Risky Value*

Atif Ellahie
David Eccles School of Business, University of Utah
atif.ellahie@eccles.utah.edu

Michael Katz
AQR Capital Management LLC
michael.katz@aqr.com

Scott Richardson
London Business School
AQR Capital Management LLC
srichardson@london.edu
scott.richardson@aqr.com

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Abstract

We use an accounting-based approach to link two primary measures of 'value' to expected returns for countries: earnings-to-price (E/P) and book-to-price (B/P). We document that when country-level earnings are less affected by accounting distortions related to conservative accounting for uncertain investments, E/P is close to a sufficient statistic for expected returns. However, when earnings are more affected by accounting distortions, B/P is needed. We find that high B/P countries are, on average, facing temporarily depressed current earnings, in part due to conservative accounting for uncertain investments, and their recovery in future earnings growth is uncertain. Countries with high B/P also exhibit greater downside sensitivity to global earnings growth, which supports our interpretation that B/P reflects systematic risk in future earnings growth. We also find stronger results in low E/P countries which points to the joint importance of E/P and B/P. Further, cross-country differences in unconditional accounting conservatism help to explain differences in the relative importance of E/P and B/P.

Keywords: equity risk premium, country returns, earnings growth, book-to-price, earnings yield

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1. Introduction

This paper uses an accounting-based approach to identify and combine 'value' characteristics that can help explain excess equity returns at the country level for a sample of 30 countries over the past two decades. Considerable past research has documented firm-level evidence of a robust positive relation between 'value' measures, typically measured as an accounting attribute such as book value of equity or earnings relative to price, and future returns. Some prominent examples include Fama and French (1992, 1993, 1996, 1998, 2012), Chui, Titman and Wei (2010) and Hou, Karolyi and Kho (2011). Our aim is not to merely document similar relations at the aggregate level, but rather to understand (1) whether the associations between 'value' measures and future returns can be attributed to systematic risk, and (2) whether cross-country differences in the level of unconditional accounting conservatism can help to explain 'why' certain accounting-based value measures inform on risk, and hence future returns.

Given the articulation between income statements and balance sheets (i.e., clean surplus), a combination of earnings and book value of equity is a natural starting point for measuring value creation. In this study, we examine the joint role of earnings-to-price (E/P) and book-to-price (B/P) for expected returns of countries. Specifically, we examine whether country-level estimates of E/P and B/P explain returns because they capture uncertainty and systematic risk in future earnings growth. We also develop country-level measures of unconditional conservatism to examine whether cross-country differences in these measures can help to explain differences in the *relative* importance of E/P and B/P for returns. We focus on country-level analyses as we are interested in a setting that delivers cross-sectional variation both in uncertain future growth prospects and in the level of unconditional accounting conservatism.

The financial reporting system is conservative in deferring the recognition of value attributable to investment activities with uncertain payoffs. For example, advertising expenditures, research and development and other intangible investment activities are typically expensed at the time the investments are undertaken, depressing current period earnings. Earnings (revenue) recognition is deferred to future periods when sales of goods and services are generated due to those risky investment activities, creating future earnings growth in the financial reporting system. Only by combining earnings and book values of equity are we able to recover information about uncertain investment activities and hence about expected returns. As Ohlson (1995) also shows, a weighted average of earnings and book value of equity can explain price levels and returns, with the relative weights on both value measures being a function of the persistence in abnormal earnings. In our setting, persistence in earnings is negatively affected by the way a conservative accounting system deals with uncertainty. Specifically, we expect the accounting distortions attributable to conservative accounting for uncertain investments that may yield future earnings growth to reduce the relative importance of E/P, and to increase the relative importance of B/P, for expected returns.

Using a panel of 7,860 country-month return observations over the March 1993 to December 2014 period covering 30 countries, we find strong evidence of E/P and B/P jointly explaining cross-sectional variation in country-level excess returns. We also find that sorting countries on the basis of B/P (jointly with E/P) systematically sorts on the basis of earnings levels and patterns in future earnings growth. Around the time of sorting, high B/P countries experience declines in the level of current earnings and in profitability. On average, high B/P countries also tend to experience distortions in current period earnings as evidenced by high levels of capitalized research and development, scaled by net operating assets (i.e., our measure of unconditional

conservatism). High B/P countries then recover and, on average, experience a stronger increase in earnings growth relative to low B/P countries, with a more pronounced effect for low E/P countries. However, we observe that the recovery in future earnings growth is more uncertain and has greater systematic risk: there is greater earnings growth variability and a greater co-movement of the future earnings growth (and future returns) of high B/P countries to future global earnings growth (and global market returns) in downside states of the world. Thus, high B/P countries may be riskier because they are more likely to experience negative realizations of future earnings growth (and returns) in 'bad' times relative to low B/P countries (i.e., greater downside fundamental beta and greater downside global market beta).

We also find that B/P is more important than E/P, in explaining returns for countries with greater ex ante expectations of uncertain (and potentially riskier) future earnings growth, and with greater distortions in current earnings due to conservative accounting for risky investments such as research and development. We sort countries based on observable characteristics that we believe capture cross-country differences in expectations of uncertain future earnings growth and accounting conservatism, and find that B/P is relatively more important in explaining returns for smaller countries, for emerging markets, for countries with greater dispersion in beliefs about real GDP growth, and for countries with higher levels of, and growth in, capitalized research and development. Finally, we also find that controlling for ex post realizations of country-level earnings growth subsumes the ability of B/P to explain country-level returns, as would be expected if B/P is capturing expectations of systematic risk attributable to future earnings growth (see e.g., Fama, 1990). Collectively, our results support a potential joint role for B/P and E/P in explaining country returns that is connected to the information about uncertainty and systematic risk that is captured by these two accounting-based 'value' measures.

Our findings are related to recent research examining predictability of excess equity returns at the country level. For example, Asness, Moskowitz and Pedersen (2013) find strong evidence of a positive relation between value measures (using the B/P ratio for the MSCI index of the country) and future returns across a variety of asset classes, which they attribute to global risks. Likewise, Campbell and Thompson (2008) find evidence that various measures of E/P and B/P generate out-of-sample improvements in country return predictability after imposing economically motivated constraints on the regression coefficients.[1] Our paper suggests, and documents, a fundamental basis for these 'value' measures to capture risk: earnings growth is the uncertain outcome for the common equity holder, and B/P and E/P jointly help to capture expectations of systematic risk in future earnings growth.

The results we document of systematic risk in future earnings growth driving the positive association between B/P and returns have not been documented previously.[2] As such, we provide empirical evidence to support the conjecture in Fama and French (1995) that "with rational pricing, size and B/P must proxy for sensitivity to common risk factors." Our paper is different from previous research that examines potential risk-based explanations for B/P such as (i) distress risk (e.g., Fama and French, 1992), (ii) increased risk of assets in place (e.g., Berk, Green and Naik, 1999; Zhang, 2005) (iii) 'q'-theory (e.g., Cochrane, 1996; Lin and Zhang, 2013), and (iv) time

[1] Other recent studies that focus on international markets or aggregate level analysis include Chattopadhyay et al., 2016; Ferreira and Santa-Clara, 2011; Kelly and Pruitt, 2013; and Lyle and Wang, 2015. Another related study is David and Veronesi (2013) who examine whether the positive relation between aggregate P/E multiples and aggregate stock volatility can be explained by investors' learning about economic fundamentals. These prior studies do not consider how a conservative accounting system affects measures used to generate estimates of expected returns, such as return on equity, earnings-to-price and book-to-price. Thus, our study is able to speak to 'why' accounting-based value measures such as E/P and B/P, are related to future returns.

[2] A cursory examination of differences in stock-level fundamental (earnings) betas between down-markets and up-markets markets is presented in Table 4 of Penman and Reggiani (2018). Differently, our analysis focuses on the country level, and we estimate fundamental betas directly using co-movement of earnings growth, rather than using realized earnings yields (E/P). Hence, our betas are true fundamental betas that rely only on accounting data rather than a price-denominated earnings measure. Further, earnings 'growth' betas have been shown to perform better in cross-sectional asset pricing tests than earnings 'level' betas (see Ellahie, 2019).

varying sensitivity to macroeconomic risks (e.g., Vassalou, 2003; Campbell, Polk and Vuolteenaho, 2010). Much of this prior work examines either (1) investments in balance sheet assets (i.e., capital stock) and how the riskiness of these assets in place may be related to B/P, or (2) financial leverage and how relative distress risk may be related to B/P. Instead, we use our understanding of the accounting system to consider the effect of risky investments that take place in the income statement (e.g., expensing of research and development, and advertising expenditures). Since these investments never appear on the balance sheet their riskiness is not captured by, and is distinct from, the riskiness of assets in place. These off-balance sheet investments distort current period earnings, and E/P, and contribute to uncertainty in future earnings which is indicated by B/P.

While prior literature has argued that high B/P is indicative of poor earnings prospects (e.g., Fama and French, 1992 and 1995), we find that it is uncertainty and systematic risk in future earnings growth that appears to be captured by country-level value measures such as B/P. In fact, on average we find that high B/P indicates higher, not lower, earnings growth prospects, consistent with stock-level evidence of the positive relation between B/P and future earnings growth presented in Penman and Reggiani (2013), and Penman, Reggiani, Richardson and Tuna, 2018. Similarly, Chen (2017) finds that cash-flow growth rates of buy-and-hold portfolios are higher in value stocks, and the effect is stronger at longer horizons. Our paper is different in that we try to provide a potential reason for why high B/P indicates higher earnings growth that is grounded in our understanding of how a conservative accounting system works.

The rest of the paper proceeds as follows. Section 2 links earnings growth characteristics and unconditional conservatism to expected returns, Section 3 describes the empirical research design as well as the data, Section 4 presents the main empirical findings, and Section 5 concludes.

2. Linking earnings growth characteristics to expected returns

Expected returns reflect expectations of future earnings and future earnings growth, as well as uncertainty in the path of future earnings. Further, it is only the systematic risk in future earnings and future earnings growth that should be priced. Starting from a well-known accounting framework (i.e., the clean surplus relation), we develop an expression for expected returns in terms of price denominated accounting attributes. Specifically, our expression identifies the expected earnings yield (E/P), the current level of book-to-price (B/P), and the expected premium of price over book value of equity as candidate variables that explain expected returns.

The starting point for the accounting framework is the clean surplus relationship, which states that changes in the book value of equity, *B* from year to year, are a result of the addition of comprehensive income, *Earnings* and the payment of dividends (net of equity issuance), *d*, such that: $B_{t+1} = B_t + Earnings_{t+1} - d_{t+1}$. This can be rearranged to express net dividends as earnings less the change in book value of equity: $d_{t+1} = Earnings_{t+1} - (B_{t+1} - B_t)$. Since prices are based on expectations of dividends, a model of expected return has to include information about both earnings and the change in book value of equity in order to recover dividends.[3] Substituting for dividends in the dollar stock return expression and rearranging terms, equation (1) shows that expected dollar returns are explained by expected earnings in year *t+1* and the *forecasted* change in the premium of price over book value of equity:

$$E_t[P_{t+1} + d_{t+1}] - P_t = E_t[Earnings_{t+1}] + E_t[P_{t+1} - B_{t+1}] - (P_t - B_t) \qquad (1)$$

Dividing through by P_t gives an expression for the expected rate of return:

[3] Further, dividends reduce book value of equity and retained earnings available to generate future earnings growth, and this displacement nature of dividends suggests that dividends are not the main driver of future value creation. Instead, we argue that earnings and book equity are directly related to future value creation and should subsume the information in dividends (especially since dividends are linked to earnings through a payout policy).

$$E_t[r_{t+1}] = \frac{E_t[P_{t+1} + d_{t+1}] - P_t}{P_t} = \frac{E_t[Earnings_{t+1}]}{P_t} + \frac{E_t[P_{t+1} - B_{t+1}] - (P_t - B_t)}{P_t} \quad (2)$$

The deflation by price in equation (2) helps to convert expected earnings and the forecasted change in the premium of price over book value of equity into yield form (see also, Penman, Reggiani, Richardson and Tuna, 2018). The forecasted change in the premium of price over book value of equity is effectively the expected capital gain, and could be due to a combination of expected earnings growth and expected returns. If there is no forecasted change in the premium, equation (2) says that the expected rate of return is equal to the expected earnings yield (the first term on the right hand side). However, in the presence of a forecasted change in premium of price over book value of equity, other variables that predict the forecasted change in the premium are needed to describe expected returns. To the extent that the forecasted change in the premium is related to expected earnings growth, variables that indicate future earnings growth are potential candidates. We empirically examine whether E/P and B/P, as candidate variables, are informative about the forecasted change in the premium, and whether this informativeness can be explained by the association of these characteristics with expected earnings growth and expected returns.

Finally, we can rearrange terms one last time and re-express equation (2) in terms of gross expected returns:

$$1 + E_t[r_{t+1}] = \frac{E_t[Earnings_{t+1}]}{P_t} + \frac{B_t}{P_t} + \frac{E_t[P_{t+1} - B_{t+1}]}{P_t} \quad (3)$$

The benefit of the manipulation in equation (3) is that it clearly identifies the expected (near-term) earnings yield (E/P) and the current level of book-to-price (B/P) as candidate variables that are related to expected returns, and forms the basis of our empirical tests. The last expression on the right-hand side is the expected premium of price over book value of equity. While the expected price is not forecastable, the expected book value of equity is linked to expected earnings

and the current book value of equity in predictable ways. Excluding equity issuance, book value of equity is expected to increase each period by the level of expected retained earnings. Thus, in situations where earnings are expected to be more persistent, future book value of equity, and growth in book value of equity, will be driven primarily by periodic earnings. However, in situations where earnings are expected to be less persistent, the best approximation of the future book value of equity is the current book value of equity. This is also evident from the clean surplus relation, where expected earnings and current book value of equity are jointly important for estimating future book value of equity.

