and nondiscretionary accruals into scaled-decile variables ranging from 0 to 1. Discretionary (i.e., abnormal) accruals are the difference between accruals and ''expected'' (or nondiscretionary) accruals, and we estimate nondiscretionary accruals by running the Jones (1991) model for each country-year:[14]

$$ACC_t = \alpha_1 + \alpha_2 \Delta REV_t + \alpha_3 PPE_t + \varepsilon \tag{7}$$

where *ACC* is accruals, *REV* is sales revenue (GVIC data 1), and *PPE* is gross property, plant, and equipment (GVIC data 77). The intercept and all variables are scaled by average total assets.[15] The results are in Panel A of Table 7, and there is a reliably negative coefficient on $DACC^{dec}$ for Australia, Canada, the U.K., and the U.S., but this is not the case for nondiscretionary accruals. Hence, there is evidence that the accrual anomaly is related to earnings management in these four countries, which is consistent with Xie's (2001) results for the U.S. We obtain virtually identical results using the modified-Jones model to estimate discretionary accruals.

Second, we consider whether the accrual anomaly is related to limits to arbitrage. Mashruwala et al. (2006) argue that absence of close substitutes for mispriced stocks accounts for why the accrual anomaly is not fully arbitraged away in U.S. markets. Pontiff (1996), Wurgler and Zhuravskaya (2002), and Mashruwala et al. (2006) use the idiosyncratic portion of a mispriced stock's volatility that cannot be avoided by holding offsetting positions in other stocks and indexes as a proxy for the absence of close substitutes. Idiosyncratic risk is relevant to arbitrageurs in these papers because they assume that arbitrageurs are risk averse and highly specialized and, hence, hold relatively few positions at a time. Our hypothesis is:

H2b: The accrual anomaly is due to limits on arbitrage.

To control for arbitrage risk in our test of H2b, we interact ACC^{dec} with ARB^{dec}, where ARB^{dec} reflects idiosyncratic return volatility, the variable Mashruwala et al. (2006) use to proxy for absence of close substitute stocks for mispriced securities, which makes arbitrage more difficult. ARB^{dec} is our scaled-decile variable pertaining to arbitrage risk. A stock's

[14] There are insufficient data to estimate abnormal accruals on a country-industry-year basis.
[15] If gross property, plant, and equipment is unavailable, we use net PPE (GVIC data 76).

arbitrage risk is the residual variance from a standard market model regression of its returns over the 36 months ending one month prior to the return accumulation period. We require a minimum of six observations to compute the residual variance, which reduces the sample to 60,695 observations. The results in Table 7, Panel B indicate there are no countries for which the coefficient on ACC^{dec} is reliably negative, and thus no case in which the accrual anomaly occurs once we control for barriers to arbitrage. In untabulated results, we also control for systematic risk by interacting ACC^{dec} with $BETA^{dec}$, where *BETA* is computed from the market model regression described above, and our inferences are unaffected. Hence, we confirm the results in Mashruwala et al. (2006) for the U.S., and find their results generalize to other countries as well.

Additional Explanations

We also consider several other alternative explanations for the accrual anomaly, and find little support for each one. We briefly summarize our investigation of each of these.

First, Richardson et al. (2005) posit that some accrual components are measured more reliably than others, which can lead to differences in persistence across the components of

TABLE 7
Abnormal Returns Tests of Alternative Explanations for the Accrual Anomaly

Panel A: Regression Tests of Abnormal Returns on Discretionary Accruals, Following Xie (2001)

$$AR_{t+1} = \delta_0 + \delta_{1a}DACC^{dec}{}_t + \delta_{1b}NDACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_i + \delta_4 BM^{dec}{}_i + \delta_5 OCF^{dec}{}_i + \varphi_{t+1} \quad (6b)$$

