Earnings Growth Forecast for ETFs

Yan He and Junbo Wang[1]

Abstract

We forecast earnings growth in the next 5 years for stock-market-indexed exchange-traded funds (ETFs). Our methods include the P/E and P/B cross-sectional regression-implied (RI) estimates and the earnings growth random-walk (RW) estimates. Our results show that compared with the actual earnings growth, both the RI and RW forecasts of earnings growth are unbiased for the U.S. ETFs but biased for the foreign ETFs. In addition, the RI method generates smaller forecast errors than the RW method for the U.S. ETFs but holds no advantage over the RW method for the foreign ETFs. Therefore, the RI forecast may be a useful method for the U.S. ETFs during our sample period of 2000-2023 but may not be so for the foreign ETFs.

Keywords: Earnings growth forecast; Regression-implied forecast; Random-walk forecast

JEL classification: G10

I. Introduction

A firm's earnings forecast is important to both investors and managers. Numerous studies have been conducted on earnings predictions for individual stocks. In addition, as the exchange-traded funds (ETFs) expand quickly, some researchers have paid attention to the earnings perspectives for equity ETFs. Hence, we divide the existing literature into three categories: analyst estimates of expected earnings for stocks, model-implied estimates of expected earnings for stocks, and earnings perspectives for equity ETFs.

Analyst estimates of expected earnings for stocks

First, analyst estimates of expected earnings are compared with actual earnings. Zacks (1979) explains that companies whose analyst consensus forecasts underestimate actual earnings growth outperform the market, whereas companies whose analyst consensus forecasts overestimate actual earnings growth underperform the market. Francis and Philbrick (1993), McNichols and O'Brien (1997), Das, Levine, and Sivaramakrishnan (1998), Lin and McNichols (1998), Lim (2001), Hong and Kubik (2003), and Hand and Martin (2017) provide evidence of analyst optimism. That is, analysts tend to underreact to negative but overreact to positive information, inducing an optimistic bias in their earnings forecasts. The direction of analysts' forecast errors reveals systematic and time-persistent upward bias about firm performance. Jung, Keeley, and Ronen (2019) report that analyst optimism is greater when estimates are issued earlier within the forecast period, indicating that analyst estimates decline over time. Chu and Zhai (2021) show that analyst optimism is greater for higher distress risk firms, implying that analysts underestimate the poor performance of such firms. In contrast to the upward-biased results, Gao and Wu (2014) combine the analysts' long-term growth forecast with several other information sources (past earnings growth, forward earnings-to-price ratio, and past returns), and their method leads to unbiased earnings predictions.

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Second, analyst estimates of expected earnings are compared with time-series model estimates. According to Ball and Brown (1968), Collins and Hopwood (1980), and Fried and Givoly (1982), analysts' forecasts outperform time-series model forecasts. However, Conroy and Harris (1987) argue that the primary forecasting advantages of analysts over time series methods appear to occur over short forecast horizons (less than a year). Bradshaw, Drake, Myers, and Myers (2012) state that analysts' superiority over simple time-series model forecasts is limited. They find that random-walk (RW) forecasts of earnings per share (EPS) are more accurate than analysts' forecasts over longer horizons, for smaller or younger firms, and when analysts forecast negative or large changes in EPS.

Third, the accuracy of analyst estimates may be subject to the influence of economic uncertainty. As Chourou, Purda, and Saadi (2021) demonstrate, economic policy uncertainty is significantly and positively associated with absolute forecast error and forecast dispersion, controlling for competing sources of economy-wide uncertainty such as national elections, recessions, equity market and macroeconomic fluctuations, etc.

Model-implied estimates of expected earnings for stocks

First, expected earnings growth affects price-to-earnings (P/E) and price-to-book (P/B) ratios, and thus, it may be derived from these price multiples. Malkiel and Cragg (1970) and Damodaran (2002) establish the P/E and P/B cross-sectional regression models. Specifically, a firm's P/E is affected by its dividend payout ratio (PAYOUT), expected growth rate of EPS, and beta; and the firm's P/B is affected by its PAYOUT, expected growth rate of EPS, beta, and return on equity (ROE). Recently, Sloan and Wang (2025) demonstrate that a significant proportion of the cross-sectional variation in observed earnings-to-price (E/P) ratios is attributable to rationally anticipated variation in future EPS growth rates. In particular, E/P ratios are strongly and negatively related to future EPS growth rates.