The premium of price over book value of equity, captured by the last expression on the right-hand side of equation (3), is affected by the properties of earnings such as persistence, growth, volatility, and systematic risk, and the pricing of these properties by investors (i.e., expected returns). Since the properties of earnings will influence the past and future evolution of book value of equity, both earnings and book value of equity are expected to be informative about the expected premium of price over book value of equity, and hence about expected returns. It follows that the relative importance of the expected earnings yield (E/P) and the current book-to-price (B/P) in explaining the future premium of price over book value of equity is linked to how informative E/P and B/P are about these earnings properties.

While equation (2) is a tautology, it is a powerful way to understand how, and why, multiple measures from the accounting system are needed to describe expected returns. Earnings are known to be confounded by transitory items and are heavily influenced by the unconditional conservatism inherent in generally accepted accounting principles that the financial reporting system is based on (e.g., expensing of research and development costs, and expensing of advertising and marketing costs). A direct consequence of this conservatism is that current earnings-based value measures

alone are unlikely to be sufficient to capture future earnings growth and firm value. The conservative choices in the financial reporting system partly reflect risk. Investments associated with uncertain activities tend to be expensed as they are incurred and future benefits (i.e., potential sales) associated with these investments are deferred to future periods. This creates future earnings growth in the financial reporting system, and a sole focus on expected (near-term) earnings, E/P, is typically insufficient to capture the full extent of this deferral. Tautologically, you can only uncover expected returns by measuring the expected earnings yield (which captures expected earnings realizations over the next period), the current book-to-price (which we argue captures longer-term earnings potential when earnings are less persistent), and the future premium of price over book value of equity (which reflects expectations about risky future earnings growth as well as changes in expected returns). We argue that the future premium of price over book, and forecasted changes in this premium, are partly captured by E/P and B/P because these characteristics are affected by earnings properties such as earnings growth and risk in earnings.[4]

However, it is not simply an ad hoc combination of price-denominated fundamentals (e.g., sales, gross profits, operating profits, net income, dividends, operating cash flows, and book values). The accounting framework suggests that only by combining earnings and book values are we able to recover value-relevant information about uncertain investment activities that may increase systematic risk, and hence about expected returns.[5]

We use the intuition underlying the accounting framework to shed light on the relative importance of near-term earnings growth, as captured by E/P, and future earnings growth, as

[4] In a similar spirit, Penman, Reggiani, Richardson and Tuna (2018) show that at the firm level, B/P is a candidate measure for the forecasted change in premium because B/P indicates future earnings growth. Also, the information content of B/P for future earnings growth is greatest in the cases where 'E' is expected to suffer more from the limitations of conservative accounting choices.

[5] In a somewhat similar vein, Barth, Beaver and Landsman (1998) examine the relative importance of net income and book value of equity for market value of equity as a function of financial health and unrecognized net assets.

captured by B/P, in explaining the cross-section of *country*-level expected returns. As we are interested in examining whether the associations between 'value' measures and future returns can be attributed to risk in future earnings growth as indicated by the accounting framework, we need a setting with sufficient cross-sectional variation both in uncertain (and potentially riskier) future growth prospects and in the level of accounting conservatism for risky investments, such as research and development. Hence, we focus on aggregate level analysis. We expect distortions in 'E' due to conservative accounting choices to affect the relative importance of E/P and B/P in explaining the cross-section of country-level returns. An attractive feature of our aggregate level setting is that we have cross-country variation in the extent to which conservative accounting choices distort earnings and, hence affect the relative importance of E/P and B/P.

In particular, we are interested in how conservative accounting policies, which partly reflect uncertainty, affect the evolution of earnings growth. Given this, examining volatility of earnings growth and co-movement of earnings growth are natural tests to see if earnings growth indeed reflects risk. One can think of volatility of earnings growth as a necessary condition for it to reflect risk, while co-movement of earnings growth with global earnings growth would be more of a sufficient condition for it to reflect risk. This distinction is important because only the systematic portion of future earnings and future earnings growth should be priced.

3. Research design and data description

The firm level accounting framework in equation (2) is extended to the country level by aggregating the underlying accounting fundamentals and developing country-level characteristics. For example, for aggregate forward E/P the twelve-month ahead forecasted earnings and current market values of equity of all N firms in a particular country are aggregated, and a country's E/P is calculated as $\sum_1^N E \,/\, \sum_1^N P$. Aggregating up firm level fundamentals to develop country-level

variables is intuitive but poses the potential problem of omitting other variables that may be important at the aggregate level. Therefore, we also control for other macroeconomic factors related to expectations of future earnings growth for countries as they may play a role in explaining aggregate returns. Macroeconomic indicators of overall real business activity and price levels, such as changing expectations of growth in GDP or inflation, are related to expectations of aggregate corporate (nominal) earnings growth, and hence are candidate characteristics to explain country returns (see Schwert, 1990).

The discussion in the previous section guides the choice of variables that are included in cross-sectional regressions of future returns on country-level characteristics. Our dependent variable is value-weighted monthly country excess returns (relative to the local risk free rate) accumulated over a 12 month horizon. From equation (2) the main determinants of expected returns are expectations of future (near-term) earnings and a term related to the forecasted change in the premium of price over book (which may indicate expectations of future earnings growth or changes in expected returns).

The future premium of price over book is an unknown, as we cannot observe the future price or the future book value. However, as discussed in section 2, the forecasted change in the premium of price over book may reflect expectations about risky future earnings growth as well as expected returns. Further, we argue that the information content of B/P for subsequent earnings growth is likely to be greatest in the cases where 'E' is expected to suffer more from the limitations of conservative accounting choices. Hence, we expect B/P in part to capture changes in expectations about risky future earnings growth and as such our base case cross-sectional regression model is specified as follows (country subscripts suppressed):

$$r_{t+1} = a + b_1 \frac{E[Earnings_{t+1}]}{P_t} + b_2 \frac{B_t}{P_t} + \Sigma \gamma X_t + \varepsilon_{t+1} \quad (4)$$

The model in equation (4) tests whether country-level E/P and B/P together, and a vector of other variables, X_t, that are expected to be related to country-level future earnings growth, combine to explain country-level excess returns. The vector X_t includes country-level D/P, momentum, size, beta, real GDP growth forecasts and inflation forecasts. As discussed earlier, we have clear priors that combinations of 'E' and 'B' should generate a superior estimate of value and hence create a better measure of expected returns. We expect the sign of both b_1 and b_2 to be positive.[6] In particular, we expect B/P to be more useful in situations where current 'E' is distorted by the effects of conservative accounting for risky investments or where there are greater expectations of future earnings growth.

The empirical tests in this paper employ panel regressions allowing us to control for time-invariant country fixed effects, as well as time fixed effects. The reported *t*-statistics are based on standard errors computed after adjusting for dependence across countries and time periods (see Petersen, 2009; Gow, Ormazabal, and Taylor, 2010). We also estimate standard Fama and Macbeth (1973) cross-sectional regressions. Each month the cross-section of country returns are regressed on candidate characteristics hypothesized to explain expected returns. The average time-series coefficients from monthly regressions provide evidence on whether these characteristics are priced in the cross-section of countries. The main results remain unchanged whether we use panel regressions or monthly cross-sectional regressions. Thus, for the sake of brevity, we focus only on the panel regression results.

[6] Consistent with the displacement nature of dividends noted earlier, we expect the sign for the coefficient on D/P to be insignificant after controlling for B/P and E/P. This would be the case if the information in dividends for future value creation is subsumed by the information in book value of equity and earnings.

For powerful statistical tests, a sufficient number of countries are required in the cross-section. However, the relatively demanding data requirements for firm-level earnings forecasts, book values of equity, dividends and other data for aggregation up to the country level, as well as macroeconomic forecasts, restricts the size and length of the sample. This study covers 30 countries over the time period from March 1993 to December 2014, providing 262 months (21 years, and 10 months) of data for each country. The sample starts in 1993 due to data availability issues for a large cross-section of countries prior to this time, and ends in December 2014 because we require future realizations up to two years ahead (i.e., through 2016) for our tests. The countries include Australia, Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, Great Britain, Hong Kong, India, Indonesia, Israel, Italy, Japan, Malaysia, the Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand and USA. The average number of firms in each country over the time period is reported in Table 1. Firms are identified as belonging to a country based primarily on country of incorporation. A maximum of 2,305,381 underlying firm-months across countries are available with fundamentals, price and I/B/E/S forecast data. Each month within each country, all available underlying firms are aggregated to form country-level variables, providing 7,860 country-month observations over the time period (262 months for 30 countries). Country-months are the main unit of analysis. We do not trim any observations since aggregating firms into country portfolios reduces the influence of outliers and data errors.

Our sample includes both emerging and developed markets. We include as many countries as possible to increase the power of our tests. A potential concern with the inclusion of emerging markets is that their return variability will dominate cross-sectional regressions. For our sample there is greater variability in returns for emerging markets compared with developed markets. The

average one month excess return for developed countries is 0.62 percent with a standard deviation of 5.62 percent (we have 21 developed countries in our sample). The average one month excess return for emerging countries is 0.57 percent with a standard deviation of 8.14 percent (we have 9 emerging countries in our sample). In later analysis we separately estimate panel regressions for developed and emerging markets. An added benefit of analyzing developed and emerging countries separately is that we expect differences in expectations of future earnings growth across these two groups, and as such B/P should matter more than E/P for emerging countries relative to developed countries.

Returns data for US firms are collected from CRSP, and for non-US firms returns are computed using price data collected from Compustat Global. Where delisting returns are available, these are included in order to mitigate potential survivorship bias. The analysis uses monthly value-weighted country excess returns accumulated over the twelve months after characteristics are measured. Excess returns are local currency returns less the relevant short term risk free rate, or equivalent short term cash rate, for each country. Only those firms are used for which returns as well as corresponding financial fundamentals and I/B/E/S data are available, so that dependent and independent variables pertain to the same underlying firms in each country every month.

Firm level financial fundamentals data are collected from Compustat North America for US and Canadian firms, and from Factset Fundamentals and Compustat Global for international firms. The explanatory variables are at the country level so for each month financial data are aggregated up for all the firms in each country. For book values of equity, the latest available fiscal period is used which may be quarterly, semi-annual or annual depending on the periodicity of reporting. For flow variables, such as dividends, the previous 12 months are accumulated. For example, for firms that report on a quarterly basis the four most recent quarters are added to

calculate a trailing twelve month (TTM) number. Similarly, for firms reporting on a semi-annual basis the two most recent interim periods are added to calculate a TTM number. Each month, the book values of equity, and dividends for all the firms in a country are added to compute aggregate book values of equity, and dividends for each country at time *t*. We also compute a one year ahead aggregate earnings forecast for each country by summing I/B/E/S earnings forecasts for all available firms in that country. These earnings forecasts are then used to calculate forward E/P. In order to avoid look-ahead bias and to ensure that the same information that would be available to investors is used, prices are observed three months ($t + 3$) after fiscal period end. The returns measurement period begins in month $t + 4$ after financial data are available. Aggregate prices are represented by the sum of market values for all firms in each country. Country-level variables are computed using the aggregated financial fundamentals and prices. For example, B/P for each country is calculated as the sum of book values of equity for all firms in the country scaled by the sum of market values of equity for the same firms.

We also construct a cross-country measure of the level of unconditional conservatism in the accounting system similar in spirit to the c-score in Penman and Zhang (2002) which is computed as capitalized research and development expenditure divided by net operating assets (NOA).[7] This measure captures the cumulative effect of conservative accounting. Each fiscal year-end, research and development expenditure (Compustat item XRD) in the income statement is assumed to be capitalized on the balance sheet and amortized using the sum-of-years digit method over five years. For each country-month, capitalized R&D and net operating assets are summed across all firms in that country before computing capitalized R&D/NOA at the country level

[7] The c-score in Penman and Zhang (2002) also includes capitalized advertising expenses (Compustat item XAD) as well as the LIFO reserve. Since data for these two items is not available for our global sample, our cross-country measure of accounting conservatism relies primarily on capitalized research and development expenditures.

ensuring that the numerator and denominator contains the same firms. We also compute the change in capitalized R&D/NOA and use that as a measure of the current period effect of conservatism.

Finally, macroeconomic forecasts are collected from Consensus Economics. The twelve-month ahead real annual GDP growth forecasts and inflation forecasts are the main macroeconomic variables used in the analysis. Table 2 reports the distribution of variables across the 30 countries for the 262 months, and the notes describe how each variable is constructed.

4. Empirical results

4.1. Empirical support for the accounting framework

Before examining the joint importance of E/P and B/P in explaining country-level returns, we test the implications of the accounting framework described in section 2. Recall from equation (2) that expected returns can be expressed as a combination of the expected earnings yield (E/P), and the forecasted change in premium of price over book value of equity. Further, the forecasted change in premium is due to a combination of expected earnings growth and expected returns. We argue that accounting-based variables, such as E/P and B/P, could be informative about the forecasted change in premium if they indicate expected earnings growth and expected returns.[8]

First, we confirm that the positive expected association between excess returns and contemporaneous earnings growth is present in our country-level sample. In Model I of Table 3, we regress 12-month ahead country-level realized excess returns on country-level realized earnings growth for the one-year and two-year ahead periods. Consistent with prior firm-level findings of a strong association between returns and earnings (e.g., Ball and Brown, 1968;

[8] In order to examine equation (2), we would need proxies for the *forecasted* change in premium of price over book, *expected* returns, and *expected* earnings growth. Instead, consistent with prior literature, we use realizations to proxy for expectations.

Kormendi and Lipe, 1987; Easton and Zmijewski, 1989; Collins and Kothari, 1989), we find that over half the variation in 12-month ahead excess returns at the country-level is explained by near-term earnings growth (i.e., one-year ahead) and longer-term earnings (i.e., two-years ahead). Thus, characteristics that indicate earnings growth are valid candidate variables to explain future realized returns both due to expected returns and the cash flow shock component of realized returns.

Second, we formally assess our conjecture that future earnings growth is a key determinant of the change in premium of price over book value of equity from equation (2). Specifically, we regress the change in premium of price over book value of equity over the 12-month ahead period on realized earnings growth for the one-year and two-year ahead periods. Consistent with our conjecture, we find that 34.2% of the variation in the change in premium is explained by future earnings growth. Importantly, the explanatory power is primarily due to earnings growth over the longer-term (i.e., two-years ahead) rather than near-term earnings growth.