Country	n	$DACC^{dec}$	$NDACC^{dec}$	$SIZE^{dec}$	EP^{dec}	BM^{dec}	OCF^{dec}
Common Law Countries:							
Australia	1883	−0.129*	0.017	−0.127*	0.118	0.009	0.004
Canada	2816	−0.113^	−0.076^	−0.324**	0.146*	−0.215**	−0.041
Hong Kong	553	0.049	−0.160^	−0.081	0.086	0.155	0.081
India	1245	−0.041	0.084	−0.061	0.002	0.112	0.063
Hong Kong	553	0.049	−0.160^	−0.081	0.086	0.155	0.081
Singapore	1471	0.191**	0.211**	−0.103^	0.016	0.193**	0.301**
Thailand	1369	−0.048	0.017	−0.202**	0.162^	0.264*	0.205*
United Kingdom	6482	−0.087*	0.033	−0.145**	0.017	−0.065	0.016
United States	19039	−0.053*	0.046^	−0.292**	−0.089**	−0.040	0.135**
Code Law Countries:							
Denmark	504	0.038	0.028	0.163*	−0.016	0.141	0.166
France	2782	0.036	−0.024	0.053	0.057	0.049	0.151*
Germany	2483	−0.009	−0.131*	0.085*	0.150**	0.014	−0.021
Indonesia	839	0.156	0.487*	−0.203^	−0.245	0.449**	0.183
Italy	785	0.046	0.052	−0.051	0.039	0.139	0.216*
Japan	13822	−0.006	−0.014	0.031*	0.094**	0.134**	−0.004
Malaysia	2215	0.063	0.116**	−0.123**	0.021	0.122**	0.217**
The Netherlands	842	−0.015	0.043	0.017	0.051	0.009	0.066
Spain	678	0.013	0.158*	0.003	0.270**	0.023	−0.034
Sweden	777	0.046	−0.105	−0.071	0.099	−0.081	0.218*
Switzerland	815	−0.044	−0.053	−0.069	0.094	−0.134	−0.036
Taiwan	627	0.171*	0.062	−0.084	0.042	0.109	0.310**

(*continued on next page*)

TABLE 7 (Continued)

Panel B: Regression Tests of Abnormal Returns on Accruals after Controlling for Arbitrage Risk, Following Mashruwala et al. (2006)

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_i + \delta_4 BM^{dec}{}_i + \delta_5 OCF^{dec}{}_i + \delta_6 ACC^{dec} * ARB^{dec}{}_i + \varphi_{t+1} \quad (6c)$$

Country	n	ACC^{dec}	$SIZE^{dec}$	EP^{dec}	BM^{dec}	$ACC^{dec} * ARB^{dec}$	OCF^{dec}
Common Law Countries:							
Australia	1858	−0.056	−0.201**	0.138	−0.029	−0.331**	−0.097
Canada	2791	0.047	−0.369**	0.071	−0.239**	−0.203*	0.026
Hong Kong	547	0.057	−0.129	0.085	0.125	−0.106	0.067
India	1226	0.025	−0.099	0.001	0.080	0.050	0.132
Malaysia	2174	0.079	−0.108**	0.041	0.142**	−0.063	0.181**
Singapore	1399	0.234*	−0.088	0.038	0.164**	−0.039	0.276**
Thailand	1369	−0.065	−0.179*	0.208*	0.258**	0.108	0.153
United Kingdom	6425	−0.046	−0.158**	0.021	−0.096*	−0.109*	−0.020
United States	18618	0.048	−0.280**	−0.093**	−0.054**	−0.050*	0.013**
Code Law Countries:							
Denmark	470	0.045	0.247**	−0.047	0.236*	0.059	0.193
France	2653	0.069	0.073*	0.063	0.079	−0.201**	0.100^
Germany	2394	0.189**	0.037	0.083*	0.017	−0.287**	0.095^
Indonesia	832	0.211	−0.131	−0.267	0.403*	0.145	0.252
Italy	745	0.093	−0.060	0.027	0.124	−0.058	0.213*
Japan	13600	0.003	0.016	0.090**	0.114**	−0.131**	−0.013
The Netherlands	819	0.101	0.002	0.006	0.018	−0.033	0.134^
Spain	665	0.170*	−0.013	0.245**	0.011	−0.228*	−0.013
Sweden	692	0.216*	−0.150*	0.049	−0.086	−0.217^	0.301
Switzerland	798	−0.000	−0.068	0.053	−0.081	−0.108	0.012
Taiwan	620	0.204*	−0.077	0.021	0.156	0.052	0.360**

**, *, ^ Represents statistical significance of t-statistics at 1 percent, 5 percent, and 10 percent levels, respectively, one- (two-) tailed for ACC^{dec} and OCF^{dec} (other variables). We estimate the models in Table 7 using the Generalized Method of Moments procedure with Newey and West (1987) correction for autocorrelation for one lag.

