Risky Value

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Abstract

We use a simple accounting based framework to link two primary measures of 'value' to expected returns for countries: earnings-to-price (E/P) and book-to-price (B/P). When 'E' is more persistent, E/P is close to a sufficient statistic for expected returns. When 'E' is less persistent, B/P is needed. High B/P countries are, on average, facing temporarily depressed 'E' and their recovery in near term earnings growth is uncertain. Countries with high B/P also exhibit greater downside sensitivity to contemporaneous global earnings growth, consistent with B/P reflecting risky future earnings growth.

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

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1. Introduction

This paper uses an accounting-based approach to identify characteristics that can help explain 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 whether the associations between 'value' measures and future returns can be attributed to risk. In particular, we examine the risk embedded in 'value' measures attributable to co-movement with expectations of earnings growth. We focus on country level returns as there is a lack of empirical research in this area, but for completeness we also examine stock level returns. To our knowledge, the results we document of systematic risk driving the positive association between B/P and future earnings growth have not been documented previously.

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 the 'fair' value of the firm. We use a simple accounting-based framework that links price denominated earnings and book equity to expected returns (see also Penman, Reggiani, Richardson and Tuna, 2013). A key implication of this framework is that combining specific attributes of the financial reporting system will create a superior measure of the 'fair' value of the firm, and will also enable the tracking of changes in the value of the firm. Assuming efficient prices, the framework suggests that expected returns are directly related to risk

embedded in the earnings yield and price denominated expected subsequent earnings growth. In the absence of risky expected subsequent earnings growth, the earnings yield (i.e., E/P) should be sufficient to capture expected returns. However, in the presence of risky expected subsequent earnings growth, E/P is no longer a sufficient measure of expected returns. B/P, in combination with E/P, will capture expected returns in scenarios where there is expected risky subsequent earnings growth. The relative importance of E/P and B/P will vary across countries based on differences in risky expected earnings growth. Our empirical tests support this.

Using a panel of 6,600 country-month return observations over the period March 1993 through to June 2011 covering 30 countries, we find strong evidence of E/P and B/P jointly explaining cross-sectional variation in country level returns. Strikingly, dividend yield (D/P) is not associated with country level returns after controlling for E/P and B/P. D/P has been the main focus of prior work in financial economics, and while it has stand-alone explanatory power, it is largely irrelevant after including E/P and B/P. This loss of predictive power of D/P is easily explained. Dividends are not a measure of value creation as they reduce retained earnings and book equity available to generate future earnings growth. Conversely, earnings and book equity are directly related to future value creation and subsume the information in dividends (since dividends are linked to earnings through payout policy). This makes 'E' and 'B' more natural candidate characteristics to capture the fair value of the firm, and hence when expressed relative to market price, they should explain more of the variation in returns.

Sorting countries on the basis of B/P systematically sorts on the basis of earnings levels and patterns in earnings growth. Around the time of sorting, high B/P countries experience declines in the level of earnings and in profitability. High B/P countries then recover and, on average, experience a strong increase in earnings growth. However, that recovery in earnings

growth is risky: there is greater earnings growth variability and a greater sensitivity of the earnings growth of high B/P countries to global earnings growth (and global market returns) in downside states of the world. 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 subsequent earnings growth (see e.g., Fama, 1990).

A key innovation in our paper is recognizing a limitation in comparative statics from the traditional dividend discount model (DDM). Assuming a constant dividend payout ratio, a simple form of DDM is P = E/(r-g), which can be re-expressed as r = E/P + g. While it is possible to make assertions about how changes in 'g' will affect E/P holding 'r' fixed, such assertions fail to understand that 'r' and 'g' are possibly correlated. A given E/P can map to any number of combinations of 'r' and 'g'. There is considerable risk in expected earnings growth. This is an important departure from most empirical research that exploits basic present value identities (e.g., Fama and French, 2008). If 'r' and 'g' are positively correlated, then comparative statics that hold fixed certain components are not a valid basis for assessing whether, and how, earnings and earnings growth relate to expected returns. This positive relation of 'r' and 'g' is especially important when 'E' is known to be transitory and subject to conservative accounting practices. Our analysis documents that 'value' measures such as B/P are effective in identifying groups of firms that are experiencing temporarily depressed 'E' and are facing an uncertain recovery. High B/P countries do recover and the recovery in earnings growth is indeed risky, supporting our conjectured positive conditional relation between 'r' and 'g'.

Fama and French (2002) suggest that estimates of expected returns that are based on fundamental data are likely to be more precise than the average historical stock returns. However, it is not simply an ad hoc combination of price denominated fundamental data (e.g., sales, gross profits, operating profits, net income, dividends, operating cash flows, and book values). The financial reporting system is conservative in deferring the recognition of value attributable to risky investment activities. For example, advertising expenditures, research and development costs and other intangible investment activities are expensed at the time the investments are undertaken. However, earnings are deferred to future periods when sales of goods and services resulting from those risky investment activities are generated. A consequence of conservative accounting practices is to create a 'transitory' distortion in reported earnings distinct from truly transitory economic shocks. Hence, when 'E' is distorted by transitory components, E/P will no longer be a sufficient statistic for expected returns, and B/P becomes more important to help overcome these distortionary effects. Only by combining earnings and book values are we able to recover information about risky investment activity and hence about expected returns.

Our findings are related to recent research examining predictability of excess stock 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 regression coefficients. Our paper suggests a fundamental

basis for these 'value' measures to capture risk: earnings growth is the outcome at risk for the common equity holder, and B/P captures expectations of risky subsequent earnings growth.

The rest of the paper proceeds as follows. Section 2 describes the framework used in the paper to link growth characteristics to 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

Financial statements are a useful starting point for understanding the drivers of changing security prices. It is well known that ex post realizations of accounting based fundamentals explain a significant portion of variation in realized stock returns. For example, Easton, Harris and Ohlson (1992) show that cum-dividend earnings realizations over a ten year period can explain over 60 percent of the variation in contemporaneous stock returns for a large sample of US firms. Richardson, Sloan and You (2012) use changes in sell-side analyst expectations of future earnings measured over the same return period, to explain 37 percent of return variation over a 1 year horizon and 57 percent of return variation over a 5 year horizon. Similarly, Asness, Israelov and Liew (2011) using a variance decomposition of country level returns show strong evidence of country fundamentals as the dominant factor for return intervals greater than 5 years. From a theoretical perspective, Ohlson (1995, equations P5 and P6) notes that as the return interval lengthens the observed change in stock prices approximates cum-dividend changes in book value of equity.