Second, expected earnings are estimated by RW and other time-series models. Many studies discover that annual earnings generally approximate a simple RW process, see Ball and Watts (1972), Albrecht, Lookabill, and McKeown (1977), Watts and Leftwich (1977), Conroy and Harris (1987), and Brown (1993). Moreover, as Bradshaw, Drake, Myers, and Myers (2012) illustrate, very little evidence suggests that more sophisticated time-series models are more accurate than simple RW models of annual earnings. The more sophisticated models demand long-time data series to estimate model parameters, whereas the RW models need no parameter estimates. Hence, the RW models avoid costly data requirements that might skew the results to large and mature firms.

Third, expected earnings growth is assessed based on the slope of a log regression of EPS. Wang, Ke, Liao, Chiang, and Hsu (2020) use the log-linear regression model to forecast the earnings growth rate. Then, they use the expected growth rate to calculate PEGR (the ratio of the stock's price/earnings to its estimated earnings growth rate). Their results show that the returns of the lowest PEGR portfolio dominate those of higher PEGR portfolios.

Fourth, expected earnings growth is derived from the Residual Income Valuation (RIV) model of Ohlson (1995). As Lacina and Ro (2013) show, future long-term earnings growth rates can be derived from the RIV model; and the RIV-imputed earnings growth rates are more accurate and less biased than the analyst long-term earnings growth forecasts.

Fifth, expected earnings are estimated by models including macroeconomic variables. Chant (1980) reveals the predictable relationship between some economic lead-indicators and EPS

numbers. Eckel (1982) uses a model that includes forecasts of industry and economic performance to predict annual EPS, and the results are more accurate than those of a naïve model that incorporates only historical EPS. Bansal, Strauss, and Nasseh (2015) utilize a combination forecast method that involves both firm-specific and macroeconomic variables, leading to substantial improvements in predictive power relative to the autoregressive benchmark.

Earnings perspectives for equity ETFs

ETFs have developed rapidly in the past two decades. Like stocks, ETFs are traded on exchanges throughout the day. In addition, they are open-ended funds that can create and redeem shares at any time. According to the Investment Company Fact Book, the US-registered ETFs had $10.3 trillion total net assets in 2024.

Several papers have explored the earnings perspectives for equity ETFs. Israeli, Lee, and Sridharan (2017) document that a firm's ETF ownership leads to its reduced earnings response coefficient and declined number of analysts covering the firm. Thus, firms that are widely held by ETFs seem to experience a decrease in informational efficiency. Bhojraj, Mohanram, and Zhang (2020) report that firms held by sector ETFs exhibit more efficient pricing of the underlying firms' earnings news than firms held by broad-based ETFs. So, sector ETFs appear to experience an increase in informational efficiency. Glosten, Nallareddy, and Zou (2021) show that ETF ownership increases short-run informational efficiency for stocks with weak information environments, possibly due to the timely integration of systematic earnings. Fu, Huang, and Tang (2022) investigate the effect of ETFs on their underlying American depositary receipts (ADRs). They show that ETF ownership improves ADR firms' information environment by helping include their systematic earnings into stock returns. Antoniou, Li, Liu, Subrahmanyam, and Sun (2023) point out that inclusion of stocks in industry ETFs enhances investment-q sensitivity, implying greater incorporation of earnings information into prices prior to public releases. Jang and Kang (2024) reveal that higher ownership by ETFs is associated with lower penalty to missing an earnings expectation. So, firms with higher ETF ownership engage in earnings management less frequently, and they are less likely to reduce discretionary spending to meet or beat earnings expectations. Lundholm and Zheng (2025) present that an increase in a firm's industry ETF ownership tends to be followed by an increase in the firm's analyst coverage. This evidence is associated with an ETF strategy: long the firm and short the industry. For example, when hedge funds expect a positive earnings surprise on a firm, they go long in the firm and short in the firm's industry ETF.

Given the above findings, however, there seems to be no research on direct earnings forecasts for individual equity ETFs. Analysts do not closely follow ETFs as they follow stocks, and they do not offer direct estimates of expected earnings for ETFs.[2] Thereby, our study utilizes model-implied estimates of earnings growth for ETFs.