Finally, we examine the extent to which E/P and B/P are informative about the change in premium and future earnings growth. In Model III, we find that B/P at time *t* is positively associated with the change in premium of price over book value of equity over the 12-month ahead period. A model with E/P and B/P explains 35.3% of the variation in the change in premium. This association provides support for the empirical model in equation (4) where we use B/P as a proxy for the forecasted change in premium of price over book value of equity from equation (2). In Model IV, we find that B/P at time *t* is also positively associated with realized earnings growth two years ahead, and a model with E/P and B/P jointly explains 26.0% of the variation in realized earnings growth. Later, in Tables 7 and 10 we will further examine this positive relation between B/P and future earnings growth.

Taken together, the results in Table 3 suggest that (1) earnings growth matters for excess returns at the country-level, (2) consistent with the accounting framework, the premium of price over book value of equity is partly attributable to future earnings growth, and (3) B/P is positively associated with the change in premium of price over book value of equity, as well as with future earnings growth. Thus, E/P and B/P are candidate variables that indicate expected earnings growth and expected returns.

4.2. Role of E/P and B/P in explaining country-level returns

The analysis in Table 4 reports the coefficients for a panel characteristic regression. Relative to characteristics at time *t*, monthly excess returns are accumulated beginning in month 4 ($t + 4$) for the subsequent 12 months ($t + 15$) to provide a 12 month buy-and-hold excess return. Excess returns are country-level returns in the local currency less the country-level short term risk free rate. We then regress these value-weighted local currency returns on the various country-level characteristics. Test statistics are based on standard errors clustered by country and month in order to account for cross-sectional and time-series correlation. Model I of Table 4 shows that E/P is significantly positively associated with future returns (test statistic of 3.42), while models II and III show a similar result for B/P (test statistic of 4.62) and D/P (test statistic of 4.64), respectively. Individually, all three variables are associated with future returns. Models IV–VI reflect various pairwise combinations of the three primary variables, and model VII includes all three variables together. Model VI directly tests equation (4) and shows that E/P and B/P jointly indicate future returns with a significantly positive coefficient on both, and an adjusted R^2 of 0.084. Combining 'E' and 'B' better captures firm 'value'.

It is clear that when D/P is included with both E/P and B/P it is no longer significant. The coefficient on D/P declines in magnitude significantly and is no longer statistically significant. For

example, the regression coefficient on D/P in model III is 4.834 with a test statistic of 4.64. This regression coefficient drops to 1.912 (model VII) and the test statistic is no longer significant (1.33 for model VII). In model VIII momentum, measured as the buy-and-hold country returns from the prior twelve months, is added. Asness, Liew and Stevens (1997) find parallels between stock and country return cross-sectional predictability for momentum, and similar results are reported here. The momentum characteristic is significantly positive. After the inclusion of momentum, the coefficients on E/P and B/P remain positively significant, despite the potential for momentum to crowd out the cash flow news captured by fundamental measures of value such as E/P and B/P. Model IX adds size (log of aggregated market values of equity for firms in each country) but the coefficient is statistically insignificant. In model X country beta, estimated using 36-month rolling regressions of monthly country returns against the returns on the MSCI All Country World Index, is included but the coefficient is insignificant.

In model XI, we add macroeconomic expectations (GDP growth and inflation) and due to reduced data availability for Consensus Economics forecasts our sample size decreases slightly from 7,860 country-months to 7,790 country-months. Expectations of one year ahead growth in GDP and expectations of nominal price growth are not significantly associated with country-level returns. Overall, this analysis suggests that in the cross-section, E/P, B/P and momentum are valid candidate characteristics to explain future country returns. However, contrary to previous findings D/P is largely irrelevant consistent with our prior that dividends displace value.

Our panel regressions in Table 4 did not include fixed effects for either time or country. In Table 5 we present four models from the full specification in Table 4 (i.e., model XI from Table 4). Model I repeats model XI from Table 4 for ease of comparison. The next three models simply include pairwise combinations of time and country fixed effects. As our empirical analysis is

designed to explain variation in country-level excess returns, we want our independent variables to be known prior to the measurement of excess returns (i.e., no forward looking information). Thus, instead of using an indicator variable for each country to capture time invariant unobservable risk characteristics at the country level, we implement country fixed effects by differencing all variables from their monthly expanding window average for each country. We then estimate the regression coefficients using these expanding window mean differenced variables.[9] This ensures that our estimated country fixed effects only incorporate backward looking information. Across models II-IV in Table 5 we continue to find that (i) E/P and B/P jointly explain cross country variation in excess returns, (ii) D/P is crowded out after including E/P and B/P, and (iii) momentum is positively associated with future country-level returns. Of note is the reduction in the explanatory power of B/P after the inclusion of country fixed effects. This is a stringent control as it captures all variation in country-level returns. To the extent that countries experience extended periods of strong earnings growth or persistent differences in risk premia, this will impede the ability of B/P to explain country-level equity returns. This explanation is likely given that our sample period 1993-2014 includes an extended bull market period, especially for emerging economies. We revisit this in section 4.3 below when we look at emerging and developed countries separately due to differences in expectations of future earnings growth across these two groups.

Finally, the negative regression coefficients on real GDP growth in the country fixed effect specifications (models III and IV of Table 5) are worth noting. Because all variables are

[9] Specifically, each month we compute the time-series country averages for all variables using past data up to that month (i.e., from the first month to the current month). We then compute the difference for each variable from the historical time-series country averages and store the mean differenced variables for that month. We move forward to the next month and recalculate the time-series country average using an additional month's data for each variable. We then recompute and store the mean differenced variables for that month. Repeating this procedure over the 262 months in our sample delivers a series of expanding window mean differenced variables which are used to control for country effects.

differenced with respect to an expanding window average in our country fixed effects specification, the negative coefficients imply that higher forecasted real GDP growth today relative to longer-run historical expected real GDP growth is associated with lower country-level returns over the next 12 months. A possible interpretation of this negative relation is a naïve extrapolation of recent GDP growth.

4.3. Role of E/P and B/P in indicating risky future earnings growth

We now focus on the patterns in earnings levels and earnings growth for high and low B/P countries. The inclusion of B/P substantially increases the explanatory power of cross-sectional regressions of country-level excess returns. Our accounting based framework suggests a basis for this. Distortions in 'E' attributable to conservative accounting render E/P an insufficient measure of expected returns. Inclusion of B/P helps to capture the expectations of future earnings growth that results from these distortions.

First, we examine our conjecture that E/P and B/P are jointly informative about the distortions in 'E' attributable to conservative accounting for risky investments. We measure accounting conservatism using capitalized research and development expenditures divided by net operating assets (see Penman and Zhang, 2002). Table 6 reports capitalized R&D/NOA and return on equity for B/P quintiles after first sorting countries into below median E/P (Panel A) or above median E/P groups each month. Then within each E/P group, each month we sort countries into B/P quintiles. Focusing first on the below median E/P group in Panel A, we find that high B/P corresponds with higher levels of conservatism as measured by capitalized R&D/NOA, and also with lower levels of return on book equity. The increase (decrease) in capitalized R&D/NOA (return on equity) across the B/P quintiles is fairly monotonic and the difference between the high and low B/P quintiles is statistically significant. Also, relative to the above median E/P group in

Panel B, the B/P quintiles in the below median E/P group generally have higher capitalized R&D/NOA and lower return on equity. Thus, the distortionary effect of conservative accounting appears to be concentrated in low E/P countries. Within the low E/P group, high B/P helps to identify situations where the distortionary effect is most pronounced. This suggests a joint role for E/P and B/P when conservative accounting for risky investments may distort current period earnings but may also contribute to risky future earnings growth when the payoffs from the risky investments are realized.

We then look at measures of earnings levels, profitability and growth rates in the years prior to and after identifying countries as low or high B/P. Each month we sort our sample of 30 countries into five groups based on country-level B/P. We focus our attention on the top and bottom B/P quintiles (each containing six countries in a given month). We compute aggregate measures for each portfolio by summing fundamental attributes (e.g., 'E' or 'B') across all companies in the top and bottom groups. Figure 1 then visualizes the temporal patterns in these portfolio aggregate measures for the three years before and after each sort. Panel A of Figure 1 shows the evolution of the natural logarithm of aggregate earnings for the top and bottom B/P quintiles. Since we repeat our sorting every month we have 262 'paths' of earnings. The solid line represents the average 'path' and the dotted lines indicate 95 percent confidence intervals. There is a clear 'kink' in the trend of earnings for high B/P countries around the sorting period when they are identified as high B/P.

To emphasize this point, we also measure aggregate earnings growth for the top and bottom B/P quintiles. We measure aggregate earnings growth as the difference in the natural logarithm of aggregate earnings across adjacent years. To ensure a 'valid' measure of earnings growth we ensure that the same firms are included in adjacent years when earnings growth is measured. Panel

B of Figure 1 reports the pattern in earnings growth for high and low B/P countries. There are two striking observations. First, there is a sharp decline in earnings growth around the sorting year which reverts subsequently. Second, there is far greater dispersion in earnings growth for high B/P countries as indicated by the wider confidence intervals. So while there is a recovery in earnings growth for high B/P countries, this recovery is uncertain.

Panel C of Figure 1 shows the evolution of the natural logarithm of aggregate dividends for the top and bottom B/P quintiles. For the years prior to and after the sorting period, low B/P countries have higher levels of dividends relative to high B/P countries. Similar to the patterns in aggregate earnings, high B/P countries have much greater variability in aggregate dividends.

Panel D of Figure 1 shows the evolution of profitability for the top and bottom B/P quintiles. We measure profitability as the return on book equity (ROE). ROE is measured analogously to the previous measures where we aggregate 'E' for all firms in the top and bottom B/P quintile respectively. We divide this by the aggregated 'B' for the same firms from the prior fiscal year. Similar to the patterns in Fama and French (1995), and Penman (1991), high B/P countries experience lower levels of profitability around the sorting period and experience a recovery in future periods.

Table 7 provides formal statistics for the differences in aggregate earnings growth across B/P quintiles. We report earnings growth rates for two years ahead computed as $ln(Earnings_{t+2}/Earnings_{t+1})$, where ln is the natural logarithm operator. We focus on growth rates in the second year as equation (2) suggests it is earnings growth after the first year that should be captured by B/P. Results are similar if we instead use $Earnings_t$ as the base for computing growth rates. In Panel A, we find that the highest B/P quintile has future earnings growth of 23.1% compared with 10.8% for the lowest B/P quintile, a significant 12.3% higher. What is more

interesting from Table 7 is the strong difference in the variability of realized future earnings growth. There is greater variability in earnings growth for high B/P countries, relative to low B/P countries, using either parametric or non-parametric measures of dispersion.

To examine the joint effect of E/P and B/P, we repeat the analysis for below median E/P (Panel B) and above median E/P (Panel C) groups. We first sort countries into below median E/P or above median E/P groups each month. Then within each E/P group, we sort countries into B/P quintiles each month. We find that realized future earnings growth is higher, and more variable, for high B/P countries and that the effect is more pronounced for the below median E/P group (Panel B). While the difference in future earnings growth between the high and low B/P quintiles within the below median E/P group is 17.6% and statistically significant, the difference in future earnings growth between the high and low B/P quintiles is only 0.9% and statistically indistinguishable from zero within the above median E/P group.

Finally, we examine whether our results are sensitive to the measure of earnings growth we use. In Panels D and E of Table 7, we repeat the analysis from Panel A for countries sorted only on B/P. We use two alternative measures of earnings growth, and find very similar results – high B/P systematically sorts countries into higher levels of, and variability in, future earnings growth. We also observe similar patterns as in Panel B of Figure 1 with the alternative measures of earnings growth (see Panels E and F of Figure 1).[10]

In summary, Figure 1 and Table 7 suggest that by sorting countries on B/P, and also conditioning on depressed E/P, we are systematically sorting on patterns in earnings level and

[10] One alternative measure of future earnings growth is $\frac{Earnings_{t+2}-Earnings_{t+1}}{(|Earnings_{t+2}|+|Earnings_{t+1}|)/2}$ which accommodates negative earnings and ranges between -2 and +2. Another measure of future earnings growth is $\frac{Earnings_{t+2}-Earnings_{t+1}}{Price_t}$.

earnings growth. High B/P countries experience a decline in earnings levels around the sorting year (panel A) and a decline in profitability around the sorting year (panel D). High B/P countries then recover after the decline and the recovery in earnings growth is more uncertain and potentially riskier, with a stronger effect for low E/P countries. To specifically examine whether the recovery in earnings growth is indeed riskier in the sense of greater systematic risk, we need to analyze conditional relations between country earnings growth and global earnings growth across country B/P quintiles. Specifically, using the same country B/P quintile sorts from Figure 1, we assess the co-movement of future earnings growth for each B/P quintile with future earnings growth for all countries combined (i.e., 'global'). It is important to note that this measure of co-movement is based on fundamentals (i.e., realized earnings growth) for a future period (i.e., starting one year after the country B/P sort). For our conditional analysis we use the full period to identify negative and positive (and associated extreme) outcomes of global earnings growth. For our sample of 252 months, we have 80 months where there is contraction and 172 months where there is an expansion in earnings growth globally. Note that we lose the last year of data as we require future earnings growth. In Table 8 and Figure 2, to emphasize the conditional nature of the positive relation between B/P at the country level and future earnings growth, we further partition the contraction and expansion months into extreme periods (±1.0 standard deviations away from the mean global earnings growth).

Table 8 and Figure 2 show that there is a clear positive correlation between country-level earnings growth and global earnings growth. This simply states that there is a fundamental component to beta (e.g., Beaver, Kettler and Scholes, 1970). The more interesting result is that this positive relation is stronger in 'bad' states of the world, and particularly so for the high B/P countries. As can be seen from the first two columns of Table 8 as well as Panel A of Figure 2,

there is a statistically significant difference in the fundamental beta (as reflected in earnings growth) for high B/P countries relative to low B/P countries. This evidence provides support for a risk-based explanation for the positive relation between B/P and country-level returns. High B/P countries experience declining levels of earnings and profitability around the time that they are classified as high B/P. On average, high B/P countries experience a strong increase in earnings growth after being identified as high B/P. However, in downside states, high B/P countries are more likely to experience negative realizations of future earnings growth (i.e., greater downside fundamental beta). This makes the earnings growth of high B/P countries riskier and the higher systematic risk increases expected returns.