Expected returns will also reflect expectations of future earnings and subsequent earnings growth. However, it is only the systematic portion of future earnings and subsequent earnings growth that should be priced. This is captured directly via price denominated accounting

attributes. The starting point for our accounting framework is the clean surplus relationship embedded in financial statements, 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 $d_{t+1} = Earnings_{t+1} - (B_{t+1} - B_t)$. Substituting for dividends in the dollar stock return expression, equation (1) shows that expected dollar returns are explained by expected earnings in year *t+1* and the expected change in the premium of price over book value of equity:

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

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

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

The deflation by price in equation (2) serves to capture the expectations of earnings and expectations about the change in premium of price over book incorporated in the current price. If there is no change in the premium (i.e., no expectations of subsequent earnings growth), 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 expected earnings growth, the forecasted change in premium of price over book value is needed to describe expected returns. Of course, due to the deflation by price, both E/P and B/P will capture time variation in expected returns as well as differences in country level discount rates.

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 conservatism

embedded in the financial reporting system (e.g., expensing of research and development costs, asymmetric asset impairment tests, and expensing of advertising 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 the fair value of the firm. The conservative choices embedded in the financial reporting system partly reflect risk. Investments associated with riskier activities tend to be expensed as they are incurred and future benefits (i.e., potential sales) associated with these risky investments are deferred into 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. You can only uncover expected returns by measuring the expected earnings yield (which captures expected earnings realizations over the next period) and the expected change in premium of price over book (which reflects expectations about risky subsequent earnings growth). The latter component is, in part, captured by B/P. Indeed, at the firm level it has been shown that the information content of B/P for subsequent earnings growth is greatest in the cases where 'E' is expected to suffer more from the limitations of conservative accounting choices (see Penman, Richardson, Reggiani and Tuna, 2013).

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 E/P the earnings and market values 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, this paper also considers macroeconomic factors related to expectations of forward

earnings growth for countries as they may also 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). While our focus is on country level returns due to the paucity of empirical research in this area, we also examine stock level returns in section 4.3.6.

3. Research design and data description

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 monthly country excess (relative to local risk free rate) returns 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 expectations of subsequent earnings growth (the change in the premium of price over book).

The future premium of price over book is an unknown, as we cannot observe the future price or the future book value. Thus, our base case cross-sectional regression model is specified as follows (country subscripts suppressed):

$$R_{t+1} = a + b_1 \frac{E[Earnings_{t+1}]}{P_t} + b_2 \frac{B_t}{P_t} + \Sigma \gamma X_t + \varepsilon_{t+1} \qquad (3)$$

The model in equation (3) tests whether E/P, B/P together, and a vector of other variables, X_t, that are expected to be related to subsequent country earnings growth, combine to explain country returns. Returns are expected to be associated with measures of price relative to the fair value of the firm. As discussed earlier, we have clear priors that combinations of 'E' and

'B' will generate a superior estimate of firm value and hence create a better measure of expected returns. In particular, B/P will be useful in situations where current 'E' is distorted by transitory effects.

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. 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.

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, book values of equity, dividends and other data for calculation of characteristics, 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 June 2011, providing 220 months (18 years, and 4 months) of data for each country. 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 1,685,724 underlying firm-months across countries are available with fundamentals, price and I/B/E/S forecast data. Each month within each country the available underlying firms are used to form aggregate country level variables, providing 6,600 country-month observations over the time period (220 months for 30 countries). Country-months are the main unit of analysis.

Our sample includes 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 0.61 percent with a standard deviation of 5.85 percent (we have 21 developed countries in our sample). The average one month excess return for emerging countries is 0.60 percent with a standard deviation of 8.69 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 subsequent 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 value-weighted monthly country excess returns. 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 fundamental 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.

Fundamental 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 fundamental data is 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 earnings and dividends, the previous 12 months of earnings 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 similar TTM number. Each month, the book values of equity, earnings and dividends for all the firms in a country are added to compute aggregate book values of equity, earnings and dividends for each country at time *t*. 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 fundamentals 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 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. To deal with negative earnings, a country level E/P is calculated only when aggregate country earnings are positive, denoted E/P(+) and is replaced with a zero when earnings are negative. An indicator

variable labeled Negative E/P identifies the aggregate negative E/P instances (less than 4% of the sample).

Finally, macroeconomic forecasts and firm level earnings forecast are collected from Consensus Economics and I/B/E/S, respectively. Real annual GDP growth forecasts and inflation forecasts are the main macroeconomic variables used in the analysis. Firm level earnings forecasts from I/B/E/S are used to compute a one year ahead earnings forecast for each country. These earnings forecasts are then used to calculate a forward E/P variable. Table 2 reports the distribution of variables across the 30 countries for the 220 months. The notes to the table describe the calculation methodology for each variable.

4. Empirical results

4.1 Role of E/P and B/P in explaining country level stock returns

The first analysis in Table 3 reports the coefficients for a panel characteristic regression. Relative to characteristics at time *t*, monthly returns are accumulated beginning in month 4 (t + 4) for the subsequent 12 months (t + 15) to provide a 12 month buy-and-hold return. These returns are then regressed on the various 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 3 shows that E/P(+) is significantly positively associated with future returns (test statistic of 4.24), while models II and III show a similar result for B/P (test statistic of 4.41) and D/P (test statistic of 4.42), 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 (3) 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 0.091. 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 5.317 with a test statistic of 4.42. This regression coefficient drops to 1.898 (model VII) and the test statistic is no longer significant (1.18 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 embedded in fundamental measures of value such as E/P and B/P. Model IX adds size (log of aggregated market capitalizations of 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 in 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 6,600 country-months to 6,530 country-months. Expectations of one year ahead growth in GDP and expectations of nominal price growth are not significantly associated with country level returns. Finally, in model XII the E/P(+) variable is substituted for the forward E/P variable using I/B/E/S earnings forecasts for the underlying firms, and the coefficient on forward E/P is large and significant, while the coefficient on B/P declines somewhat. 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.