I.4. Purpose and summary of this study

In this paper, we forecast earnings growth for equity ETFs, rather than for stocks. Specifically, we forecast earnings growth in the next 5 years for stock-market-indexed ETFs. Our methods include the P/E and P/B cross-sectional regression-implied (RI) estimates and the earnings growth random-walk (RW) estimates. The U.S. stock-market-indexed ETFs include SPY,

[2] The growth estimate for an ETF from analysts, if there is any, is usually indirect, based on the weighted average of analyst estimates for the individual stocks in the ETF.

SPTM, and DIA, while the foreign stock-market-indexed ETFs include IEV, EWJ, and EEM.[3] The entire sample period is from 2000 to 2023.

Our results show that compared with the actual earnings growth, both the RI and RW forecasts of earnings growth are unbiased for the U.S. ETFs but biased for the foreign ETFs. In addition, the RI method generates smaller forecast errors than the RW method for the U.S. ETFs but holds no advantage over the RW method for the foreign ETFs. Therefore, the RI forecast may be a useful method for the U.S. ETFs during our sample period of 2000-2023 but may not be so for the foreign ETFs.

II. Data and Methods

Data sample

Our entire period for data collection is from January 2000 to December 2023, and our period for empirical tests is from January 2005 to December 2018. The test period (2005-2018) is shorter than the entire period (2000-2023) for two reasons. First, the regression data from Damodaran's website started in January 2005. Second, the inputs of the past 5-year annual average earnings growth need to go back 5 years (such as from 2005 to 2000); and the inputs of the next 5-year annual average earnings growth need to go forward 5 years (such as from 2018 to 2023).

We gather data from various sources. The monthly data of Fama-French three-factor returns are obtained from French's website, and they are provided respectively for the U.S., developed, and emerging markets.[4] The monthly data of each individual ETF adjusted prices are downloaded from Yahoo's website.[5] The quarterly data of each individual ETF's financial variables and ratios are acquired from FactSet, including EPS, PAYOUT, ROE, P/E, P/B, etc.[6] The annual data of P/E and P/B regression coefficients are collected from Damodaran's website, and they are reported separately for the U.S., European, Japanese, and emerging market companies.[7]

We investigated a total of six market-indexed ETFs. They represent the U.S., European, Japanese, and emerging stock markets. Their periods of available historical data are longer than those of many other similar ETFs. The U.S. ETFs include SPY, SPTM, and DIA, and the foreign ETFs include IEV, EWJ, and EEM. The details are as follows.

- SPY is the ticker symbol for SPDR S&P 500 ETF Trust. Its underlying index is the S&P 500.
- SPTM is the ticker symbol for SPDR Portfolio S&P 1500 Composite Stock Market ETF. Its underlying index is the S&P Composite 1500.
- DIA is the ticker symbol for SPDR Dow Jones Industrial Average ETF Trust. Its underlying index is the DJ Industrial Average.
- IEV is the ticker symbol for iShares Europe ETF. Its underlying index is the S&P Europe 350.

[3] The explanations of these ETF ticker symbols are provided in Section 2.1.
[4] French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
[5] Yahoo's website: http://finance.yahoo.com
[6] FactSet publishes quarterly EPS for individual ETFs. For the detailed information on ETF-level EPS construction, please consult both FactSet's general definition and individual ETFs' specific explanations.
[7] Damodaran's website: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile

- EWJ is the ticker symbol for iShares MSCI Japan ETF. Its underlying index is the MSCI Japan.
- EEM is the ticker symbol for iShares MSCI Emerging Markets ETF. Its underlying index is the MSCI Emerging Markets.

Regression-Implied (RI) earnings growth forecast

We derive expected earnings growth from the price-multiple regression models of Damodaran (2002). The P/E and P/B cross-sectional regression models are:

$$P/E = a0 + a1*gEPS + a2*PAYOUT + a3*BETA, \quad (1)$$
$$P/B = b0 + b1*gEPS + b2*PAYOUT + b3*BETA + b4*ROE, \quad (2)$$

where P/E is a firm's price-to-earnings ratio, P/B is the firm's price-to-book ratio, gEPS is the analyst estimate of the firm's annual average earnings growth in the next 5 years, PAYOUT is the firm's annual dividend payout ratio, BETA is the firm's market risk measure (beta), and ROE is the firm's annual return on equity. We obtain the regression coefficients (a0 to a3 and b0 to b4) from Damodaran's website (see Footnote 6). We estimate BETA based on several types of returns; moreover, the data sources of Fama-French three-factor returns differ for the six ETFs. Please see Appendix A for the details of BETA estimation.