To examine the joint effect of E/P and B/P, we repeat the analysis for the below median E/P (Panel B) and above median E/P (Panel C) groups. We find that realized future earnings growth has stronger co-movement with global earnings growth for high B/P countries, and the effect can be observed in both E/P groups. Finally, in Panel D, we find very similar asymmetric relations if we instead use alternative growth measures or use country returns instead of earnings growth as the basis for determining conditional relations.

Having established that B/P captures expectations of risky future earnings growth, we revisit the intuition of equation (2). Our framework suggests that E/P will be a sufficient measure of expected returns when there is no forecasted change in the premium of price over book. This simply means that in the absence of expected future earnings growth, earnings are more persistent and E/P will be sufficient, but in the presence of a forecasted change in the premium of price over book, which may indicate expected future earnings growth, both E/P and B/P matter. Also, as we discussed in section 2, 'E' is subject to distortions due to conservative accounting choices and using 'B' in addition to 'E' can correct for these distortions. We now test this implication from

equation (2) more formally. There are two ways we undertake these tests. First, as reported in Table 9 we sort countries ex ante based on observable characteristics that we believe capture cross-country differences in expectations of risky future earnings growth and levels of accounting conservatism. Our priors are that (i) smaller countries have higher expectations of risky future earnings growth, (ii) emerging markets have higher expectations of risky subsequent earnings growth, (iii) countries with greater dispersion in beliefs about real GDP growth have higher expectations of risky future earnings growth, and (iv) countries with higher capitalized R&D/NOA (and changes in capitalized R&D/NOA) suffer from greater distortions in 'E' due to conservative accounting choices. We test this formally by comparing the difference in regression coefficients on B/P and E/P across partitions. Second, as reported in Table 10 we can control for realizations of future earnings growth ex post.

The results in Table 9 largely confirm our priors. We estimate equation (4) separately for each cross-sectional partition and report test statistics that account for dependence across countries and time periods within each partition. The final row in Table 9 reports the standard deviation of future earnings growth within each partition. We report these to support the basis of our partitions. Across four of the five partitions we see greater dispersion in future earnings growth consistent with our priors (i.e., higher expectations of risky future earnings growth for smaller, emerging, higher GDP forecast dispersion, and higher capitalized R&D/NOA countries). Comparing models I and II, we see that forward E/P is more relevant for the larger countries, and B/P is more important for the smaller countries (F-statistic of the difference in B/P and E/P regression coefficients across groups is 4.75, significantly different at conventional levels). Comparing models III and IV, we see that E/P matters relatively more for developed countries, and B/P matters relatively more for emerging markets. Comparing models V and VI, we see that E/P matters relatively more for

countries with lower dispersion in real GDP forecasts and that B/P matters relatively more for countries with higher dispersion in real GDP forecasts. Comparing models VII and VIII, we observe that E/P is relatively more important for low capitalized R&D/NOA countries, and B/P matters relatively more for high capitalized R&D/NOA countries. Finally, we see a similar pattern when partitioning countries based on the change in capitalized R&D/NOA in models IX and X. Collectively, the results in Table 9 are consistent with the implication of equation (2) that the relative roles of E/P and B/P as measures of expected returns vary with expectations of risky future earnings growth and with the distortionary effects of conservative accounting for risky investments.

Our previous analysis has shown that B/P is associated with future earnings growth at the country level both in first and second moments (Figure 1 and Table 7) and, conditionally, high B/P countries have higher fundamental betas in 'bad' states of the world relative to low B/P countries (Figure 2 and Table 8). All of this analysis suggested that B/P is associated with future returns because it helps to capture expectations of risky future earnings growth. Thus, if we were to include realizations of future earnings growth, the predictive power of B/P for future country-level returns should decline (see Fama 1990). As reported in Table 10 we find strong evidence in support of this prior. Model I in Table 10 is a repeat of model II of Table 5 for the reduced sample of 7,160 country months as we require realizations of earnings growth over the subsequent year. We continue to see the joint significance of E/P and B/P and the crowding out of D/P. The remaining models include various combinations of 'bottom-up' and 'top-down' measures of realizations of future earnings growth. The 'bottom-up' measure is based on aggregating firm level realized future earnings growth. The $(Earnings_{t+2} - Earnings_{t+1})/P$ and $(Earnings_{t+3} - Earnings_{t+1})/P$ variables capture this. The 'top-down' measure is based on future expectations of the twelve-month ahead

real GDP growth forecasts from Consensus Economics, with forecasts used as proxies for future realizations of GDP growth. The 'top-down' measure is reflected by the E_{t+1}[GDP Growth Forecast$_{t+2}$] and E_{t+2}[GDP Growth Forecast$_{t+3}$] relative to the time t real GDP forecast (which is also included in the regression).

Across all models we see that including the various measures of realized earnings growth leads to significant increases in explanatory power and, more importantly, B/P loses its significance. Models II and III use the 'bottom-up' measure of realized future earnings growth, while models IV, V and VI use the 'top-down measure'. Notably, when comparing model I with models III, V, and VI B/P is crowded out by the inclusion of our measures of realized earnings growth, while E/P retains its significance. Finally, in models VII and VIII we include both 'bottom-up' and 'top-down' measures and in model VIII we also control for country fixed effects. Comparing these models with model I, we continue to find that the coefficient on B/P loses magnitude and significance when realized earnings growth is included. This loss of B/P's explanatory power for expected returns suggests that country B/P captures, in part, expectations of risky future earnings growth. The negative coefficients on the time t real GDP growth forecast in models IV through VIII are expected since we are effectively examining changes in expectations by including both the current and future real GDP growth forecasts.

4.4. Extensions and limitations

4.4.1. Industrial production as an alternative measure of country-level growth

Our tabulated results use expectations of real GDP growth from Consensus Economics. We chose this country-level forecast as it provided the greatest coverage across countries and across time periods. We have repeated all of our analyses using a smaller set of 6,730 country-

months using twelve-month ahead forecasts of growth in industrial production (IP). These forecasts are also from Consensus Economics. We find very similar results to those tabulated.

4.4.2. Issues with lack of comparability in accounting numbers across countries

Accounting standards, and the quality of enforcement of those standards, are likely to differ across countries which will affect cross-sectional inferences about the predictive ability of characteristics based on accounting numbers. While IFRS harmonization mitigates this concern for countries that use IFRS, accounting differences create at least two problems. First, different accounting treatments for similar economic transactions will dictate how earnings and book values of equity are recorded. This will affect the ability of characteristics based on earnings and book equity to provide information about subsequent earnings growth. Second, different quality of accounting information across countries may affect the way accounting fundamentals are reflected in prices and returns.

To help mitigate these concerns, our empirical analyses also include specifications based on country-level 'fixed effects'. To do this in a predictive setting, each month we simply difference all variables based on an expanding window for each country, before estimating the regression models using these expanding window mean differenced variables. Thus, these specifications help to mitigate time invariant country factors that could be confounding our analysis. With these specifications, our primary findings continue to hold: (i) D/P is 'crowded' out by E/P and B/P, with E/P and B/P together capturing meaningful variation in future country-level returns (columns III and IV of Table 5), and (ii) B/P is associated with risky future earnings growth and this effect is 'removed' by controlling for future realizations of earnings growth (column VII of Table 10).

4.4.3. Alternative measure of dividends

All of our tabulated analysis is based on common dividends paid by firms. There are alternative methods for firms to distribute free cash flow to shareholders, and these could vary significantly across countries for a variety of reasons (e.g., taxation rules). Likewise, a focus on dividends ignores the 'negative' dividend implicit in equity financing. In unreported analyses, we have computed 'net' dividends as cash paid for common dividends plus cash paid for common stock repurchases less cash raised from common stock issuance. For this alternative measure of dividends, we continue to find that D/P is crowded out by E/P and B/P. For example, in equivalent specifications to those tabulated in Table 4, we find that D/P measured using 'net' dividends is significant on a stand-alone basis with a test statistic of 2.84 and an adjusted R^2 of 0.015 in panel regressions. However, D/P measured using 'net' dividends, is no longer significant after inclusion of E/P and B/P. The test statistic on D/P declines to 0.48, confirming that E/P and B/P continue to crowd out the ability of D/P to explain future country-level returns.

4.4.4. Other determinants of country-level equity returns

There is limited empirical evidence to date documenting cross-sectional determinants of country-level equity returns. Our focus has been on value measures, however we also include measures of momentum based on the evidence in Asness, Moskowitz and Pedersen (2013). In contrast, there has been considerably more research examining the usefulness of various measures to 'time' exposure to the equity risk premium in US markets. The primary variable in this regard has been the P/E ratio. Many other variables have also been examined including: (i) aggregate capital flows (e.g., Baker and Wurgler, 2000), (ii) aggregate investment (e.g., Lamont, 2000 and Arif and Lee, 2014), (iii) measures of aggregate sentiment (e.g., Baker and Wurgler, 2006), (iv) slope of the yield curve (e.g., Keim and Stambaugh 1986), and (v) default spreads (e.g., Fama and

French, 1999). Our aim is not to provide an exhaustive analysis of potential determinants of cross-country returns. In part, this is due to our inability to source consistent measures of the various constructs mentioned above across our sample of countries. More importantly, our focus is to assess whether the data supports a risk-based explanation for the B/P effect across a large set of countries that may be related to the way the accounting system deals with uncertainty, not to run a horse race of every conceivable country-level characteristic and its relation with future returns.

5. Conclusion

This paper uses an accounting based framework to link expected returns with drivers of earnings growth. Detailed firm level fundamental data is aggregated to develop country-level characteristics that are related to expectations of earnings growth and hence should explain country-level excess equity returns. Using a broad sample of 7,860 country-month observations (covering 30 countries over the period March 1993 to December 2014), we find that E/P and B/P jointly explain a significant portion of the cross-sectional variation in country-level returns. Notably, D/P is irrelevant after controlling for B/P and E/P. This is consistent with the earnings displacement nature of dividends. Dividends are not a measure of value creation as they reduce the book equity and retained earnings available to generate future earnings growth. Earnings and book equity are directly related to future value creation and subsume the information in dividends (since dividends are linked to earnings through a payout policy).

We further find that B/P captures risk in future earnings growth. This can be related to the impact of accounting conservatism on the relative usefulness of 'E' and 'B'. The conservative practice of expensing risky investments which may contribute to future earnings growth distorts 'E'. When 'E' is subject to less distortion due to accounting conservatism, then E/P is close to a sufficient statistic for expected returns. When 'E' is subject to more distortion it is not, and B/P is

needed. High B/P countries are, on average, facing temporarily depressed 'E' and an uncertain recovery in future earnings growth that is concentrated in low E/P groups. We document that high B/P countries experience greater sensitivity of future earnings growth to global future earnings growth in downside states. We also find that controlling for ex post realizations of country-level earnings growth subsumes the ability of B/P to explain country-level returns, as would be expected if B/P is indeed capturing expectations of future earnings growth. Collectively, the results are consistent with B/P reflecting risky future earnings growth and support the role of B/P as a valid characteristic to explain country-level returns.

A key implication of our results is that combining measures of value, such as E/P and B/P, offers a theoretically superior way to measure expected returns. It is not simply the case that averaging arbitrarily across multiple fundamental measures (e.g., earnings, book values, sales, cash flows, or dividends) creates a superior estimate of expected returns. Rather, it is by combining attributes of accounting that reflect the term structure of future earnings growth. Expectations of near term earnings are captured by E/P, and expectations of longer term earnings growth are captured, in part, by B/P. By combining information contained in E/P, and especially B/P, we can capture risk and uncertainty in the realizations of future earnings growth, especially in bad states of the world.

References

Arif, S., and C. Lee. 2014, Aggregate investment and investor sentiment, *Review of Financial Studies* 27, 3241–3279.

Asness, C., J. Liew, and R. Stevens. 1997. Parallels between the cross-sectional predictability of stock and country returns. *Journal of Portfolio Management* 23, 79–87.

Asness, C., T. Moskowitz, and L. Pedersen. 2013. Value and momentum everywhere. *Journal of Finance* 68, 929–985.

Baker, M. and Wurgler, J. 2000. The equity share in new issues and aggregate stock returns. *Journal of Finance* 55, 2219–2257.

Baker, M., and J. Wurgler. 2006. Investor sentiment and the cross-section of stock returns. *Journal of Finance* 61, 1645–1680.

Ball, R., and P. Brown. 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research* 6, 159-178.

Barth, M., W. Beaver, and W. Landsman. 1998. Relative valuation roles of equity book value and net income as a function of financial health. *Journal of Accounting and Economics* 25, 1–34.

Beaver, W., P. Kettler, and M. Scholes. 1970. The association between market determined and accounting determined risk measures. *The Accounting Review* 45, 654–682.

Berk, J., R. Green, and V. Naik. 1999. Optimal investment, growth options, and security returns. *Journal of Finance* 54, 1153–1608.

Campbell, J., C. Polk, and T. Vuolteenaho. 2010. Growth or glamour? Fundamentals and systematic risk in stock returns. *Review of Financial Studies* 23, 306–344.

Campbell, J., and S. Thompson. 2008. Predicting excess stock returns out of sample: Can anything beat the historical average? *Review of Financial Studies* 21, 1509–1531.

Chattopadhyay, A., M. R. Lyle, and C. C. Wang. 2016. Accounting data, market values, and the cross section of expected returns worldwide. Harvard Business School Working Paper No. 15-092. Available at SSRN: https://ssrn.com/abstract=2613366

Chen, H. 2017. Do cash flows of growth stocks really grow faster? *Journal of Finance* forthcoming.

Chui, A. C. W., S. Titman, K. C. J. Wei. 2010. Individualism and momentum around the world, *Journal of Finance* 65, 361–392.