Sample consists of 62,027 firm-year observations from 1994–2002 (sample is reduced to 60,695 observations for Panel B due to lack of available arbitrage risk proxy).

NI is the decile rank related to net income before extraordinary items (GVIC data 32) scaled by average total assets measured as the average of beginning and end of fiscal year total assets (GVIC data 89). Operating cash flows is net income before extraordinary items plus Depreciation (GVIC data 11) minus change in Current assets (GVIC data 75 minus GVIC data 60) and plus change in Current liabilities (GVIC data 104 minus data 94). Accruals is *NI* minus *OCF*, while ACC^{dec} refers to the decile rank of accruals scaled by average total assets. $SIZE^{dec}$ is market value of common equity measured in a country's own currency at the beginning of the return accumulation period, then ranked within the country, and transformed to a scaled-decile variable ranging from 0 to 1. Thus currency translation issues do no pose a concern for our analysis; EP^{dec} is earnings-to-price ratio (stock price measured at the beginning of the return accumulation period), transformed to a scaled-decile variable ranging from 0 to 1; BM^{dec} is the natural logarithm of the ratio of the book-to-market ratio measured at the beginning of the abnormal return accumulation period, transformed to a scaled-decile variable ranging from 0 to 1. Abnormal return (*AR*) is the annual holding period return, including dividends, minus the appropriate country index compiled by the investment bank Morgan Stanley (http://www.msci.com); $DACC^{dec}$ ($NDACC^{dec}$) is the decile rank of discretionary (nondiscretionary) accruals scaled by average total assets. Discretionary accruals are estimated using the Jones (1991) model described in the text to estimate expected (or nondiscretionary) accruals; ARB^{dec} is scaled-decile variable pertaining to arbitrage risk. A stock's arbitrage risk is the residual variance from a standard market model regression of its returns over the 36 months ending one month prior to the return accumulation period.

total accruals. This suggests that differential abnormal returns will be associated with trading strategies based on the differing reliabilities of the various accrual components.

In untabulated results, we first (1) replicate Richardson et al.'s (2005) results that current period total accruals is negatively related to next period's return on assets, and this occurs in Australia, Canada, the U.K., as well as the U.S.; (2) confirm the significance of most of the components of total accruals that Richardson et al. (2005) find are related to next period's return on assets for the U.S.; but (3) find that only changes in current liabilities and changes in noncurrent assets are consistently significant across Australia, Canada, and the U.K. We then perform abnormal returns tests following Richardson et al. (2005). Our results indicate the following: (1) Significantly negative coefficients for the U.S., indicating abnormal returns can be earned on changes in the following accrual components: current assets, current liabilities, and non-current assets. These results are broadly consistent with those of Richardson et al. (2005) for the U.S., except they find that abnormal returns can also be earned on long-term investments. (2) We also observe that changes in current liabilities and changes in noncurrent assets are significant in Australia and the U.K., but not Canada. These results suggest that mispricing of less reliably measured accrual components is only a partial explanation of the accrual anomaly worldwide.

Second, we examine whether the anomaly is an aspect of the value-growth (a.k.a. value-glamour) anomaly the finance literature has documented worldwide (Fama and French 1998). Desai et al. (2004) show that the accrual anomaly and the value-glamour anomaly (attributed to sales growth, book-to-market, and earnings-to-price) are captured by returns to a new variable, operating cash flow-to-stock price, in the U.S. We note that consideration of cash flow-to-stock price reflects a combination of valuation anomalies and earnings quality issues that are proxied by accruals.

To test whether the value-glamour anomaly subsumes the accrual anomaly, we augment Equation (6) with decile ranks of operating cash flows scaled by stock price ($OCFP^{dec}$). We find in untabulated results that the coefficient on ACC^{dec} for the U.S. is insignificant whereas the coefficient on $OCFP^{dec}$ is significantly positive. Thus, as in Desai et al. (2004), we do not detect the accrual anomaly when controlling for operating cash flows deflated by stock price. However, this result does not generalize. We find a significantly negative coefficient on ACC^{dec} for Australia, Canada, and the U.K., and the accompanying coefficient on $OCFP^{dec}$ is not significantly positive for these countries. Hence, the value-glamour anomaly does not subsume the accrual anomaly in Australia, Canada, and the U.K., but it appears to do so in the U.S.