Our panel regressions in Table 3 did not include fixed effects for either time or country. In Table 4 we present four models from the full specification in Table 3 and report results only for forward E/P for the sake of brevity (i.e., model XII from Table 3). Results are very similar if instead we use E/P(+). Model I repeats model XII from Table 3 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. Thus, for country fixed effects instead of using a global indicator for country to capture time invariant unobservable risk characteristics at the country level, we difference all variables using an expanding window for each country. Across models II-IV in Table 4 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 forward 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 stock returns. This explanation is likely given that our sample period 1993-2011 includes an extended bull market period, especially for emerging economies. We revisit this in section 4.2 below when we look at emerging and developed countries separately due to differences in expectations of subsequent earnings growth across these two groups.

Finally, the negative regression coefficients on real GDP growth and inflation forecasts in the country fixed effect specifications (models III and IV of Table 4) are worth noting. Because all variables are differenced with respect to an expanding window average in our country fixed effects specification, the negative coefficients imply that higher forecasted real GDP growth (inflation) today relative to longer-run historical expected real GDP growth (inflation) is associated with lower country level returns over the next 12 months. Possible interpretations of these negative relations include (i) a naïve extrapolation of recent GDP growth and changes in inflation expectations, and (ii) the response of monetary policy (i.e., tightening) to these higher short term growth expectations.

4.2 B/P and risky subsequent 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 and to truly transitory shocks, render E/P an insufficient measure of expected returns. Inclusion of B/P helps capture the expected earnings growth that results from these distortions.

We first 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 220 '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 5 provides formal statistics of the difference in aggregate earnings growth and aggregate dividend growth. We report growth rates for two years ahead as $ln(X_{t+2}/X_{t+1})$, where ln is the natural logarithm operator and X is either aggregate earnings or aggregate dividends. 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 X_t as the base for computing growth rates. We find that the highest B/P quintile has subsequent earnings growth of 27.8% compared with 12.4% for the lowest B/P quintile, a significant 15.3% higher. We also find that the highest B/P quintile has subsequent dividend growth of 1.8% compared with 10.4% for the lowest B/P quintile, a significant 8.6% lower. This is not that surprising. High B/P countries exhibit greater variability in their earnings and management of such firms are unlikely to make significant changes to their dividend policies faced with such uncertainty. What is more interesting from Table 5 is the strong difference in the variability of realized growth. For both aggregate earnings and aggregate dividends there is greater variability for high B/P countries using either parametric or non-parametric measures of dispersion.

In summary, Figure 1 and Table 5 suggest that by sorting on B/P we are systematically sorting on patterns in earnings and 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 firms then recover after the decline and the recovery in earnings growth is more uncertain and potentially riskier. 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 realized country earnings growth and realized 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 subsequent earnings growth for each B/P quintile with subsequent 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., 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 210 months, we have 60 months where there is contraction and 150 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 6 and Figure 2, to emphasize the conditional nature of the positive relation between B/P at the country level and subsequent 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 6 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 6 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 provides a risk based explanation for the positive relation between B/P and country level stock 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. This makes the earnings growth of high B/P countries risky. In unreported analysis, we find very similar asymmetric relations if we instead use global stock returns instead of global earnings growth as the basis for determining conditional relations.

Having established that B/P captures expectations of risky subsequent 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 expected change in the premium of price over book. This simply means that in the absence of expected earnings growth, E/P will be sufficient, but in the presence of expected earnings growth, both E/P and B/P matter. As we discussed in section 2, 'E' is subject to transitory distortions and using 'B' in addition to 'E' can correct for these transitory distortions. We now test this implication from equation (2) more formally. There are two ways we undertake these tests. First, as reported in Table 7 we sort countries ex ante based on observable characteristics that we believe capture cross-country differences in expectations of risky subsequent earnings growth. Our priors are that (i) smaller countries have higher expected risky subsequent earnings growth, (ii) emerging markets have higher expected risky subsequent earnings growth, and (iii) countries with greater dispersion in beliefs about real GDP growth have higher expected risky subsequent earnings growth. We test this formally by comparing the difference in regression coefficients on B/P and E/P across partitions. Second, as reported in Table 8 we can control for realizations of subsequent earnings growth ex post.

The results in Table 7 largely confirm our priors. We estimate equation (3) 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 7 reports the standard deviation of future earnings growth within each partition. We report these to support the basis of our partitions. Across all three partitions we see greater dispersion in future earnings growth consistent with our priors (i.e., higher expected risky subsequent earnings growth for smaller, emerging and high GDP forecast dispersion 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 4.73, 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. Finally, 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. Collectively, the results in Table 7 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 subsequent risky earnings growth.

Our previous analysis has shown that B/P is associated with subsequent earnings growth at the country level both in first and second moments (Figure 1 and Table 5) and conditionally high B/P countries have higher fundamental betas in 'bad' states of the world (Table 6 and Figure 2). All of this analysis suggested that B/P is associated with future returns because it captures expectations of risky subsequent earnings growth. Thus, if we were to include realizations of subsequent earnings growth, the predictive power of B/P for future country level stock returns should decline (see Fama 1990). As reported in Table 8 we find strong evidence in support of this prior. Model I in Table 8 is a repeat of model II of Table 4 for the reduced sample of 5,900 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 subsequent 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 12 month ahead real GDP growth forecasts from Consensus Economics, with forecasts used as proxies for 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. Notably, in models III, V, and VI-VIII B/P is crowded out by realized earnings growth, while E/P retains its significance.

4.3 Extensions and limitations

4.3.1 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 4,886 country-months using 12 month ahead forecasts of growth in industrial production (IP). These forecasts are also from Consensus Economics. We find very similar results to those tabulated. One point of difference is the slight reduction in the significance of the coefficient on industrial production forecasts relative to real GDP growth forecasts in Table 8.

4.3.2 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, we simply difference each variable based on an expanding window for each country. Thus, these specifications help to mitigate time invariant 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 stock returns (columns III and IV of Table 4), and (ii) B/P is associated with future risky earnings growth and this effect is 'removed' by controlling for future realizations of earnings growth (column VII of Table 8).

4.3.3 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 3, we find that D/P measured using 'net' dividends is significant on a stand-alone basis with a test statistic of 2.31 and an adjusted R^2 of 0.012 in panel regressions. However, D/P measured using 'net' dividends, is no longer significant after inclusion of E/P and B/P. Test statistics on D/P decline to -0.21, confirming that E/P and B/P continue to crowd out the ability of D/P to explain future country level returns.