Cochrane, J. 1996. A cross-sectional test of an investment-based asset pricing model. *Journal of Political Economy* 104, 572–621.

Collins, D., and S.P. Kothari. 1989. An analysis of inter-temporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics* 11, 143–181.

David, A., and P. Veronesi. 2013. What ties return volatilities to price valuations and fundamentals? *Journal of Political Economy* 121, 682–746.

Ellahie, A. 2019. Firms fundamentals and sensitivity to aggregate earnings. Working paper. Available at https://ssrn.com/abstract=2757688.

Easton, P., and M Zmijewski. 1989. Cross-sectional variation in the stock market response to accounting earnings announcements. *Journal of Accounting and Economics* 11, 117–141.

Fama, E., 1990. Stock returns, expected returns, and real activity, *Journal of Finance* 45, 1089–1108.

Fama, E., and K. French. 1992. The cross-section of expected stock returns. *Journal of Finance* 47, 427–465.

Fama, E., and K. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33, 3–56.

Fama, E., and K. French. 1995. Size and book-to-market factors in earnings and returns. *Journal of Finance* 50, 131–155.

Fama, E., and K. French. 1996. Multifactor explanations of asset pricing anomalies. *Journal of Finance* 51, 55–84.

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

Fama, E., and K. French. 2002. The equity premium. *Journal of Finance* 57, 637–659.

Fama, E., and K. French. 2012. Size, value, and momentum in international stock returns, *Journal of Financial Economics* 105, 457–472.

Fama, E., and J. Macbeth. 1973. Risk, return, and equilibrium: empirical tests. *The Journal of Political Economy* 81, 607–636.

Ferreira, M. A. and P. Santa-Clara. 2011. Forecasting stock market returns: The sum of the parts is more than the whole. *Journal of Financial Economics* 100, 514–537.

Gow, I., G. Ormazabal, and D. Taylor. 2010. Correcting for Cross-Sectional and Time-Series Dependence in Accounting Research. *The Accounting Review* 85, 483–512.

Hou, K., G. Karolyi, and B. Kho. 2011. What factors drive global stock returns? *Review of Financial Studies* 24, 2527–2574.

Keim, D. B., and R. F. Stambaugh. 1986. Predicting returns in the stock and bond markets. *Journal of Financial Economics* 17, 357–390.

Kelly, B. and S. Pruitt. 2013. Market expectations in the cross-section of present values. The *Journal of Finance* 68, 1721–1756.

Kormendi, R., and R. Lipe. 1987. Earnings innovations, earnings persistence and stock returns. *Journal of Business* 60, 323–345.

Lamont, O. 2000. Investment plans and stock returns. *Journal of Finance* 55, 2719–2745.

Lin, X., and L. Zhang. 2013. The investment manifesto. *Journal of Monetary Economics* 60, 351–366.

Lyle, M. R. and C. C. Wang. 2015. The cross section of expected holding period returns and their dynamics: A present value approach. *Journal of Financial Economics* 116, 505–525.

Ohlson, J. 1995. Earnings, book values and dividends in equity valuation. *Contemporary Accounting Research* 11, 661–687.

Penman, S. 1991. An evaluation of accounting rate of return. *Journal of Accounting, Auditing, and Finance* 6, 233–255.

Penman, S., and F. Reggiani. 2013. Returns to buying earnings and book value: accounting for growth and risk. *Review of Accounting Studies* 18, 1021–1049.

Penman, S., and F. Reggiani. 2018. Fundamentals of value versus growth investing and an explanation for the value trap. *Financial Analysts Journal* 74, 103–119.

Penman, S., F. Reggiani, S. Richardson, and İ. Tuna. 2018. A framework for identifying accounting characteristics for asset pricing models, with an evaluation of book-to-price. *European Financial Management* 24, 488–520.

Penman, S., and X. Zhang. 2002. Accounting Conservatism, the Quality of Earnings, and Stock Returns. *The Accounting Review* 77, 237–264.

Petersen, M. 2009. Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *Review of Financial Studies* 22, 435–480.

Schwert, W. 1990. Stock returns and real activity: A century of evidence. *Journal of Finance* 45, 1237–1257.

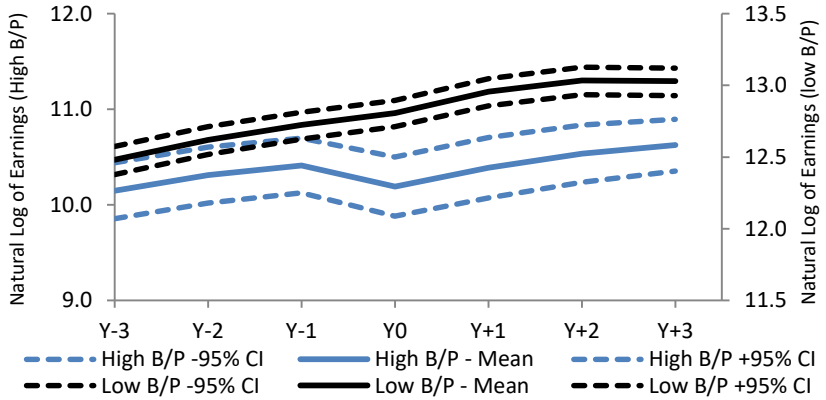
Vassalou, M. 2003. News related to future GDP growth as a risk factor in equity returns. *Journal of Financial Economics* 68. 47–73.

Zhang, L. 2005. The value premium. *Journal of Finance* 60, 67–103.

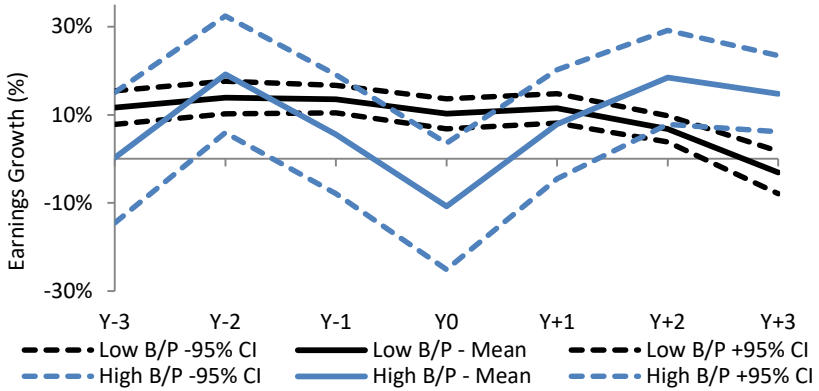
Figure 1: Realized earnings, earnings growth, dividends and return on equity for B/P portfolios

This figure shows the evolution of earnings (Panel A), earnings growth (Panel B), dividends (Panel C) and return on equity (Panel D) for portfolios formed by sorting countries each month from March 1993 to February 2014 into the highest and lowest quintile on book-to-price, B/P. Each month, trailing twelve month earnings and dividends for countries in each portfolio are aggregated to compute portfolio-level earnings and dividends. Y0 references the portfolio formation month, and the plots span the period from three years before (Y-3) to three years after (Y+3) portfolio formation. Panel A plots realized earnings in natural logarithms, Panels B plots realized log earnings growth, Panel C plots realized dividends in natural logarithms, and Panel D plots realized return on equity. For Panel B, earnings growth is calculated as $\ln(Earnings_{t+1}/Earnings_t)$ where ln indicates natural logarithm. Return on equity is calculated as $Earnings_{t+1}/Book\ Equity_t$. In Panels E and F, we use two alternative measures of earnings growth as indicated above the plots. The dashed lines indicate 95% confidence intervals.

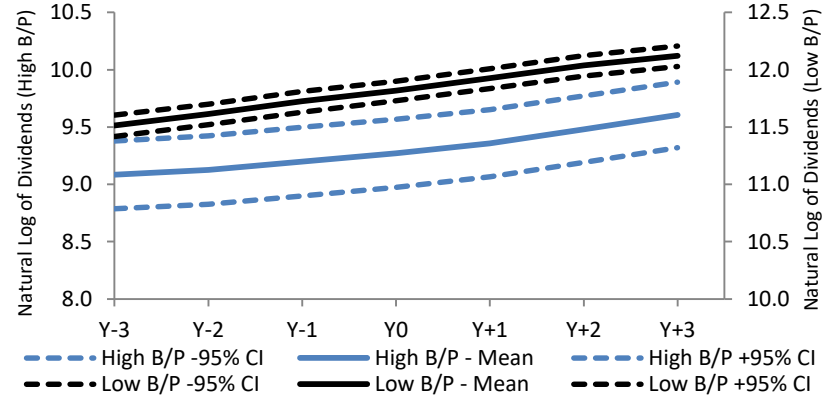
Panel A: Natural Logarithm of Realized Earnings by B/P Quintile



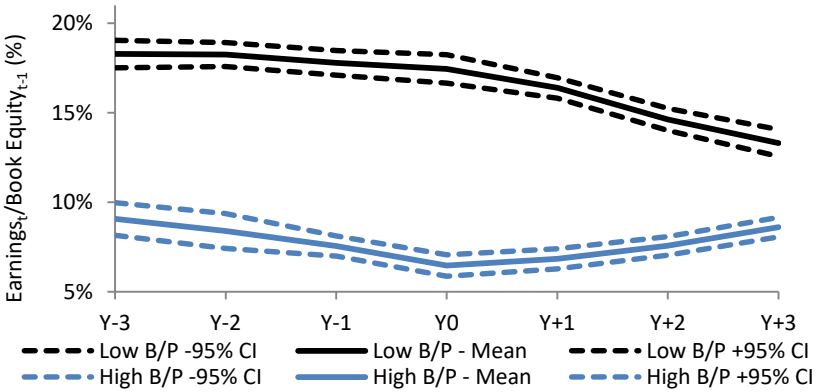
Panel B: Average Log Earnings Growth by B/P Quintile



Panel C: Natural Logarithm of Realized Dividends by B/P Quintile

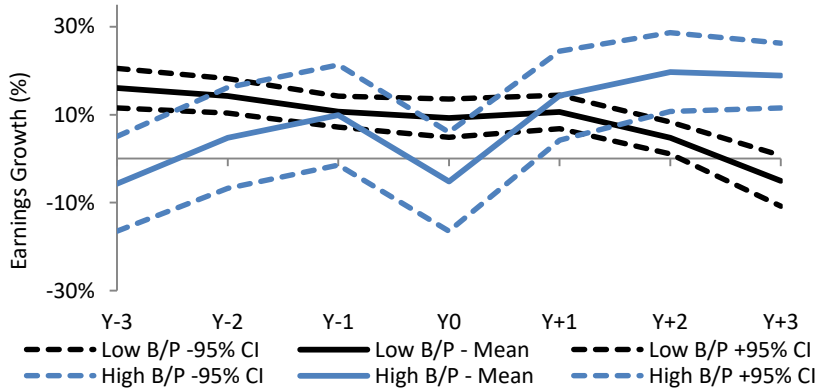


Panel D: Average Realized ROE by B/P Quintile



Panel E: Average Earnings Growth by B/P Quintile

$$Growth = \frac{Earnings_{t+1} - Earnings_t}{(|Earnings_{t+1}| + |Earnings_t|)/2}$$



Panel F: Average Price-scaled Earnings Growth by B/P Quintile

$$Growth = \frac{Earnings_{t+1} - Earnings_t}{Price_t}$$

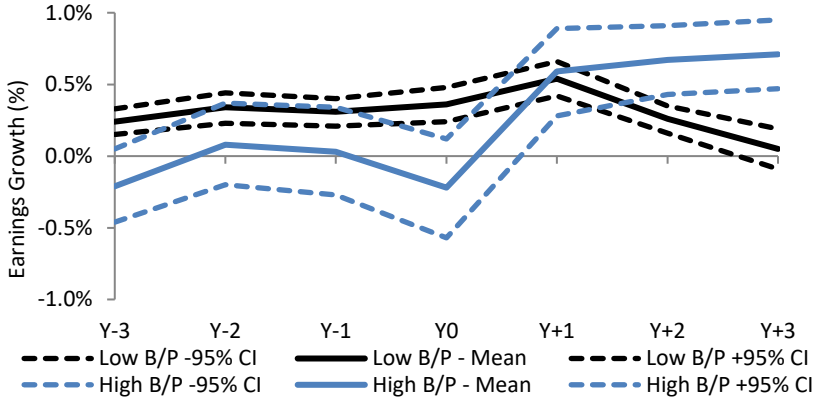
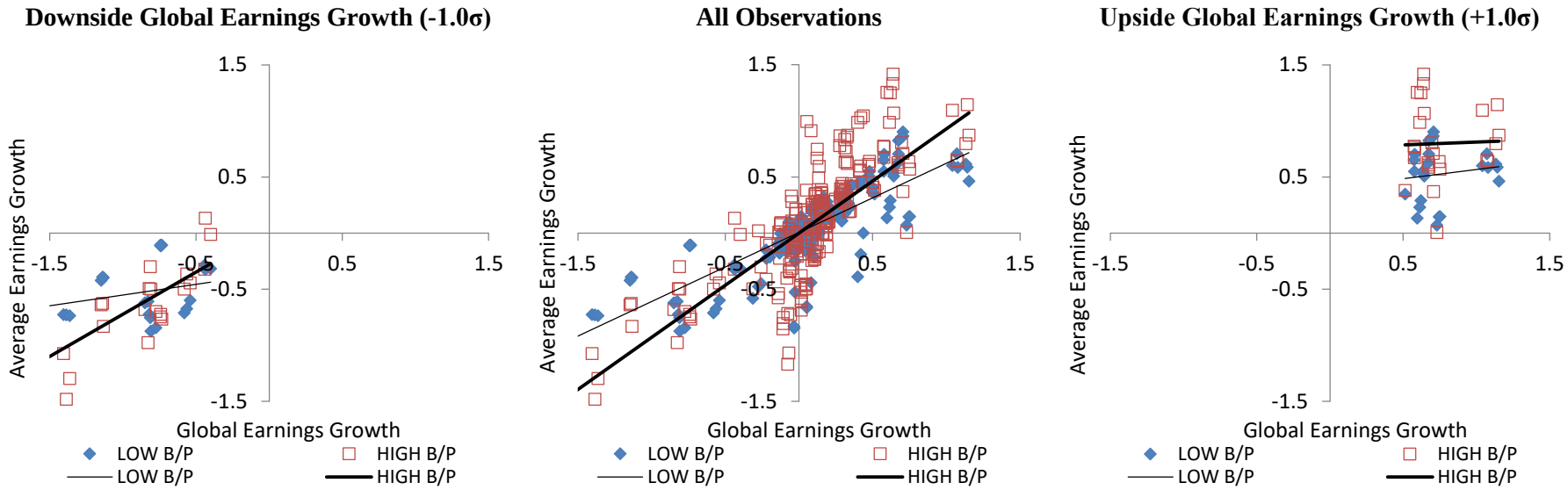