Employing the P/E model, we estimate the P/E-regression-implied expected earnings growth for an ETF in a quarter. Hence, $gEPS^{P/E\ model}$ is derived from the P/E regression model as follows, and t denotes a quarter.

$$gEPS_t^{\ P/E\ model} = [P/E_t - (a0_t + a2_t*PAYOUT_t + a3_t*BETA_t)] / a1_t. \quad (3)$$

The inputs to Equation (3) include the ETF's quarterly data of P/E, PAYOUT, and BETA, as well as the regression coefficients a0, a1, a2, and a3. Please note that since regression coefficients are reported annually, the four quarters in a year use the same inputs for a0, a1, a2, and a3.

Likewise, employing the P/B model, we estimate the P/B-regression-implied expected earnings growth for the same ETF in the same quarter. Thus, $gEPS^{P/B\ model}$ is derived from the P/B regression model as follows, and t denotes a quarter.

$$gEPS_t^{\ P/B\ model} = [P/B_t - (b0_t+b2_t*PAYOUT_t+b3_t*BETA_t+b4_t*ROE_t)] / b1_t. \quad (4)$$

The inputs to Equation (4) include the ETF's quarterly data of P/B, PAYOUT, BETA, and ROE, as well as the regression coefficients b0, b1, b2, b3, and b4. Please note that the four quarters in a year use the same inputs for b0, b1, b2, b3, and b4.

Then, we take the average of the above two regression-implied earnings growth estimates in each quarter to get the quarterly RI_gEPS. So, RI_gEPS denotes an ETF's regression-implied expected earnings growth in the next 5 years. The formula is:

$$RI\_gEPS_t = (gEPS_t^{\ P/E\ model} + gEPS_t^{\ P/B\ model}) / 2. \quad (5)$$

In terms of the RI_gEPS estimation, the data sources of P/E and P/B regressions vary for the six ETFs. Please see Appendix B for the details of RI_gEPS estimation.

II.3. Random-Walk (RW) earnings growth forecast

Following previous studies, we assume a random-walk process for earnings growth. The RW expected earnings growth is estimated as:

$$RW\_gEPS_t = PAST\_gEPS_t, \quad (6)$$

where RW_gEPS is the random-walk annual average earnings growth in the next 5 years, PAST_gEPS is the past 5-year annual average earnings growth, and t denotes a quarter.

Overall, both forecasts (RI_gEPS and RW_gEPS) utilize quarterly rolling and point-in-time evaluations. This design is largely in accordance with the patterns of long-term investments.

Forecast errors

For either RI_gEPS or RW_gEPS, we define the forecast error as the absolute difference between the forecasted and the actual annual average earnings growth in the next 5 years. The formula is:

$$\text{Forecast Error}_t = |FORECAST_t - AT\_gEPS_t|, \quad (7)$$

where FORECAST can be either RI_gEPS or RW_gEPS, AT_gEPS is the actual annual average earnings growth in the next 5 years, and t denotes a quarter.

III. Empirical Results

Preliminary results

Figures 1 and 2 display monthly adjusted prices of the U.S. and foreign stock market ETFs over the entire period. All the prices are denominated in US$. In Figure 1, the three ETFs (SPY, SPTM, and DIA) represent the three major U.S. stock market indexes (the S&P 500, the S&P Composite 1500, and the DJ Industrial Average). They tend to move together, and their trends are chiefly upward. In Figure 2, the three ETFs (IEV, EWJ, and EEM) represent the three major foreign stock market indexes (the S&P Europe 350, the MSCI Japan, and the MSCI Emerging Markets). They seem volatile, and their trends are largely upward.