4.3.4 Mispricing vs. risk based explanations for the B/P effect

The debate around the source of the value effect is a long standing one. Our evidence rests firmly on the side of a risk based explanation. Whilst others have suggested, and tested, for a risk based explanation, our results are new in documenting a fundamental basis for the B/P effect, which is anchored to the accounting system. Previous risk based explanations have included (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 varying sensitivity to macroeconomic risks (e.g., Vassalou, 2003 and Campbell, Polk and Vuolteenaho, 2010), amongst others. Our analysis is closest in spirit to the time varying sensitivity of value stocks to macroeconomic risks. Rather than separately identifying specific sources of macroeconomic risk, our approach simply identifies earnings growth as the outcome which is at risk. Our finding of stronger downside sensitivity of earnings growth to global earnings growth captures, in a reduced manner, all types of systematic risk affecting earnings growth. To the best of our knowledge, our results showing that systematic

risk drives the positive association between B/P and future earnings growth have not been documented previously.

On the mispricing side, several papers have argued that the positive relation between B/P and future stock returns is due to mispricing. Examples of papers in this area include Lakonishok, Shleifer and Vishny (1994), Dechow and Sloan (1997) and Piotroski and So (2012). Common to these papers is evidence that measures of 'growth' ('value') are positively associated with overly optimistic (pessimistic) expectations of future earnings and cash flows. We are open to potential mispricing explanations for the B/P effect. In fact, measures deflated by 'P' are always open to multiple interpretations. However, our tests go beyond simple return correlations which are potentially consistent with both mispricing and risk based explanations. If B/P is associated with errors in expectations of future earnings, then we would expect to see a positive relation between B/P and the *level* of future earnings growth. Our results are consistent with this interpretation. However, the analysis in Tables 5 and 6 showed that B/P was positively associated with *volatility* in future earnings growth and systematic risk in that future earnings growth. This evidence supports a risk based, and not mispricing based, explanation for the B/P effect.

4.3.5 Other determinants of country level stock returns

There is limited empirical evidence to date documenting cross-sectional determinants of country level stock 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, 2006), (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. But 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, not to run a horse race of every conceivable country level characteristic and its relation with future returns.

4.3.6 Stock level evidence

All of our tabulated empirical analysis has used county-month as the unit of observation (6,600 country-months). We have repeated all of our empirical analysis at the stock-month level (over 1.6 million firm-months), and for the sake of brevity we summarize that analysis here. We find that measures of both E/P and B/P are relevant for explaining cross-sectional variation in firm level excess returns. Using equal (value) weighted returns we find that the B/P is relatively more (less) important than E/P. This result is equivalent to the country level partitions reported in Table 7: for smaller stocks where it is reasonable to assume there is a greater chance of risky future earnings growth then B/P should be more important to explain cross-sectional variation in stock returns. Likewise, the finding that B/P is positively associated with both the level of, and variation in, subsequent earnings growth at the country level (Table 5 results) also holds at the firm level.

Of particular interest is whether the conditional relations between realized country level earnings growth and realized global earnings growth across country B/P quintiles extend to the firm level. We repeat the analysis in Figure 2 and Table 6 by sorting all stocks each month into ten equal sized groups based on B/P. Our inferences are not affected by whether we adjust B/P for country and/or industry fixed effects. For each month we assess the co-movement of subsequent earnings growth for each B/P decile with subsequent earnings growth for all stocks combined (i.e., 'global'). Similar to the country level results shown in Figure 2 and Table 6, we find strong evidence of a higher fundamental beta for high B/P stocks relative to low B/P stocks. For the full sample the estimated fundamental beta is 0.34 (0.15) for high (low) B/P stocks and these betas are significantly different from each other (test statistic of 11.19). Furthermore, the difference in fundamental betas is strongest in months where global earnings growth is more than 1 standard deviation below the full sample mean. Specifically, we find that in these 'bad' states of the world the fundamental beta is 0.38 (0.09) for high (low) B/P stocks and these betas are significantly different from each other (test statistic of 9.43). In downside states, high B/P stocks are more likely to experience negative realizations of future earnings growth, a result that is consistent with a risk based explanation for the observed positive correlation between B/P and future stock returns. To our knowledge, this set of results documenting a positive association between B/P and future earnings growth, and the risk contained therein, have not been documented previously.

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 stock returns. Using a broad sample of 6,600 country-month observations (covering 30 countries over the period March 1993 to June 2011), we find that E/P and B/P jointly explain a significant portion of the cross-sectional variation in country level stock 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 subsequent earnings growth. This can be related to the impact of accounting conservatism on the relative usefulness of 'E' and 'B'. When 'E' is more persistent, then E/P will be close to a sufficient statistic for expected returns. When 'E' is less persistent it will not. The lack of persistence in 'E' can be attributable to truly transitory components of 'E' as well as the conservative practice of expensing risky investment expenditures which will contribute to earnings growth. High B/P countries are, on average, facing temporarily depressed 'E' and an uncertain recovery in near term earnings growth. We document that high B/P countries experience greater sensitivity of subsequent earnings growth to global 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 capturing expectations of future earnings growth. Collectively, the

results are consistent with B/P reflecting risky earnings growth and support 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 capture uncertainty in the future realizations of earnings growth, especially in bad states of the world.

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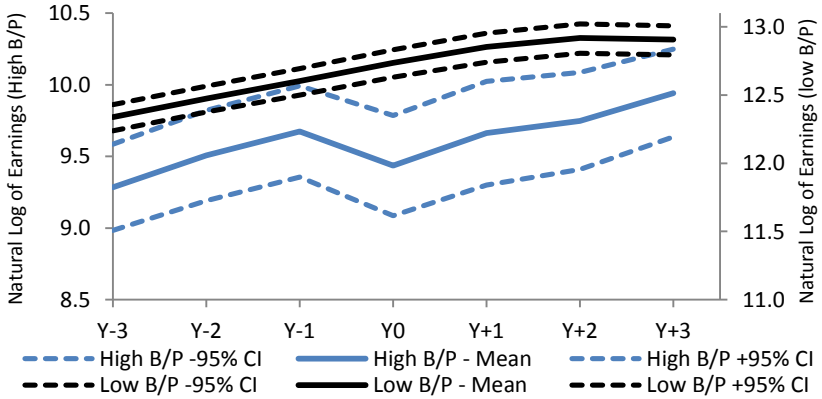
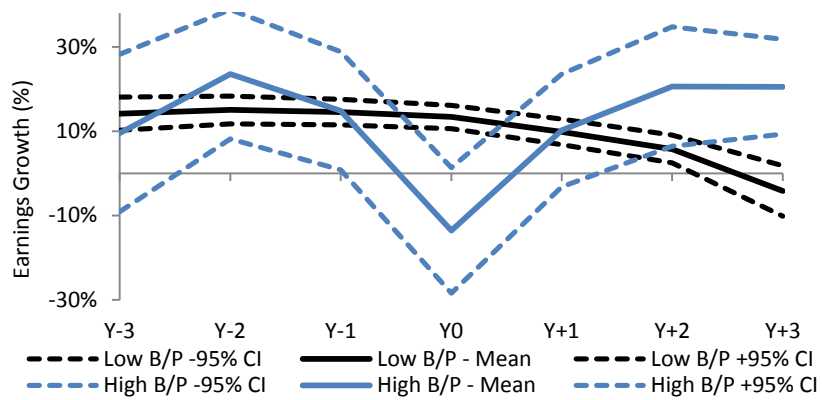
Figure 1: Realized earnings, earnings growth, realized dividends and return on equity for B/P portfolios