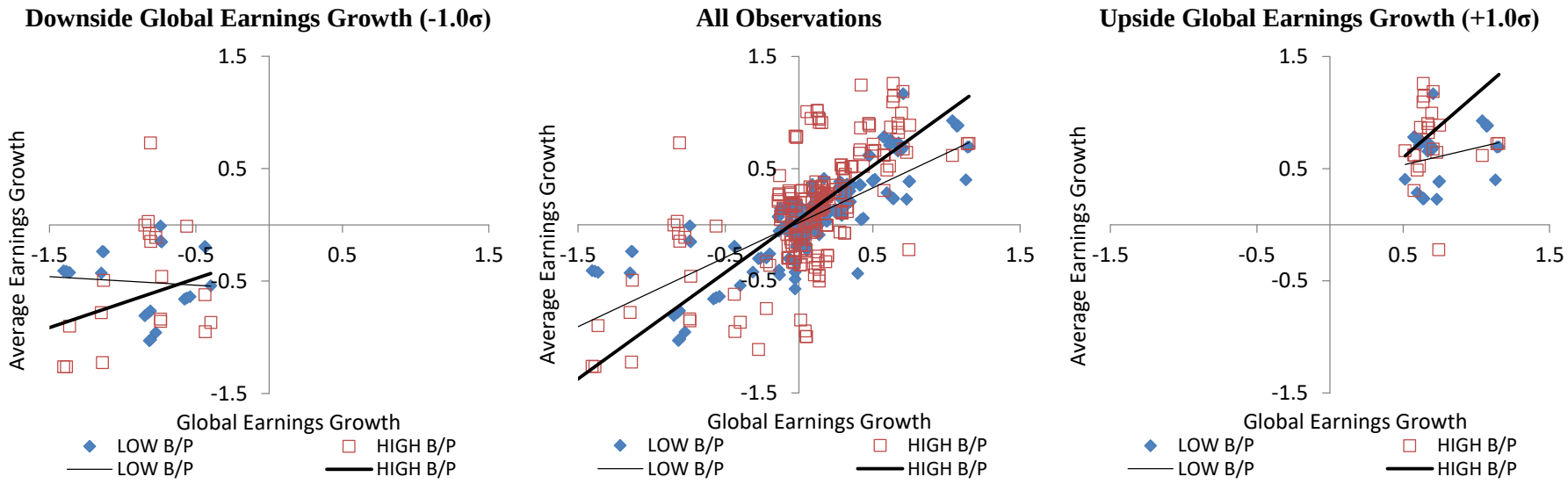
Figure 2: Relation between earnings growth and global earnings growth for high and low B/P countries

This figure shows scatter plots of realized portfolio earnings growth two years ahead (on vertical axis) on realized global earnings growth two years ahead (on horizontal axis) for high and low B/P portfolios. For Panel A, each month, quintile portfolios were formed by ranking countries on book-to-price, B/P and only the high and low B/P quintiles were used for the plots. Earnings two years ahead for countries in each portfolio are aggregated to compute portfolio-level earnings. For Panels A, B and C, portfolio-level future earnings growth is calculated as $\ln(Earnings_{t+2}/Earnings_{t+1})$ where ln indicates natural logarithm. Global earnings growth is calculated using the sum of country-level earnings for the 30 countries over the 252 months from March 1993 to February 2014 (the series is shortened from 262 months to enable the calculation of growth rates two years ahead, i.e., future earnings growth). Global earnings growth realizations are partitioned into downside states of the world (1.0 standard deviation below the mean) and upside states of the world (1.0 standard deviation above the mean). For Panel B, each month, countries are first sorted into two groups on the basis of E/P (i.e., below median E/P, and above median E/P). Then within each E/P group, quintile portfolios were formed by ranking countries on book-to-price, B/P and only the high and low B/P quintiles were used for the plots. Panel B reports the results for below median E/P and Panel C reports the results for above median E/P. Finally, for Panel D, we repeat the scatter plots from Panel A for the downside states of the world only (i.e., 1.0 standard deviation below the mean) using two alternative measures of portfolio-level earnings growth as well as portfolio average future realized returns (months 12 to 24). In each plot in Panel D, portfolio-level growth/returns is plotted against global growth/returns that are computed in the same way as for portfolios. Also see Table 8 which reports the slope coefficients and statistical significance of the difference in slopes between the high and low B/P quintile portfolios for different states of the world.

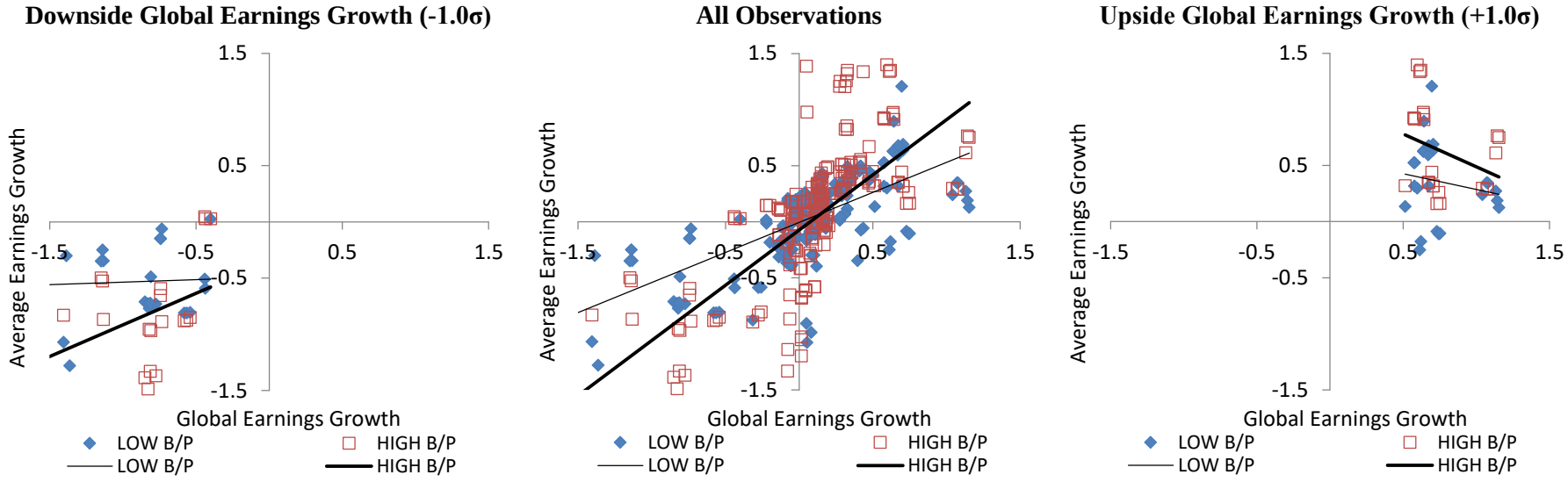
Panel A: Sort countries only on B/P



Panel B: Sort countries first on E/P and then on B/P (Below Median E/P)



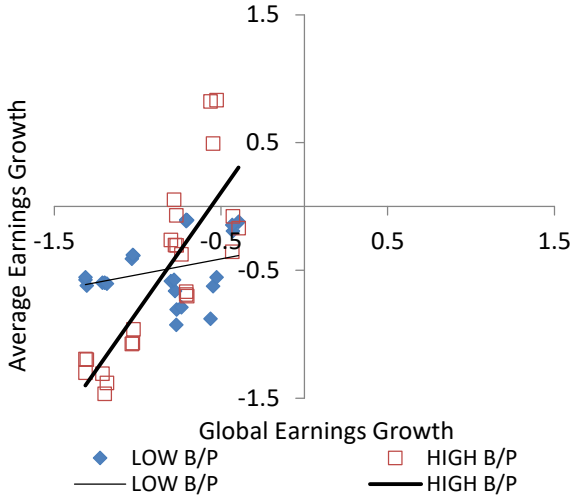
Panel C: Sort countries first on E/P and then on B/P (Above Median E/P)



Panel D: Sort countries only on B/P – Alternative Measures to Assess Sensitivity to Global Downside States

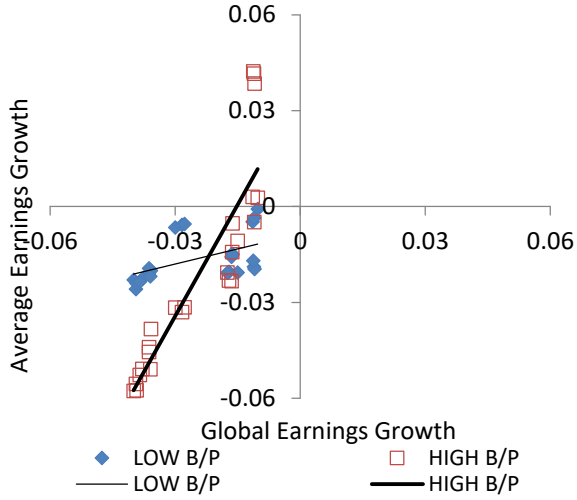
Downside Global Earnings Growth (-1.0σ)

$$Growth = \frac{Earnings_{t+2} - Earnings_{t+1}}{(|Earnings_{t+2}| + |Earnings_{t+1}|)/2}$$



Downside Global Earnings Growth (-1.0σ)

$$Growth = \frac{Earnings_{t+2} - Earnings_{t+1}}{Price_t}$$



Downside Global Returns (-1.0σ)

$$Returns_{(12-24)}$$

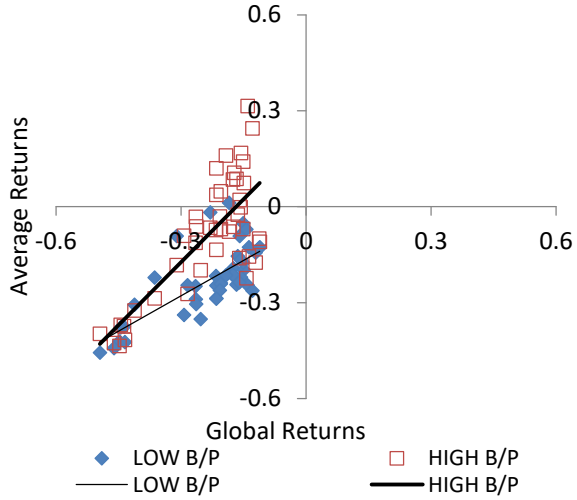


Table 1: Sample composition

This table reports the sample of 30 countries used in the analyses, as well as the average number of firms in the data set. The sample spans 262 months from March 1993 to December 2014. The table reports the average number of firms in each country with: 1) available fundamental data; and 2) available fundamental and I/B/E/S earnings forecast data. I/B/E/S coverage percentage is the proportion of firms within each country with available fundamental data that also have available I/B/E/S data.

Country	Firms with Fundamental Data	Firms with Fundamental and I/B/E/S Data	I/B/E/S Coverage
Australia	519	268	52%
Austria	56	34	61%
Belgium	73	53	73%
Canada	841	312	37%
China	852	399	47%
Denmark	97	57	59%
Finland	83	67	81%
France	410	262	64%
Germany	433	267	62%
Great Britain	845	602	71%
Hong Kong	106	51	48%
India	537	239	45%
Indonesia	150	63	42%
Israel	140	43	31%
Italy	189	126	67%
Japan	2,799	926	33%
Malaysia	451	174	39%
Netherlands	113	94	83%
New Zealand	57	41	72%
Norway	108	84	78%
Portugal	34	24	71%
Singapore	285	105	37%
South Africa	151	94	62%
South Korea	746	221	30%
Spain	92	77	84%
Sweden	170	117	69%
Switzerland	167	121	72%
Taiwan	715	192	27%
Thailand	253	105	42%
USA	4,113	2,946	72%
Total Firms	15,585	8,164	52%
Firm-months	4,110,178	2,305,381	56%

Table 2: Distribution of variables

This table reports means, standard deviations and selected percentiles of variables across 30 countries and 262 months from March 1993 to December 2014 (*N* = 7,860, except as noted). All variables are at the country level using all firms with available fundamental and I/B/E/S forecast data. Since our analyses is conducted at the country portfolio level which reduces the influence of outliers and data errors, we do not trim any variables.

	N	Mean	Std. Dev.	P1	P5	P10	P25	P50	P75	P90	P95	P99
Returns	7,860	0.085	0.284	-0.541	-0.367	-0.263	-0.082	0.092	0.229	0.393	0.531	0.926
E/P	7,860	0.071	0.022	0.024	0.038	0.045	0.058	0.069	0.081	0.097	0.108	0.139
B/P	7,860	0.526	0.200	0.205	0.282	0.318	0.398	0.491	0.614	0.769	0.894	1.184
D/P	7,860	0.025	0.013	0.005	0.009	0.012	0.016	0.023	0.032	0.040	0.049	0.073
Momentum	7,860	0.096	0.236	-0.441	-0.283	-0.190	-0.037	0.101	0.215	0.351	0.469	0.805
Size	7,860	12.318	1.624	8.552	9.641	10.201	11.295	12.281	13.333	14.377	15.069	16.434
Beta	7,860	0.905	0.356	0.155	0.387	0.488	0.677	0.886	1.087	1.363	1.581	1.903
GDP Growth Forecast	7,790	0.030	0.022	-0.023	-0.002	0.008	0.017	0.027	0.040	0.062	0.075	0.092
Inflation Forecast	7,790	0.028	0.026	-0.006	0.005	0.010	0.016	0.022	0.031	0.056	0.077	0.104

Returns data for US firms are collected from CRSP, and for non-US firms returns are computed using price data collected from Compustat Global. Where delisting returns are available, these are included in order to mitigate potential survivorship bias. The analysis uses monthly value-weighted country excess returns accumulated over the twelve months after characteristics are measured (i.e., 12-months ahead). Excess returns are local currency returns less the relevant short term risk free rate, or equivalent short term cash rate, for each country.