Finally, Khan (2005) alludes to the role of bankruptcy risk in explaining the accrual anomaly such that low accruals proxy for firms with high risk of bankruptcy. When we control for bankruptcy risk in untabulated results the coefficient on ACC^{dec} remains significantly negative in Australia, Canada, the U.K., and the U.S., consistent with our main results and inconsistent with bankruptcy risk explaining the accrual anomaly.

In summary, we document that the accrual anomaly occurs in Australia, Canada, the U.K., and the U.S. We consider several alternative explanations for the accrual anomaly, and find that (1) the accrual anomaly reflects abnormal (or discretionary) accruals, and (2) we no longer observe the accrual anomaly when we control for limits to arbitrage. The results suggest that earnings management by means of accrual manipulation is a key factor explaining the presence of the accrual anomaly, and that limits to arbitrage, which implies that impediments to the rational pricing of accruals are costly to remove, is key in explaining why the anomaly persists.

V. ANALYSIS OF ADRs

In our final analysis, we explore whether the accrual anomaly occurs when we place firms from countries where we do not observe the anomaly into the context of the U.S. capital markets. We consider a sample of American Depository Receipts (ADRs), which are certificates representing an interest in the shares of a foreign-based company that are traded in the U.S. A significant advantage of examining ADRs is that these cross-listed firms are subjected to the institutional requirements in the U.S., including increased SEC-mandated disclosure and enforcement and generally increased monitoring and litigation (e.g., Coffee 2002). Thus, we examine a setting where stocks of firms domiciled in countries where it is least likely to observe the accrual anomaly, trade (cross-list) in the U.S., which has institutional and accounting features associated with the occurrence of the anomaly.

We obtain ADR data for 893 firm-years for 1994–2002 from CRSP and Compustat consisting of firms that are domiciled in 14 of the 16 countries where the accrual anomaly was nonexistent. No ADR data are available for firms from Malaysia and Thailand. Table 8, Panel A lists the firm-years from each of the countries included in the ADR sample. Approximately 22 percent of the ADR firm-years are from Japan, 21 percent from The Netherlands, and 16 percent from France.

Panel B of Table 8 presents the results of the Mishkin test. There is significant overweighting of accruals (1.763 versus 0.438), similar to the result for U.S. companies in Table 3, Panel C. Hence, even though we have excluded firms that are from countries where we documented the occurrence of the accrual anomaly (i.e., Australia, Canada, the U.K., and the U.S.), when we examine ADRs from countries where we do not observe the accrual anomaly, the Mishkin test rejects the null hypothesis of rational pricing of accruals. The results for the abnormal returns test appear in Table 8, Panel C, and are consistent with the Mishkin test results. The coefficient of ACC^{dec} is reliably negative (-0.041) when we estimate Equation (6) using ADRs, and remains so (-0.029) when we control for *OCF*.[16]

In summary, the results suggest that ADRs of firms from countries where the accrual anomaly is not prevalent, and which likely make additional financial disclosures by having ADRs traded, nevertheless reflect the accrual anomaly. This is an intriguing result suggesting that the accounting and institutional structures of a country where a firm's stock is traded can matter more than those features of the country where a firm is domiciled. The descriptive data in Table 4 indicate that the U.S. is characterized by three of the four accounting and institutional structures that we document in Table 5, Panel B as being significantly linked to the occurrence of the accrual anomaly; these are a common law tradition, the most highly dispersed share ownership of any of the 20 countries we consider, and the most extensive use of accrual accounting permitted of any country we consider. Thus, the ADR analysis is consistent with these features having a significant bearing on the efficiency with which stock market participants interpret the accrual component of earnings.

VI. SUMMARY, DISCUSSION, AND CONCLUSIONS

In addition to the post-earnings announcement drift (e.g., Bernard and Thomas 1990), the accrual anomaly (Sloan 1996) represents an important challenge to the widely held belief that U.S. stock markets are efficient with respect to publicly available accounting information.[17] We investigate whether the evidence related to the accrual anomaly is specific

[16] Due to small country-specific sample sizes in the ADR sample, we do not perform country-specific analyses.