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 August 2010 into the highest and lowest quintiles of 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 portfolio earnings in natural logarithms, Panels B plots average realized earnings growth, Panel C plots portfolio dividends in natural logarithms, and Panel D plots portfolio return on equity. Earnings growth is calculated as $\ln(\text{Earnings}_{t+2}/\text{Earnings}_{t+1})$ where ln indicates natural logarithm. Return on equity is calculated as $\text{Earnings}_t/\text{Book Equity}_{t-1}$. The dashed lines indicate 95% confidence intervals.

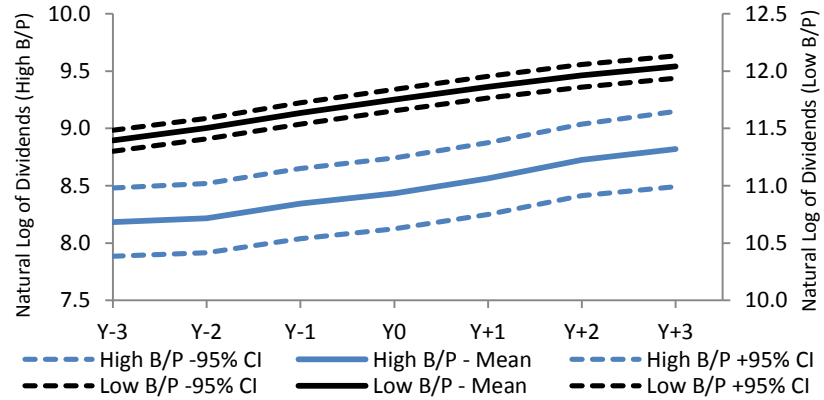
Panel A: Natural Logarithm of Portfolio Earnings by B/P Quintile



Panel B: Average Realized Portfolio Earnings Growth by B/P Quintile



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



Panel D: Average Realized Portfolio ROE by B/P Quintile

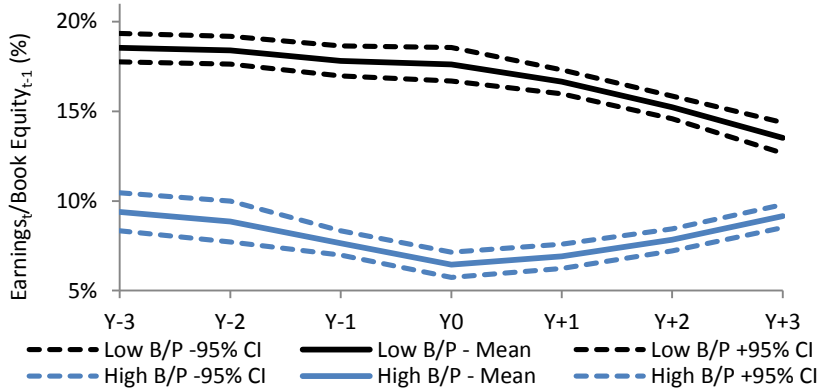


Figure 2: Relation between realized earnings growth and global earnings growth for high and low B/P countries

This figure shows three scatter plots of average realized earnings growth two years ahead (on vertical axis) and contemporaneous global earnings growth (on horizontal axis) for the high and low B/P quintiles from Table 5. Each month, quintiles 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. Global earnings growth is calculated using the sum of country-level earnings for the 30 countries over the 210 months from March 1993 to August 2010 (the series is shortened from 220 months to enable the calculation of growth rates two years ahead. Growth rates are calculated as $\ln(\text{Earnings}_{t+2}/\ln(\text{Earnings}_{t+1})$ where ln indicates natural logarithm. Global earnings growth realizations are partitioned into downside states (1.0 standard deviation below the mean) and upside states (1.0 standard deviation above the mean). Panel A uses only downside global earnings growth observations, Panel B uses all 210 monthly observations for global earnings growth, and Panel C uses only upside global earnings growth observations. Also see Table 6 which reports the slope coefficients and statistical significance of the difference in slopes between the high and low B/P portfolios for different global earnings growth states.