Fundamental data are from Compustat for US and Canadian firms and from Factset for international firms. Returns and price data are from CRSP for US firms, and Compustat Global for Canadian and international firms. A maximum of 2,305,381 firm-months with available fundamental data (earnings, book value of equity, and dividends) and I/B/E/S earnings forecast data are aggregated up to the country level.

E/P is the forward earnings yield at the country level calculated as the ratio of the sum of time-weighted one-year ahead I/B/E/S forecast earnings divided by the sum of market value of equity for the same firms. Firm-level earnings per share forecasts from I/B/E/S are multiplied by shares outstanding in I/B/E/S for each firm to calculate forecasts of earnings. Each month, a constant horizon 12-month ahead forecast (*F*12) is calculated by time-weighting the forecasts for the one-year ahead (*F*1) and two-year ahead (*F*2) periods. For each firm *i* in month *t*, the 12-month ahead forecast is calculated as $F12_i = w_{i,t}F1_i + \left(1 - w_{i,t}\right)F2_i$ where the monthly weights ($w_{i,t}$) are based on the number of days between the forecast date and the fiscal period end date for the one-year-ahead forecast, divided by 365 days. These are then summed up across all firms in a country to compute earnings forecasts at the country level and are used as the numerator for E/P. Prices are observed three months after the fiscal period end, and represent firm-level market value of equity across all share classes that are then summed up to the country level each month. E/P at the country level is calculated ensuring that the numerator and denominator contain the same firms.

B/P, the book-to-price ratio, is book value of common equity at the end of the most recent fiscal period (annual, quarterly, or semi-annual, as available) and are scaled by market value of equity observed three months after the fiscal period end. Book value is Compustat's common equity (CEQ) and Factset's shareholders equity (FF_SHLDRS_EQ). For each country-month, book values and market values of equity are summed across all firms in that country with available data. B/P at the country level is calculated ensuring that the numerator and denominator contain the same firms.

D/P, the dividend yield, is common dividends from Compustat (DVC) and Factset (FF_DIV_COM_CF) for the most recent fiscal period scaled by market value of equity. Interim periods (quarterly or semi-annual) are used to compute trailing twelve month dividends in order to provide cross-sectional comparability with annual dividends. For each country-month, dividends are summed across all firms with available fundamental and I/B/E/S forecast data to provide country-level measures of dividends. Prices are represented by firm-level market value of equity across all share classes summed up to the country level each month. D/P at the country level is calculated ensuring that the numerator and denominator contain the same firms.

Momentum is the value-weighted return for each country over the twelve month period prior to the returns measurement period. Size is the natural log of aggregate country-level market value of equity. Aggregate market value of equity is calculated by summing market value of equity across firms within a country. Beta for each country is estimated from 36-month rolling regressions of value-weighted monthly country returns on the monthly returns from a global market index represented by the MSCI All Country World Index (MSCI ACWI).

GDP Growth Forecast and Inflation Forecast are macroeconomic forecasts from Consensus Economics for real annual GDP growth and the change in the Consumer Price Index for each country, respectively. The data provided by the vendor is a consensus forecast representing the average of estimates across all contributors including financial firms and economic research organizations. Each month, the one-year ahead forecast ($F1$) and two-year ahead forecast ($F2$) are time-weighted to provide a 12-month ahead forecast ($F12$) of real annual GDP growth and inflation. Specifically, for each country i in month t a 12-month ahead forecast is calculated as $F12_i = w_{i,t}F1_i + (1 - w_{i,t})F2_i$ where the monthly weights ($w_{i,t}$) are based on the number of months between the month of the forecast date and the end of the year, divided by 12 months.

Table 3: Empirical Support for the Accounting Framework

This table reports coefficient estimates from panel regressions that examine whether the change in premium of price over book value of equity over the 12-month ahead period is associated with future earnings growth, and whether value measures are associated with the change in premium, and with future earnings growth. The sample uses all available country-months from 1993 to 2014. In Model I, we confirm that country-level returns and country-level earnings growth are positively associated by regressing country-level 12-month ahead value-weighted realized excess returns on realized annual earnings growth over the one-year and two-year ahead periods. In Model II, we examine whether the realized change in premium is associated with future earnings growth by regressing the change in premium of price over book value of equity over the 12-month ahead period on realized annual earnings growth over the one-year and two-year ahead periods. In Model III, we examine whether E/P and B/P measured at time *t* are associated with the change in premium by regressing the change in premium of price over book value of equity over the 12-month ahead period on these characteristics. Finally, in Model IV, we examine whether E/P and B/P measured at time *t* are associated with future earnings growth by regressing realized annual earnings growth over the two-year period on these characteristics. All models include month fixed effects. The sample comprises 7,500 country-months (250 months for each of the 30 countries) due to the additional data requirements to calculate realized earnings growth rates and the change in premium of price over book value of equity over the 12-month ahead period. The reported *t*-statistics are based on standard errors clustered by country and month. The asterisks *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	I	II	III	IV
	Realized Excess Returns over the next 12 months	*Change in Premium of Price over Book Value of Equity over the next 12 months*	*Change in Premium of Price over Book Value of Equity over the next 12 months*	*Realized Earnings Growth Two-Years Ahead*
Realized Earnings Growth One Year Ahead	0.052***	0.010		
	(2.82)	(0.38)		
Realized Earnings Growth Two Years Ahead	0.098***	0.118***		
	(4.12)	(4.74)		
E/P			0.228	-1.583
			(0.24)	(-1.20)
B/P			0.431***	0.244*
			(2.86)	(1.75)
Adjusted R-squared	0.506	0.342	0.353	0.260

Table 4: Coefficient estimates and test statistics for panel regressions

This table reports coefficient estimates from panel regressions of 12-month ahead value-weighted country excess returns on time *t* characteristics for 7,860 country-months from March 1993 to December 2014 along with *t*-statistics and adjusted R-squareds. In model XI where GDP growth and inflation forecasts are included the number of observations is reduced slightly to 7,790 country-months. The *t*-statistics reported are based on standard errors clustered by country and month. The asterisks *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
E/P	1.879***			1.410***		1.030**	1.120**	1.170**	1.152**	1.149**	1.304**
	(3.42)			(2.62)		(2.47)	(2.25)	(2.35)	(2.24)	(2.24)	(1.97)
B/P		0.393***			0.311***	0.351***	0.332***	0.333***	0.329***	0.329***	0.274**
		(4.62)			(3.50)	(4.71)	(3.48)	(3.54)	(3.49)	(3.47)	(2.43)
D/P			4.834***	3.814***	2.438*		1.912	1.859	1.874	1.883	1.502
			(4.64)	(3.41)	(1.85)		(1.33)	(1.29)	(1.30)	(1.32)	(1.30)
Momentum								0.191***	0.190***	0.191***	0.133***
								(3.07)	(3.07)	(3.08)	(2.64)
Size									-0.003	-0.003	-0.008
									(-0.34)	(-0.34)	(-0.76)
Beta										0.008	0.008
										(0.30)	(0.26)
GDP Growth Forecast											-0.012
											(-1.12)
Inflation Forecast											-0.001
											(-0.22)
Intercept	-0.017	-0.122***	-0.038	-0.111***	-0.140***	-0.156***	-0.214***	-0.213***	-0.176	-0.184	-0.072
	(-0.57)	(-2.92)	(-1.29)	(-2.66)	(-3.49)	(-3.49)	(-4.73)	(-4.77)	(-1.51)	(-1.57)	(-0.40)
Adjusted R-squared	0.029	0.077	0.051	0.060	0.086	0.084	0.101	0.103	0.103	0.103	0.104
Country-Months	7,860	7,860	7,860	7,860	7,860	7,860	7,860	7,860	7,860	7,860	7,790

Table 5: Coefficient estimates and test statistics for panel regressions (fixed effects)

This table reports coefficient estimates from panel regressions of 12-month ahead value-weighted country excess returns on time *t* characteristics for 7,790 country-months from March 1993 to December 2014 along with *t*-statistics and adjusted R-squareds. For models with fixed effects, the intercept is not reported. The reported *t*-statistics are based on standard errors clustered by country and month. The asterisks *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	I	II	III	IV
E/P	1.304**	1.142*	1.315**	1.031*
	(1.97)	(1.74)	(2.33)	(1.89)
B/P	0.274**	0.177*	0.170*	0.164*
	(2.43)	(1.92)	(1.85)	(1.90)
D/P	1.502	0.627	1.248	0.150
	(1.30)	(0.68)	(1.04)	(0.17)
Momentum	0.133***	0.177***	0.131***	0.176***
	(2.64)	(2.73)	(2.73)	(3.00)
Size	-0.008	0.001	-0.034	-0.016
	(-0.76)	(0.11)	(-1.55)	(-0.84)
Beta	0.008	0.015	-0.039	-0.039
	(0.26)	(0.64)	(-1.34)	(-1.34)
GDP Growth Forecast	-0.012	-0.005	-0.039***	-0.024*
	(-1.12)	(-0.52)	(-3.47)	(-1.92)
Inflation Forecast	-0.001	-0.001	-0.007	-0.001
	(-0.22)	(-0.18)	(-1.24)	(-0.19)
Intercept	-0.072			
	(-0.40)			
Adjusted/Within R-squared	0.104	0.057	0.147	0.096
Country-Months	7,790	7,790	7,790	7,790
Month Fixed Effects	No	Yes	No	Yes
Country Fixed Effects	No	No	Yes	Yes

Table 6: Average capitalized R&D and return on equity for countries sorted jointly on E/P and B/P

This table reports average capitalized research and development as well as average return on equity for portfolios formed each month from March 1993 to February 2014, by ranking countries jointly on earnings-to-price, E/P, and book-to-price, B/P. Each month, countries are first sorted into two groups on the basis of E/P (i.e., below median E/P group and above median E/P group). Then within each E/P group, quintile portfolios were formed by ranking countries on book-to-price, B/P. Capitalized R&D is a country-level measure of unconditional conservatism in the accounting system similar to the c-score in Penman and Zhang (2002) and is computed as capitalized research and development expenditures divided by net operating assets (NOA). This measure captures the cumulative effect of conservative accounting. Each fiscal year-end, research and development expenditure (Compustat item XRD) is assumed to be capitalized and amortized using the sum-of-years digit method over five years. For each country-month, capitalized R&D and net operating assets are summed across all firms in that country before computing Capitalized R&D/NOA at the country level ensuring that the numerator and denominator contains the same firms. For calculating return on equity, each month we aggregate the trailing twelve month earnings for countries in each portfolio in order to compute portfolio-level earnings. Portfolio-level return on equity is calculated as $\text{Earnings}_{t+1}/\text{Book Equity}_t$. The *t*-statistics for the difference in mean between the high B/P and low B/P quintile portfolios incorporate a Newey-West adjustment for overlapping monthly observations. Panel A reports the results for the below median E/P group, and Panel B reports the results for the above median E/P group.

Panel A: Sort countries first on E/P and then on B/P (Below Median E/P)

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Capitalized R&D/NOA (%)	3.8	4.3	4.3	4.9	6.6	2.9	*(13.91)*
Return on Equity (%)	11.3	10.4	9.8	6.4	5.1	-6.2	*(-8.74)*

Panel B: Sort countries first on E/P and then on B/P (Above Median E/P)

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Capitalized R&D/NOA (%)	4.8	4.0	3.9	4.0	4.0	-0.8	*(-1.37)*
Return on Equity (%)	14.0	12.8	12.9	11.8	8.8	-5.2	*(-6.39)*

Table 7: Average realized earnings growth two years ahead for country portfolios sorted on B/P (and jointly on E/P)

This table reports average realized earnings growth two years ahead (i.e., future earnings growth from month 12 to month 24) and variability in future earnings growth for five portfolios formed each month from March 1993 to February 2014, by ranking countries on book-to-price, B/P (see Panel A) and jointly on earnings-to-price, E/P, and B/P (see Panels B and C). The series is shortened to enable the calculation of growth rates two years ahead and comprises 7,560 country-months (252 months for each of the 30 countries). Each month, trailing twelve month earnings for countries in each portfolio are aggregated to compute portfolio-level earnings. Future earnings growth is calculated as $\ln(Earnings_{t+2}/Earnings_{t+1})$ where ln indicates natural logarithm. The table also reports the average monthly standard deviation and inter-quartile range of two year ahead earnings growth rates for each of the five B/P quintile portfolios. The *t*-statistics for the difference in mean between the high B/P and low B/P quintile portfolios incorporate a Newey-West adjustment for overlapping monthly observations. For Panel B, each month, countries are first sorted into two groups on the basis of E/P (i.e., below median E/P group and above median E/P group). Then within each E/P group, quintile portfolios were formed by ranking countries on book-to-price, B/P. Panel B reports the results for the below median E/P group, and Panel C reports the results for the above median E/P group. Panels D and E use two alternative measures of earnings growth and repeat the analysis from Panel A for countries sorted only on the basis of B/P.