[17] See Fama (1991, 1998), Kothari (2001), and Lee (2001) for recent surveys of capital market anomalies that researchers in finance and accounting have documented.

to the U.S. market. Analyses of samples from the markets of 19 other countries suggest that the accrual anomaly, characterized by stock markets overweighting accrual persistence, is present in only four countries: Australia, Canada, the U.K., and the U.S. We also find that an underweighting of operating cash flows generally does not accompany the overweighting of accruals. However, we find considerable evidence of an underweighting of operating cash flows and earnings in other countries.

TABLE 8
Regression Results for ADR Sample

Panel A: Country Composition of Firms Traded as ADRs in the U.S. Markets

Country	No. of Firms
Denmark	27
France	146
Germany	61
Hong Kong	28
India	8
Indonesia	20
Italy	71
Japan	199
Malaysia	0
The Netherlands	186
Singapore	25
Spain	20
Sweden	57
Switzerland	36
Taiwan	9
Thailand	0
Total	893

Panel B: Regression Results Related to Capital Market Weighting of Accrual and Cash Components Using Mishkin (1983) Framework for the ADR Sample

$$NI_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \beta_0 + \beta_1(NI_{t+1} - \gamma_0^* - \gamma_1^* ACC_t - \gamma_2^* OCF_t) + \nu_{t+1} \quad (2)$$

n	β_1	γ_1	γ_1^*	γ_2	γ_2^*	F-statistic for $\gamma_1 = \gamma_1^*$	F-statistic for $\gamma_2 = \gamma_2^*$
893	1.893	0.438	1.763	0.731	1.121	21.03**	2.92^

Panel C: Regression Tests of Abnormal Returns on Accruals

$$AR_{t+1} = \delta_0 + \delta_1 ACC^{dec}{}_t + \delta_2 SIZE^{dec}{}_t + \delta_3 EP^{dec}{}_i + \delta_4 BM^{dec}{}_i + \delta_5 OCF^{dec}{}_i + \varphi_{t+1} \quad (6a)$$

n	ACC^{dec}	$SIZE^{dec}$	EP^{dec}	BM^{dec}	OCF^{dec}
893	−0.041**	−0.042**	−0.007	−0.039**	
893	−0.029*	−0.040**	−0.006	−0.041**	−0.003

(*continued on next page*)

TABLE 8 (Continued)

**, *, ^ Represents statistical significance of t-statistics (F-statistics) at 1 percent, 5 percent, and 10 percent levels, respectively, two- (one-) tailed for Panel B (Panel C).
The ADR sample consists of 893 firm-year observations over the period 1994–2002.
NI is income before extraordinary items (COMPUSTAT data 18) scaled by average total assets measured as the average of beginning and end of fiscal year total assets (COMPUSTAT data 6). *OCF* is operating cash flows (COMPUSTAT data 308 minus data 124) scaled by average total assets. *ACC* is accruals measured as *NI* minus *OCF*. Abnormal return (*AR*) is annual holding period return, including dividends, minus the value weighted market return.
Additional variables for Panel C are defined as follows: Superscript *dec* indicates a transformation of the respective variable to a scaled-decile variable ranging from 0 to 1. *SIZE* is the market value of common equity at the beginning of the abnormal return accumulation period, *EP* is earnings-to-price ratio (stock price measured at the beginning of the abnormal return accumulation period), *BM* is the natural logarithm of the book-to-market ratio measured at the beginning of the abnormal return accumulation period.

We consider a number of alternative explanations for the accrual anomaly, and our results are most supportive of the earnings management and limits to arbitrage explanations. It appears that earnings management using accruals is key to the occurrence of the accrual anomaly, and barriers to arbitrage due to the absence of close substitutes for mispriced stocks explains why it persists. We also explore the extent to which country-level accounting and institutional factors are useful in understanding why the accrual anomaly occurs in some countries but not in others. We find the anomaly is more likely to occur in countries with a common law legal tradition, more extensive accrual accounting, lower concentration of share ownership, and possibly weaker outside shareholder rights. Moreover, we examine ADRs of firms from countries in our sample for which we do not observe the accrual anomaly. The results indicate the presence of the accrual anomaly when we consider firms domiciled outside the U.S. but list in the U.S. ADR market. This buttresses our findings that common law tradition, extensive accrual accounting, and disperse share ownership are significant with regard to the occurrence of the anomaly.