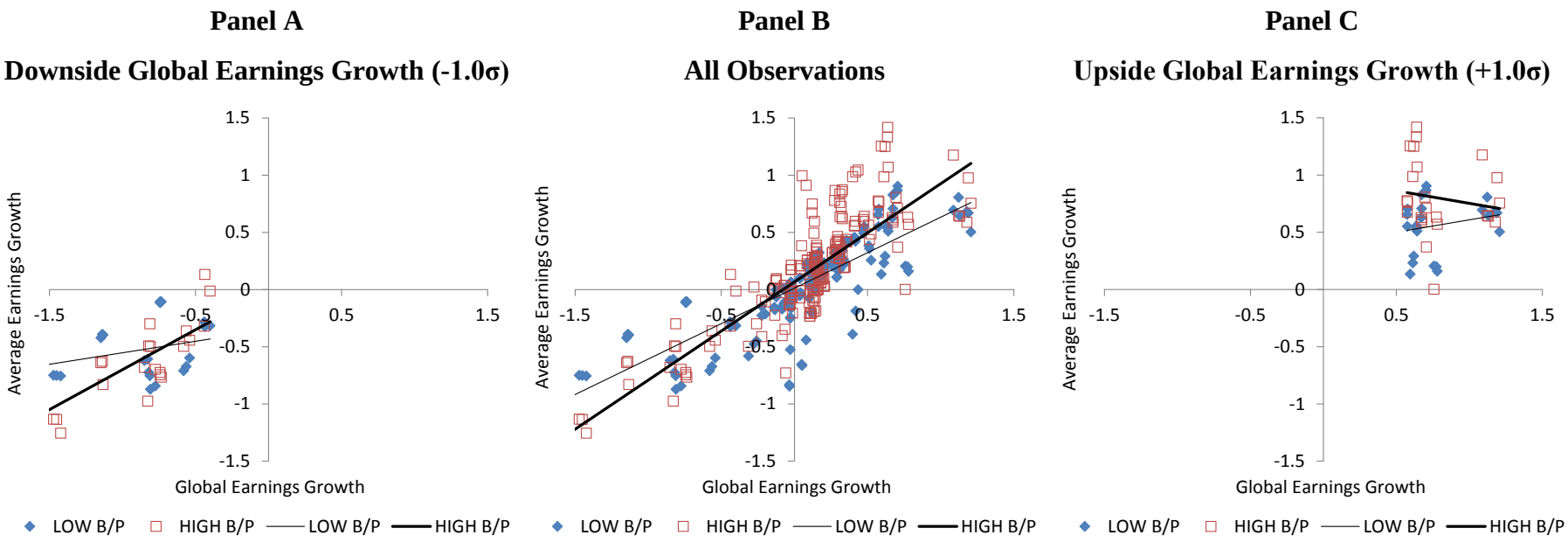


Table 1: Sample composition

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 220 months from March 1993 to June 2011. The table reports the average number of firms in each country with: 1) available fundamental data; and 2) available fundamental as well as I/B/E/S earnings forecasts data. I/B/E/S coverage percentage is the proportion of firms 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	448	231	52%
Austria	54	33	61%
Belgium	71	52	73%
Canada	789	291	37%
China	579	223	39%
Denmark	93	57	61%
Finland	79	63	80%
France	388	251	65%
Germany	417	257	62%
Great Britain	841	582	69%
Hong Kong	113	54	48%
India	405	165	41%
Indonesia	118	57	48%
Israel	108	39	36%
Italy	183	121	66%
Japan	2,714	907	33%
Malaysia	416	169	41%
Netherlands	114	96	84%
New Zealand	51	39	76%
Norway	100	78	78%
Portugal	32	22	69%
Singapore	251	103	41%
South Africa	139	91	65%
South Korea	575	144	25%
Spain	89	75	84%
Sweden	153	104	68%
Switzerland	160	118	74%
Taiwan	568	149	26%
Thailand	219	99	45%
USA	4,276	2,993	70%
Total Firms	14,543	7,663	53%
Firm-months	3,198,930	1,685,724	53%

Table 2: Distribution of variables

This table reports means, standard deviations and selected percentiles of variables across 30 countries and 220 months from March 1993 to June 2011 (*N*=6,600, except as noted). Variables are at the country level using all firms with available fundamental and I/B/E/S forecast data.

	N	Mean	Std. Dev.	P1	P5	P10	P25	P50	P75	P90	P95	P99
E/P	6,600	0.052	0.034	-0.059	0.008	0.022	0.039	0.054	0.066	0.081	0.095	0.145
E/P(+)	6,600	0.054	0.027	0.000	0.008	0.022	0.039	0.054	0.066	0.081	0.095	0.145
Negative E/P	6,600	0.040	0.196	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Forward E/P	6,600	0.069	0.023	0.023	0.037	0.044	0.056	0.067	0.079	0.096	0.108	0.144
B/P	6,600	0.509	0.197	0.192	0.275	0.309	0.384	0.474	0.593	0.736	0.863	1.172
D/P	6,600	0.024	0.013	0.005	0.008	0.011	0.015	0.022	0.030	0.038	0.047	0.074
Momentum	6,600	0.101	0.250	-0.446	-0.304	-0.207	-0.048	0.107	0.232	0.376	0.495	0.849
Size	6,600	12.139	1.621	8.465	9.511	10.051	11.135	12.046	13.141	14.266	14.945	16.356
Beta	6,600	0.935	0.372	0.124	0.388	0.493	0.690	0.917	1.138	1.423	1.636	1.934
GDP Growth Forecast	6,530	0.031	0.023	-0.023	-0.001	0.010	0.018	0.028	0.042	0.063	0.075	0.094
Inflation Forecast	6,530	0.029	0.028	-0.007	0.005	0.010	0.016	0.023	0.032	0.057	0.081	0.106

Accounting 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 1,685,724 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 an estimate of the forward earnings yield using the realized earnings yield, with earnings defined as earnings before extraordinary items (Compustat item IB, and Factset item FF_NET_INC_BASIC_BEFT_XORD). Earnings are observed at the end of the most recent fiscal period. Where only annual data are available, the most recent fiscal period end is the most recent year end. Where quarterly and semi-annual interim data are available, these are aggregated for the prior four quarters or two semi-annual periods to provide trailing twelve month (TTM) earnings comparable to an annual number. For each country-month, earnings are summed up across all firms in that country with available data. Prices are observed three months after the fiscal period end, and represent the company market capitalization across all share classes that are then summed up to the country level each month. E/P at the country level is calculated using the same firms in the numerator and denominator.

E/P(+) is equal to E/P when positive and 0 otherwise. This is an estimate of forward earnings yield when earnings are strictly positive. Negative E/P is an indicator variable which is 0 when E/P is positive and 1 when E/P is negative.

Forward E/P is the ratio of the sum of time-weighted one-year ahead I/B/E/S forecast earnings divided by the sum of market capitalizations 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 get forecast total earnings. Each month, a one-year ahead forecast is calculated by time-weighting the forecasts for the one-year and two-year ahead periods. These are then summed up across all firms to compute country level earnings forecasts and are used as the numerator for forward E/P.

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). Book value is Compustat's common equity (CEQ) and Factset's shareholders equity (FF_SHLDRS_EQ). For each country-month, book values are summed across all firms in that country with available data. Prices are observed three months after the fiscal period end and represent the company market capitalization across all share classes summed up to the country level each month. B/P is calculated ensuring the numerator and denominator contains 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. Similar to the E/P calculation, interim periods (quarterly or semi-annual) are used to compute TTM dividends comparable to annual dividends. For each country-month, dividends are summed across all firms with available fundamental and I/B/E/S forecast data. Prices are represented by company market capitalizations across all share classes summed up to the country level each month. D/P is calculated ensuring the numerator and denominator contains the same firms.