Panel A: Sort countries only on B/P

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Earnings Growth Two Years Ahead (%)	10.8	3.8	7.3	15.1	23.1	12.3	*(2.62)*
Standard Deviation of Earnings Growth	32.3	48.5	62.2	91.3	63.7	31.3	
Inter-quintile Range of Earnings Growth	21.1	32.8	42.2	39.4	63.1	42.1	

Panel B: Sort countries first on E/P and then on B/P (Below Median E/P)

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Earnings Growth Two Years Ahead (%)	10.7	4.3	10.1	10.7	28.2	17.6	*(2.78)*
Standard Deviation of Earnings Growth	32.6	80.3	69.6	75.7	87.1	54.5	
Inter-quintile Range of Earnings Growth	23.6	35.3	45.7	47.0	43.6	20.0	

Panel C: Sort countries first on E/P and then on B/P (Above Median E/P)

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Earnings Growth Two Years Ahead (%)	4.5	5.5	6.1	14.3	5.4	0.9	*(0.19)*
Standard Deviation of Earnings Growth	37.3	37.4	56.4	92.1	61.6	24.2	
Inter-quintile Range of Earnings Growth	40.0	32.6	32.5	35.3	46.4	6.4	

Panel D: Sort countries only on B/P – Alternative Measure of Earnings Growth

$$Growth = \frac{Earnings_{t+2} - Earnings_{t+1}}{(|Earnings_{t+2}| + |Earnings_{t+1}|)/2}$$

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Earnings Growth Two Years Ahead (%)	10.6	6.0	11.0	16.3	20.9	10.2	*(2.68)*
Standard Deviation of Earnings Growth	30.5	39.1	45.0	66.7	66.8	36.3	
Inter-quintile Range of Earnings Growth	21.0	32.6	41.8	44.6	71.2	50.3	

Panel E: Sort countries only on B/P – Alternative Measure of Earnings Growth

$$Growth = \frac{Earnings_{t+2} - Earnings_{t+1}}{Price_t}$$

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Earnings Growth Two Years Ahead (%)	0.6	0.5	0.8	0.8	1.0	0.4	*(1.94)*
Standard Deviation of Earnings Growth	1.2	1.6	1.9	2.2	3.6	2.3	
Inter-quintile Range of Earnings Growth	1.1	2.0	2.2	2.3	3.0	1.9	

Table 8: Relation between earnings growth and global earnings growth for high and low B/P countries

This table reports the slope coefficients from regressions of realized portfolio earnings growth two years ahead (i.e., future earnings growth from month 12 to month 24) on realized global earnings growth two years ahead, for the high and low B/P quintile portfolios. For Panel A, we sort countries only on the basis of book-to-price (B/P). We use indicators to identify high and low B/P quintile portfolios and are interested in the magnitude of the coefficients on high B/P and low B/P, as well as the difference between the two coefficients (i.e., high minus low). Realized earning growth two years ahead is calculated as $\ln(Earnings_{t+2}/Earnings_{t+1})$ where ln indicates natural logarithm. Monthly global earnings growth is calculated using the sum of country-level earnings for the 30 countries over each of the 252 months from March 1993 to February 2014. The series is shortened to enable the calculation of growth rates two years ahead. The monthly global earnings growth series is partitioned into negative and positive global earnings growth realizations, as well as those that are over ±1.0 and ±0.5 standard deviation away from the mean (i.e., time series average) global earnings growth. Each column reports the slope coefficient of the high and low B/P quintile portfolios for the different partitions of global earnings growth realizations. For each partition, the *t*-statistic for the slope coefficient, as well as the *t*-statistic for the difference in slope coefficients between the high and low B/P quintile portfolios is reported. The asterisks *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively. The number of months available for estimating each slope coefficient is also reported. For Panel B, each month, countries are first sorted into two groups on the basis of E/P (i.e., below median E/P group and above median E/P group. Then within each E/P group, quintile portfolios were formed by ranking countries on book-to-price, B/P. We use indicators to identify high and low B/P quintile portfolios. Panel B reports the results for the below median E/P group, and Panel C reports the results for the above median E/P group. Finally, in Panel D, we repeat the analysis from Panel A for the downside states of the world only (i.e., 1.0 standard deviation below the mean) using two alternative measures of realized earnings growth two years ahead as well as average future realized returns (months 12 to 24). In each column in Panel D, portfolio-level growth/returns is plotted against global growth/returns that are computed in the same way as for portfolios. Also see Figure 1 which depicts scatter plots of the sensitivity of earnings growth (and returns) of high and low B/P quintile portfolios to global earnings growth (and global returns) in different states of the world.

Panel A: Sort countries only on B/P

	I Growth 1.0σ Below Mean	II Growth 0.5σ Below Mean	III Negative Growth	IV All Observations	V Positive Growth	VI Growth 0.5σ Above Mean	VII Growth 1.0σ Above Mean
HIGH B/P	0.752	0.626	0.514	0.929	1.136	0.512	0.050
	(5.14)	(5.93)	(6.02)	(17.57)	(9.18)	(4.06)	(0.20)
LOW B/P	0.191	0.279	0.424	0.616	0.665	0.499	0.161
	(2.37)	(5.15)	(9.05)	(16.17)	(9.43)	(5.80)	(1.23)
HIGH – LOW	0.561***	0.348***	0.090	0.313***	0.471***	0.013	-0.111
t-statistic for HIGH – LOW difference	*(3.98)*	(2.98)	(0.94)	(6.30)	(3.75)	(0.09)	(-0.35)
Number of Months	24	32	80	252	172	61	25

Panel B: Sort countries first on E/P and then on B/P (Below Median E/P)

	I Global Growth 1.0σ Below Mean	II All Observations	III Global Growth 1.0σ Above Mean
HIGH B/P	0.438	0.948	1.129
	(1.46)	(11.27)	(1.92)
LOW B/P	-0.077	0.617	0.306
	(-0.76)	(11.40)	(1.49)
HIGH – LOW	0.515	0.331***	0.823
t-statistic for HIGH – LOW difference	(1.49)	(3.52)	(1.33)
Number of Months	23	239	25

Panel C: Sort countries first on E/P and then on B/P (Above Median E/P)

	I Growth 1.0σ Below Mean	II All Observations	III Growth 1.0σ Above Mean
HIGH B/P	0.563	0.983	-0.586
	(2.20)	(12.40)	(-1.81)
LOW B/P	0.045	0.536	-0.283
	(0.24)	(9.61)	(-1.48)
HIGH – LOW	0.518**	0.447***	-0.303
t-statistic for HIGH – LOW difference	(2.08)	(6.47)	(-0.71)
Number of Months	24	251	25

Panel D: Sort countries only on B/P – Alternative Measures to Assess Sensitivity in Global Downside States

	I	II	III
	Global Growth 1.0σ Below Mean	Global Growth 1.0σ Below Mean	Global Returns 1.0σ Below Mean
Measure Used:	$\frac{Earnings_{t+2} - Earnings_{t+1}}{(\lvert Earnings_{t+2}\rvert + \lvert Earnings_{t+1}\rvert)/2}$	$\frac{Earnings_{t+2} - Earnings_{t+1}}{Price_t}$	$Returns_{(12-24)}$
HIGH B/P	1.856	2.330	1.314
	(6.53)	(8.39)	(9.12)
LOW B/P	0.246	0.317	0.737
	(1.85)	(3.02)	(9.61)
HIGH – LOW	1.610***	2.014***	0.577***
t-statistic for HIGH – LOW difference	(3.97)	(5.79)	(3.15)
Number of Months	24	24	44

Table 9: Panel estimations for cross-sectional country partitions

This table reports coefficient estimates from panel regressions of 12-month ahead excess returns on time *t* characteristics for the time period March 1993 to December 2014 along with *t*-statistics and R-squared. For the samples used in models I and II, three portfolios are formed each month by ranking countries on size. The smallest and largest size tercile results are reported in model I and model II, respectively. Model III classifies 21 of the 30 countries as Developed Markets including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Hong Kong, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and USA. Model IV classifies 9 countries as Emerging Markets including China, India, Indonesia, Israel, Malaysia, South Africa, South Korea, Taiwan and Thailand. For Models V and VI, four portfolios were formed each month by ranking countries on the basis of GDP growth forecast variability. For Models VII and VIII, four portfolios were formed each month by ranking countries on the basis of Capitalized R&D. Capitalized R&D is a country-level measure of unconditional conservatism in the accounting system similar to the c-score in Penman and Zhang (2002) and is computed as capitalized research and development expenditures divided by net operating assets. This measure captures the cumulative effect of conservative accounting. Each fiscal year-end, research and development expenditure (Compustat item XRD) is assumed to be capitalized and amortized using the sum-of-years digit method over five years. For each country-month, capitalized R&D and net operating assets (NOA) are summed across all firms in that country before computing Capitalized R&D/NOA at the country level ensuring that the numerator and denominator contains the same firms. For Models IX and X, four portfolios were formed each month by ranking countries on the basis of ΔCapitalized R&D. ΔCapitalized R&D is the change in country-level Capitalized R&D/NOA and captures the current period effect of conservative accounting. The models also include time fixed effects. The *t*-statistics reported are based on standard errors clustered by country and month. The *F*-statistics reported are for significance of the difference between B/P – E/P across the various partitions. The last row of the table also reports dispersion in future earnings growth for each partition.

	I	II	III	IV	V	VI	VII	VIII	IX	X
	Largest Size	Smallest Size	Developed Markets	Emerging Markets	Low GDP Forecast Variability	High GDP Forecast Variability	Low Capitalized R&D	High Capitalized R&D	Low ΔCapitalized R&D	High ΔCapitalized R&D
E/P	1.604***	0.640	0.770**	0.512	2.010***	0.186	1.799**	-0.881	1.091	-0.261
	(2.73)	(0.74)	(2.19)	(0.81)	(3.38)	(0.26)	(2.20)	(-0.33)	(1.01)	(-0.23)
B/P	0.212***	0.305***	0.093**	0.363**	-0.029	0.311***	0.125**	0.249*	-0.042	0.198**
	(3.39)	(3.21)	(1.99)	(2.03)	(-0.31)	(4.73)	(2.25)	(1.88)	(-0.45)	(2.27)
R-squared	0.046	0.106	0.051	0.116	0.011	0.127	0.053	0.032	0.008	0.028
Country-Months	2,620	2,620	5,502	2,358	1,243	1,441	1,620	1,563	1,537	1,563
(B/P – E/P) F-Statistic	*II vs. I:*	*4.75*	*IV vs. III:*	*4.11*	*VI vs. V:*	*5.48*	*VIII vs. VII:*	*53.61*	*X vs. IX:*	*9.00*
Prob > F		*(0.029)*		*(0.043)*		*(0.019)*		*(0.000)*		*(0.003)*
$\sigma_{\text{Future Earnings Growth}}$	63.9	74.2	64.8	66.2	66.1	69.3	65.2	67.4	71.9	67.5

Table 10: B/P and realized future earnings growth

This table reports coefficient estimates from panel regressions of 12-month ahead country excess returns on time *t* characteristics and proxies for realization of future earnings growth. We use 'bottom-up' and 'top-down' measures. The series is shortened to enable the calculation of future growth rates and comprises 7,160 country-months. Our 'bottom-up' measures of earnings realizations are $(Earnings_{t+2} - Earnings_{t+1})/Price_t$ which is the realized change in earnings from year one to year two scaled by price at time *t*, and $(Earnings_{t+3} - Earnings_{t+1})/Price_t$ which is the realized change in earnings from year one to year three scaled by price at time *t*. Our 'top-down' measures are $E_{t+1}[GDP\ Growth\ Forecast_{t+2}]$ and $E_{t+2}[GDP\ Growth\ Forecast_{t+3}]$ representing the forecasts one year and two years from time *t* for one-year ahead GDP growth. The *t*-statistics reported are based on standard errors clustered by country and month. The asterisks *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	'Bottom-up' Measures			'Top-down' Measures			Both Measures	
	I	II	III	IV	V	VI	VII	VIII
E/P	1.181*	1.434***	1.318***	1.601***	1.424***	1.570***	1.647***	1.363**
	(1.83)	(2.83)	(2.75)	(2.74)	(2.91)	(3.16)	(4.21)	(2.50)
B/P	0.191**	0.148*	0.102	0.172**	0.096	0.104	0.050	0.147
	(2.04)	(1.79)	(1.01)	(2.12)	(1.26)	(1.41)	(0.61)	(1.60)
D/P	0.563	0.639	1.271	0.528	0.271	0.307	0.834	0.173
	(0.60)	(0.76)	(1.60)	(0.55)	(0.33)	(0.35)	(1.10)	(0.24)
Momentum	0.188***	0.156**	0.152**	0.067	0.080	0.045	0.029	0.054
	(2.74)	(2.44)	(2.39)	(0.95)	(1.40)	(0.71)	(0.50)	(1.12)
Size	0.000	0.000	0.001	0.002	0.000	0.001	0.002	-0.006
	(0.06)	(0.01)	(0.14)	(0.38)	(0.06)	(0.22)	(0.30)	(-0.28)
Beta	0.016	0.006	0.006	0.011	0.000	0.001	-0.005	-0.044*
	(0.64)	(0.27)	(0.26)	(0.49)	(0.01)	(0.04)	(-0.22)	(-1.94)
GDP Growth Forecast	-0.005	0.001	-0.000	-0.057***	-0.053***	-0.068***	-0.061***	-0.052***
	(-0.55)	(0.11)	(-0.06)	(-3.93)	(-4.96)	(-4.82)	(-4.19)	(-3.14)
Inflation Forecast	-0.001	-0.010***	-0.010***	-0.007*	-0.009**	-0.010**	-0.016***	-0.009
	(-0.21)	(-3.00)	(-3.29)	(-1.86)	(-2.19)	(-2.48)	(-4.40)	(-1.46)
$(Earnings_{t+2} - Earnings_{t+1})/Price_t$		1.771***						
		(3.44)						
$(Earnings_{t+3} - Earnings_{t+1})/Price_t$			1.480***				1.042***	0.890***
			(4.12)				(3.63)	(2.93)
$E_{t+1}[GDP\ Growth\ Forecast_{t+2}]$				0.065***		0.029***	0.030***	0.031***
				(5.03)		(3.40)	(3.09)	(3.22)
$E_{t+2}[GDP\ Growth\ Forecast_{t+3}]$					0.070***	0.057***	0.050***	0.056***
					(6.86)	(7.55)	(7.84)	(7.58)
Within R-squared	0.062	0.152	0.133	0.166	0.239	0.255	0.288	0.286
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	No	No	No	No	No	Yes