It is undoubtedly surprising that we observe the accrual anomaly in countries where the capital markets are considered most efficient. One possible reason for this is that there is more focus on earnings in these markets than in most of the other markets we examine, and our finding in support of earnings management using accruals as a key explanation for the accrual anomaly is consistent with capital market agents in aggregate not fully seeing through earnings to the underlying economic fundamentals. It may be the accrual anomaly has a behavioral cause, but our findings that investors price accruals and operating cash flows differently (even as they overweight accruals) is inconsistent with a naïve version of the functional fixation hypothesis. It is also the case that there is incomplete disclosure about the accrual components of earnings, which increases information asymmetry between managers and investors, a necessary condition for earnings management.

Another surprising result is that operating cash flows are not underweighted in Australia, Canada, the U.K., and the U.S., but *OCF*s are underweighted in a large number of other countries where accruals are not overweighted. We conjecture the underweighting of *OCF*s in these countries may reflect the belief by investors that earnings management occurs in these countries through the structuring of transactions (e.g., Jian and Wong 2004) rather than the manipulation of accruals. Moreover, to the extent the relation between stock prices and underlying economic fundamentals is weaker in less efficient markets, investors in such markets may have less confidence that what is being reported actually captures the underlying fundamentals. If insiders also have more control over resources and reporting, then

it may be that such nonfundamentals are the more important determinants of value in such markets. We leave an investigation of *OCF* underweighting to future research.

Although cross-country research designs such as the ones we employ exploit differences in financial reporting and institutional and corporate governance structures to provide new evidence on a phenomenon, they suffer from several limitations. For example, Bushman and Smith (2001) indicate that the use of cross-country designs in studies like ours provides primarily descriptive evidence as causal theories to explain that the phenomena are problematic at best. Nevertheless, our findings should provide useful input in developing richer theories and additional empirical analyses that will further advance our understanding of the accrual anomaly.

REFERENCES

Alford, A., J. Jones, R. Leftwich, and M. Zmijewski. 1993. The relative informativeness of accounting disclosures in different countries. *Journal of Accounting Research* 31 (Supplement): 183–223.

Ali, A., and L. Hwang. 2000. Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research* 38 (1): 1–21.

Ashbaugh, H., and M. Pincus. 2001. Domestic accounting standards, International Accounting Standards, and the predictability of earnings. *Journal of Accounting Research* 39 (3): 417–434.

Ball, R., S. P. Kothari, and A. Robin. 2000. The effect of institutional factors on properties of accounting earnings. *Journal of Accounting and Economics* 29 (1): 1–51.

Belsley, D., E. Kuh, and R. Welsch. 1980. *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. New York, NY: Wiley.

Beneish, M., and M. Vargus. 2002. Insider trading, earnings quality, and accrual mispricing. *The Accounting Review* 77 (October): 755–791.

Bernard, V., and J. Thomas. 1990. Evidence that stock prices do not fully reflect the implications of current earnings for future earnings. *Journal of Accounting and Economics* 13: 305–340.

Bhattacharya, U., and H. Daouk. 2002. The world price of insider trading. *Journal of Finance* 57: 75–108.

———, ———, and M. Welker. 2003. The world price of earnings opacity. *The Accounting Review* 78: 641–678.

Bradshaw, M., S. Richardson, and R. Sloan. 2001. Do analysts and auditors use information in accruals? *Journal of Accounting Research* 39: 45–74.

Bushman, R., and A. Smith. 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics* 32: 237–333.

———, and J. Piotroski. 2004. Financial reporting incentives for conservative accounting: The influence of legal and political institutions. Working paper, University of North Carolina.

Coffee, J. 2002. Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance. Working paper, Columbia Law School.

Collins, D. W., and P. Hribar. 2000. Earnings-based and accrual-based market anomalies: One effect or two? *Journal of Accounting and Economics* 29: 101–124.

Coopers & Lybrand. 1993. *International Accounting Summaries: A Guide for Interpretation and Comparison*. 2nd Edition. New York, NY: Wiley.

Davis, J. 1994. The cross-section of realized returns: The pre-Compustat evidence. *Journal of Finance* 49: 1579–1593.

Dechow, P., and C. Schrand. 2004. *Earnings Quality*. Charlottesville, VA: Research Foundation of CFA Institute.