Momentum is the value-weighted return for each country over the twelve months prior to the returns measurement period. Size is the natural log of company market capitalizations aggregated up to the country level. 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 use 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 and two-year ahead forecasts are time-weighted to provide a 12-month ahead forecast of real annual GDP growth and inflation.

Table 3: Coefficient estimates and test statistics for panel regressions

This table reports coefficient estimates from panel regressions of 12 month value-weighted country excess returns on time t characteristics for 6,600 country-months from March 1993 to June 2011 along with t-statistics and adjusted R-squared. Where GDP growth and inflation forecasts are included the number of observations is 6,530 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	XII
Intercept	-0.065*	-0.147***	-0.050	-0.097***	-0.166***	-0.185***	-0.187***	-0.238***	-0.199	-0.207	-0.080	-0.098
	(-1.95)	(-3.11)	(-1.62)	(-2.73)	(-3.80)	(-4.09)	(-4.22)	(-4.87)	(-1.44)	(-1.49)	(-0.40)	(-0.45)
E/P(+)	2.558***			1.444**		1.292**	0.892*	1.146**	1.122*	1.119*	1.432**	
	(4.24)			(2.32)		(2.41)	(1.69)	(2.09)	(1.93)	(1.94)	(2.56)	
B/P		0.441***			0.352***	0.378***	0.334***	0.380***	0.373***	0.374***	0.344***	0.323**
		(4.41)			(3.42)	(3.85)	(3.17)	(3.30)	(3.20)	(3.19)	(2.86)	(2.49)
D/P			5.317***	3.874***	2.674*		1.898	2.103	2.128	2.125	1.018	1.625
			(4.42)	(3.11)	(1.80)		(1.18)	(1.29)	(1.29)	(1.29)	(0.71)	(1.18)
Momentum								0.145***	0.143***	0.144***	0.147***	0.146***
								(2.76)	(2.75)	(2.76)	(2.94)	(2.80)
Size									-0.003	-0.003	-0.008	-0.008
									(-0.30)	(-0.32)	(-0.67)	(-0.68)
Beta										0.010	0.015	0.011
										(0.36)	(0.48)	(0.35)
GDP Growth Forecast											-0.013	-0.013
											(-1.37)	(-1.12)
Inflation Forecast											-0.001	-0.001
											(-0.27)	(-0.34)
Forward E/P												1.407**
												(2.09)
Negative E/P	0.151**			0.098		0.039	0.026	0.030	0.027	0.026	0.020	
	(2.00)			(1.32)		(0.45)	(0.33)	(0.41)	(0.36)	(0.34)	(0.28)	
Adjusted R-squared	0.042	0.082	0.053	0.062	0.092	0.091	0.092	0.095	0.106	0.106	0.114	0.112
Country-Months	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,530	6,530
Time Fixed Effects	No	No	No	No	No	No	No	No	No	No	No	No
Country Fixed Effects	No	No	No	No	No	No	No	No	No	No	No	No

Table 4: Coefficient estimates and test statistics for panel regressions (fixed effects)

This table reports coefficient estimates from panel regressions of 12 month value-weighted country excess returns on time t characteristics for 6,530 country-months from March 1993 to June 2011 along with t-statistics and adjusted R-squared. 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
Intercept	-0.098			
	(-0.45)			
Forward E/P	1.407**	1.272*	2.170***	1.149*
	(2.09)	(1.93)	(3.36)	(1.95)
B/P	0.323**	0.208**	0.226*	0.223*
	(2.49)	(2.04)	(1.68)	(1.87)
D/P	1.625	0.716	1.389	-0.161
	(1.18)	(0.66)	(0.90)	(-0.12)
Momentum	0.146***	0.189***	0.154***	0.168**
	(2.80)	(2.68)	(3.05)	(2.51)
Size	-0.008	0.002	-0.050	-0.023
	(-0.68)	(0.20)	(-1.43)	(-0.86)
Beta	0.011	0.017	-0.020	-0.021
	(0.35)	(0.67)	(-0.52)	(-0.66)
GDP Growth Forecast	-0.013	-0.004	-0.044***	-0.031**
	(-1.12)	(-0.45)	(-3.49)	(-1.99)
Inflation Forecast	-0.001	-0.001	-0.013**	-0.007*
	(-0.34)	(-0.15)	(-1.96)	(-1.69)
Adjusted/Within R-squared	0.112	0.064	0.180	0.105
Country-Months	6,530	6,530	6,530	6,530
Time Fixed Effects	No	Yes	No	Yes
Country Fixed Effects	No	No	Yes	Yes

Table 5: Average realized earnings growth and dividend growth two years ahead for country portfolios sorted on B/P

This table reports average growth rates and variability in growth rates for earnings and dividends two years ahead (months 12 to 24) for five portfolios formed each month from March 1993 to August 2010, by ranking countries on book-to-price, B/P. The series is shortened to enable the calculation of growth rates two years ahead and comprises 6,300 country-months (210 months for each of the 30 countries). Each month, trailing twelve month earnings and dividends for countries in each portfolio are aggregated to compute portfolio-level earnings and dividends. Growth rates are calculated as $\ln(X_{t+2}/X_{t+1})$ where ln indicates natural logarithm and X is either aggregate earnings or aggregate dividends. The table also reports the average monthly standard deviation of two year ahead growth rates for each of the five B/P quintiles. The t-statistics for the difference in mean between the high B/P and low B/P portfolios incorporate a Newey-West adjustment for overlapping monthly observations.

	B/P						
	LOW	**2**	**3**	**4**	**HIGH**	**HIGH – LOW**	***t-stat***
Average Earnings Growth Two Years Ahead (%)	12.4	6.5	11.4	13.9	27.8	15.3	*(2.49)*
Average Standard Deviation of Forward Earnings Growth	35.0	55.7	68.1	90.0	69.6	34.7	
Inter-quintile Range of Forward Earnings Growth	23.5	34.0	33.1	48.1	71.2	47.6	
Average Dividend Growth Two Years Ahead (%)	10.4	9.9	8.6	5.4	1.8	-8.6	*(-5.28)*
Average Standard Deviation of Forward Dividend Growth	10.4	13.0	16.1	17.5	22.7	12.3	
Inter-quintile Range of Forward Dividend Growth	14.0	14.1	21.4	24.3	22.7	8.7	

Table 6: Relation between realized earnings growth and global earnings growth for high and low B/P countries

This table reports the slope coefficients from regressions of average realized earnings growth two years ahead on contemporaneous global earnings growth for the high and low B/P portfolios from Table 5. Global earnings growth is calculated using the sum of country-level earnings for the 30 countries over the 210 months from March 1993 to August 2010. Growth rates are calculated as $\ln(Earnings_{t+2}/\ln(Earnings_{t+1})$ where ln indicates natural logarithm. Global earnings growth 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 global earnings growth. Each column reports the slope coefficient of the high and low B/P 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 portfolios is also 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. Also see Figure 1 which shows scatter plots of average realized earnings growth for high and low B/P portfolios against global earnings growth. For the scatter plots, only the partitions from column I, IV, and VII are used.

	I	II	III	IV	V	VI	VII
	Growth 1.0σ Below Average	Growth 0.5σ Below Average	Negative Growth	All Observations	Positive Growth	Growth 0.5σ Above Average	Growth 1.0σ Above Average
HIGH B/P	0.699	0.669	0.531	0.859	0.844	0.295	-0.220
	(6.20)	(7.85)	(4.42)	(16.67)	(9.30)	(3.30)	(-0.71)
LOW B/P	0.201	0.236	0.372	0.620	0.653	0.497	0.215
	(1.67)	(2.67)	(6.26)	(20.66)	(11.41)	(3.21)	(0.97)
HIGH – LOW	0.498***	0.432***	0.159	0.238***	0.192	-0.202	-0.434
t-statistic for HIGH – LOW difference	*(4.22)*	*(5.34)*	*(1.49)*	*(5.18)*	*(1.58)*	*(-0.98)*	*(-1.42)*
Number of Months	24	30	60	210	150	42	24

Table 7: Panel estimations for cross-sectional country partitions

This table reports coefficient estimates from panel regressions of 12 month excess returns on time t characteristics for the time period March 1993 to June 2011 along with t-statistics and R-squared. For the samples used in models I and II, three portfolios were formed each month by ranking countries on size. The smallest and largest size portfolio 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 monthly portfolios were formed by ranking countries on GDP growth forecast variability. 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 forward earnings growth for each partition.

	I	II	III	IV	V	VI
	Largest Size Tercile	Smallest Size Tercile	Developed Markets	Emerging Markets	Low GDP Forecast Variability	High GDP Forecast Variability
Forward E/P	2.025*	1.266*	1.277**	0.632	2.653*	0.533
	(1.90)	(1.68)	(2.40)	(0.93)	(1.73)	(0.65)
B/P	0.152**	0.433***	0.108*	0.373**	-0.017	0.304***
	(2.18)	(3.81)	(1.73)	(1.99)	(-0.16)	(4.12)
(B/P – E/P) F-Statistic	*II vs. I:*	*(4.73)*	*IV vs. III:*	*(6.66)*	*VI vs. V:*	*(7.58)*
Prob > F		*(0.030)*		*(0.010)*		*(0.006)*
R-squared	0.082	0.134	0.061	0.116	0.029	0.127
Country-Months	2,200	2,200	4,620	1,980	1,033	1,189
$\sigma_{\text{Forward Earnings Growth}}$	71.9	75.5	65.0	71.6	67.4	73.3

Table 8: B/P and realized subsequent earnings growth

This table reports coefficient estimates from panel regressions of 12 month excess returns on time t characteristics and proxies for realization of earnings growth. The series is shortened to enable the calculation of growth rates and comprises 5,900 country-months. $(Earnings_{t+2} - Earnings_{t+1})/P$ is the realized change in earnings from year one to year two scaled by price at time t, and $(Earnings_{t+3} - Earnings_{t+1})/P$ is the realized change in earnings from year one to year three scaled by price at time t. $E_{t+1}[GDP\ Growth\ Forecast_{t+2}]$ and $E_{t+2}[GDP\ Growth\ Forecast_{t+3}]$ are 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.

	I	II	III	IV	V	VI	VII	VIII
Forward E/P	1.296*	1.487***	1.314**	1.711***	1.457***	1.624***	1.626***	1.460***
	(1.84)	(2.69)	(2.38)	(2.77)	(2.93)	(3.23)	(4.16)	(3.18)
B/P	0.235**	0.182*	0.133	0.203**	0.102	0.111	0.050	0.152
	(2.08)	(1.81)	(1.08)	(2.07)	(1.14)	(1.27)	(0.52)	(1.24)
D/P	0.810	0.886	1.589	0.736	0.461	0.489	1.064	0.738
	(0.64)	(0.80)	(1.54)	(0.59)	(0.46)	(0.46)	(1.22)	(0.56)
Momentum	0.191***	0.155**	0.150**	0.058	0.068	0.027	0.008	-0.006
	(2.65)	(2.25)	(2.18)	(0.78)	(1.10)	(0.40)	(0.12)	(-0.11)
Size	0.002	0.002	0.002	0.005	0.001	0.003	0.003	-0.011
	(0.24)	(0.22)	(0.24)	(0.60)	(0.22)	(0.43)	(0.45)	(-0.42)
Beta	0.018	0.007	0.007	0.011	-0.003	-0.002	-0.009	-0.015
	(0.69)	(0.30)	(0.28)	(0.48)	(-0.13)	(-0.10)	(-0.40)	(-0.51)
GDP Growth Forecast	-0.006	0.000	-0.001	-0.059***	-0.055***	-0.071***	-0.064***	-0.051***
	(-0.60)	(0.02)	(-0.10)	(-3.73)	(-4.54)	(-4.59)	(-4.03)	(-3.04)
Inflation Forecast	-0.001	-0.010***	-0.010***	-0.007*	-0.009**	-0.011**	-0.016***	-0.013**
	(-0.35)	(-2.68)	(-2.99)	(-1.91)	(-2.18)	(-2.46)	(-4.03)	(-2.25)
$(Earnings_{t+2} - Earnings_{t+1})/P$		1.718***						
		(3.09)						
$(Earnings_{t+3} - Earnings_{t+1})/P$			1.426***				1.002***	0.960***
			(3.49)				(3.14)	(3.04)
$E_{t+1}[GDP\ Growth\ Forecast_{t+2}]$				0.068***		0.032***	0.032***	0.039***
				(4.92)		(3.60)	(3.22)	(3.69)
$E_{t+2}[GDP\ Growth\ Forecast_{t+3}]$					0.073***	0.059***	0.054***	0.058***
					(6.46)	(6.99)	(7.52)	(7.19)
Within R-squared	0.071	0.153	0.133	0.179	0.253	0.271	0.301	0.308
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	No	No	No	No	No	Yes