Desai, H., S. Rajgopal, and M. Venkatachalam. 2004. Value-glamour and accruals mispricing: One anomaly or two? *The Accounting Review* 79: 355–385.

Fama, E., and J. MacBeth. 1973. Risk, return and equilibrium: Empirical tests. *Journal of Political Economy* 71 (May/June): 607–636.

———. 1991. Efficient markets: II. *Journal of Finance* 46: 1575–1617.

———. 1998. Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics* 49: 283–306.

———, and K. French. 1998. Value versus growth: The international evidence. *Journal of Finance* 53: 1975–1999.

Greene, W. 1993. *Econometric Analysis*. 2nd edition. New York, NY: McMillan.

Holthausen, R. W. 2003. Testing the relative power of accounting standards versus incentives and other institutional features to influence the outcome of financial reporting in an international setting. *Journal of Accounting and Economics* 36: 271–283.

Houge, T., and T. Loughran. 2000. Cash flow is king: Cognitive errors by investors. *Journal of Psychology and Financial Markets* 2 (1): 161–175.

Hribar, P. and D. Collins. 2002. Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research* 40 (1): 105–134.

Hung, M. 2001. Accounting standards and value relevance of financial statements: An international analysis. *Journal of Accounting and Economics* 30: 401–420.

Jian, M., and T. J. Wong. 2004. Earnings management and tunneling through structuring-related party transactions: Evidence from Chinese corporate groups. Working paper, Chinese University of Hong Kong.

Johnston, J. 1984. *Econometric Methods*. 3rd edition. New York, NY: McGraw-Hill Publishing Company.

Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29 (2): 193–228.

Khan, M. 2005. Are accruals really mispriced? Evidence from tests of an intertemporal capital asset pricing model. Working paper, University of Toronto.

Kothari, S. P. 2001. Capital markets research in accounting. *Journal of Accounting & Economics* 31 (1–-): 105–231.

LaFond, R. 2005. Is the accrual anomaly a global anomaly? Working paper, Massachusetts Institute of Technology.

Land, J., and M. Lang. 2003. Empirical evidence on the evolution of international earnings. *The Accounting Review* 77: 115–133.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1997. Legal determinants of external finance. *Journal of Finance* 52: 1131–1150.

———, ———, ———, and ———. 1998. Law and finance. *Journal of Political Economy* 106: 1113–1155.

Lee, C. 2001. Market efficiency and accounting research: A discussion of ''Capital market research in accounting'' by S. P. Kothari. *Journal of Accounting & Economics* 31 (1–3): 233–253.

Leuz, C., D. J. Nanda, and P. Wysocki. 2003. Earnings management and institutional factors: An international comparison. *Journal of Financial Economics* 69 (3): 505–527.

Mashruwala, C., S. Rajgopal, and T. Shevlin. 2006. Why is the accrual anomaly not arbitraged away? The role of idiosyncratic risk and transaction costs. *Journal of Accounting and Economics* 42 (1–2): 3–33.

Mishkin, F. 1983. *A Rational Expectations Approach to Macroeconometrics: Testing Policy Ineffectiveness and Efficient-Markets Models*. Chicago, IL: University of Chicago Press.

Newey, W. K., and K. D. West. 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55 (3): 703–708.

Pontiff, J. 1996. Costly arbitrage: Evidence from closed-end funds. *The Quarterly Journal of Economics* 111 (4): 1135–1151.

———. 2006. Costly arbitrage and the myth of idiosyncratic risk. *Journal of Accounting and Economics* 42 (1–2): 35–52.

Richardson, S., R. Sloan, M. Soliman, and I. Tuna. 2005. Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics* 39 (3): 437–485.

Sloan, R. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71: 289–315.

Warfield, T., J. Wild, and K. Wild. 1995. Managerial ownership, accounting choices, and informativeness of earnings. *Journal of Accounting and Economics* 20 (1): 61–91.

Wurgler, J., and E. Zhuravskaya. 2002. Does arbitrage flatten the demand curve for stocks? *Journal of Business* 74 (4): 583–608.

Xie, H. 2001. The mispricing of abnormal accruals. *The Accounting Review* 76 (3): 357–373.

Zach, T. 2003. Inside the ''accrual anomaly.'' Working paper, Washington University in St. Louis.