For the RI earnings growth forecast, the inputs contain P/E and P/B ratios as well as other variables. Figures 3 and 4 present quarterly P/E and P/B ratios of the U.S. and foreign stock market ETFs during the test period (2005-2018). In Figure 3, SPY, SPTM, and DIA have similar trends in P/E and P/B, respectively. Both ratios are largely stable, with big volatilities around the great recession of 2008-2009. In Figure 4, IEV, EWJ, and EEM have mildly dissimilar tendencies in P/E and P/B respectively because they are from different foreign regions. Both ratios are mainly steady, with big fluctuations around 2008-2009.

Table 1 summarizes the inputs to the RI earnings growth forecast during the test period (2005-2018). The forecast models are Equations (3), (4), and (5). The inputs to the models include P/E, P/B, BETA, PAYOUT, and ROE. First, we note that the three U.S. ETFs, on average, have higher P/E and P/B ratios than the three foreign ETFs during the test period. Second, among the six ETFs, IEV has the highest BETA (1.18), while EWJ has the lowest

Figure 1. Monthly Adjusted Prices of U.S. Stock Market ETFs

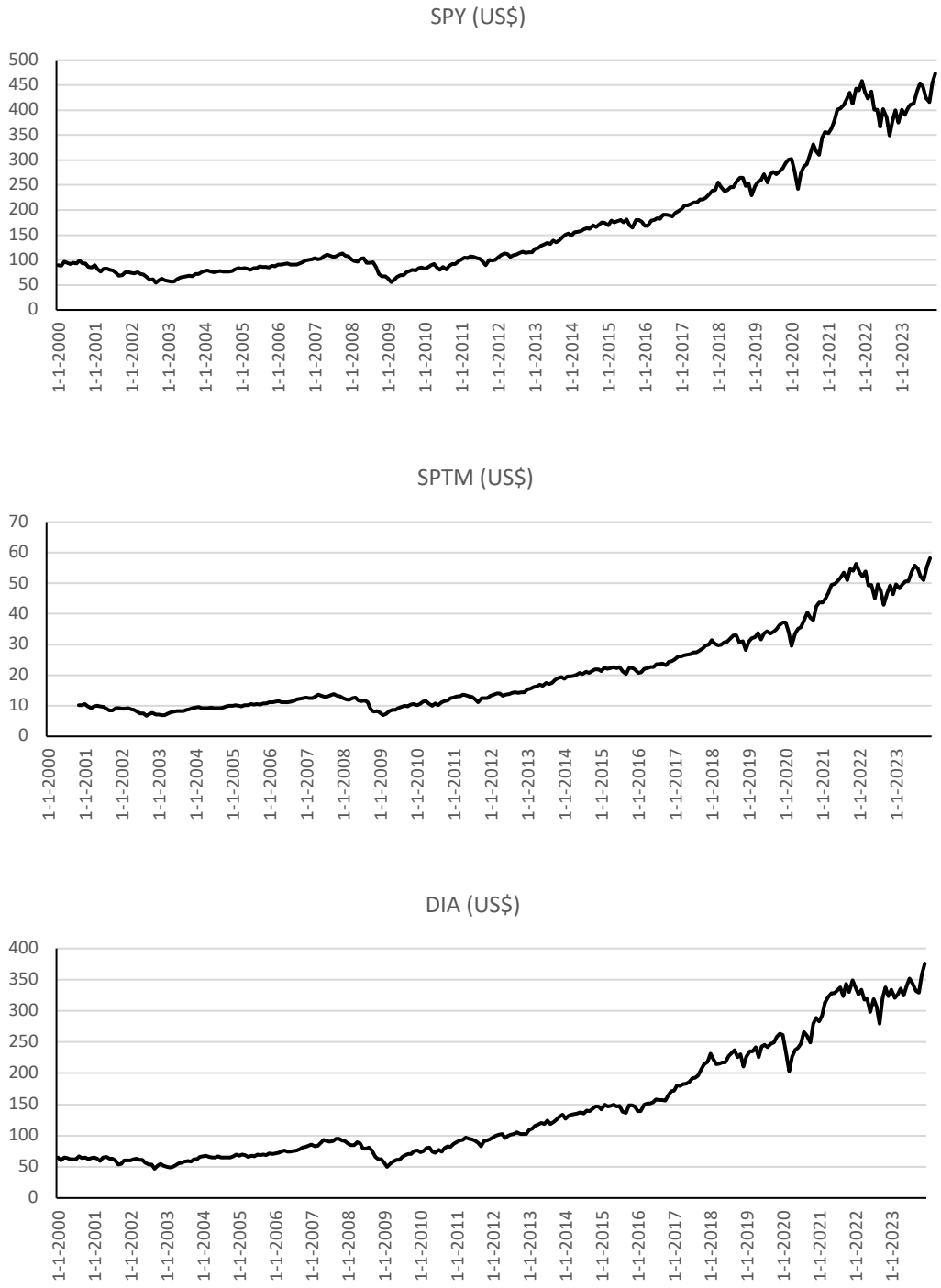

Figure 2. Monthly Adjusted Prices of Foreign Stock Market ETFs

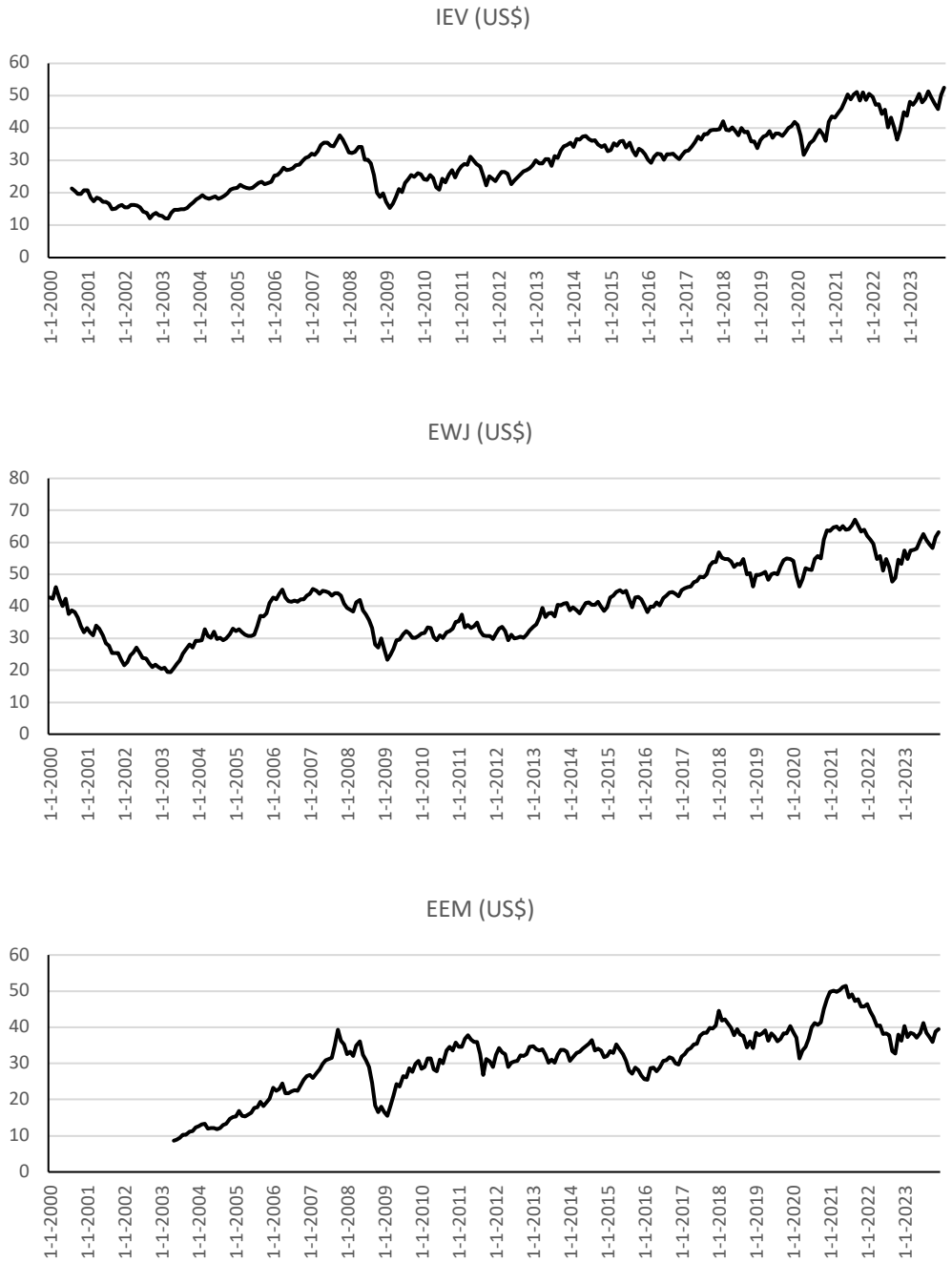

Figure 3. Quarterly P/E and P/B Ratios of U.S. Stock Market ETFs

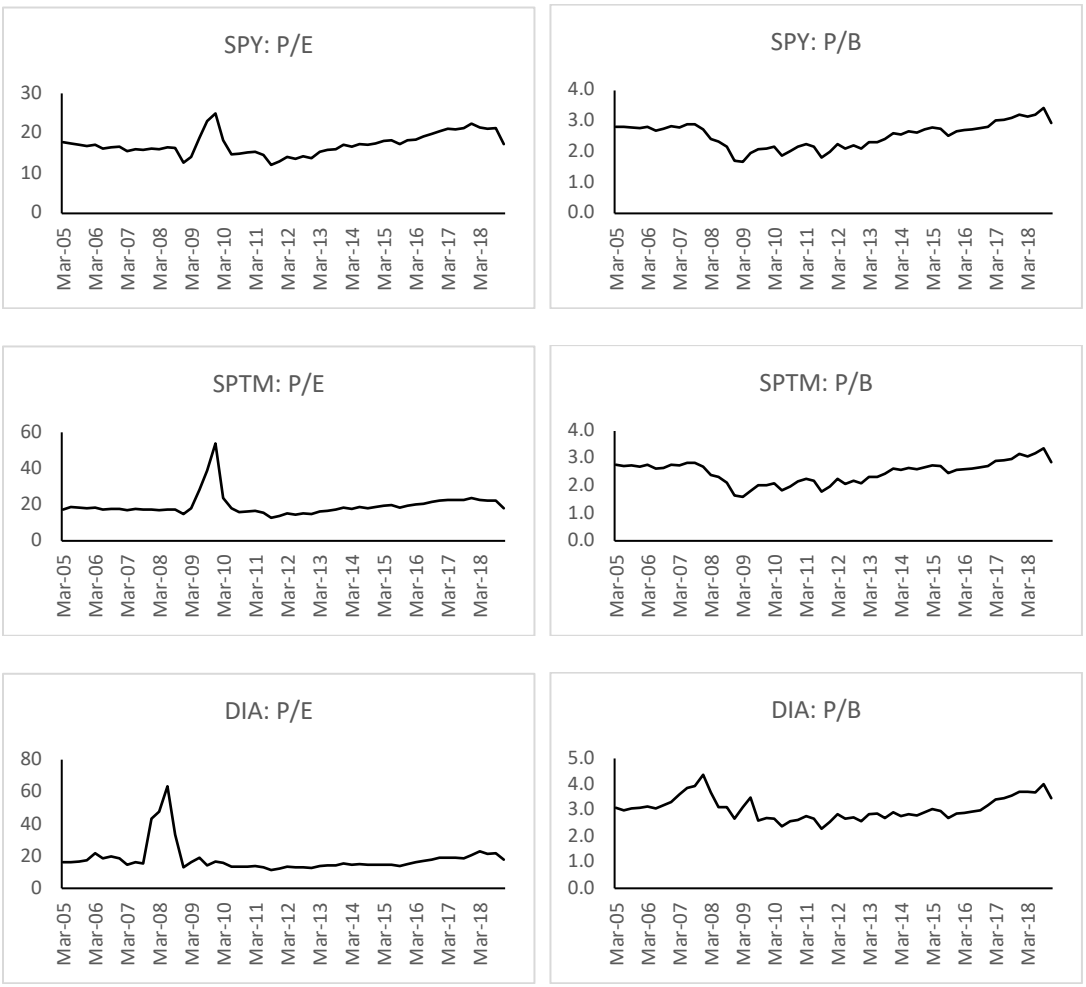

Figure 4. Quarterly P/E and P/B Ratios of Foreign Stock Market ETFs

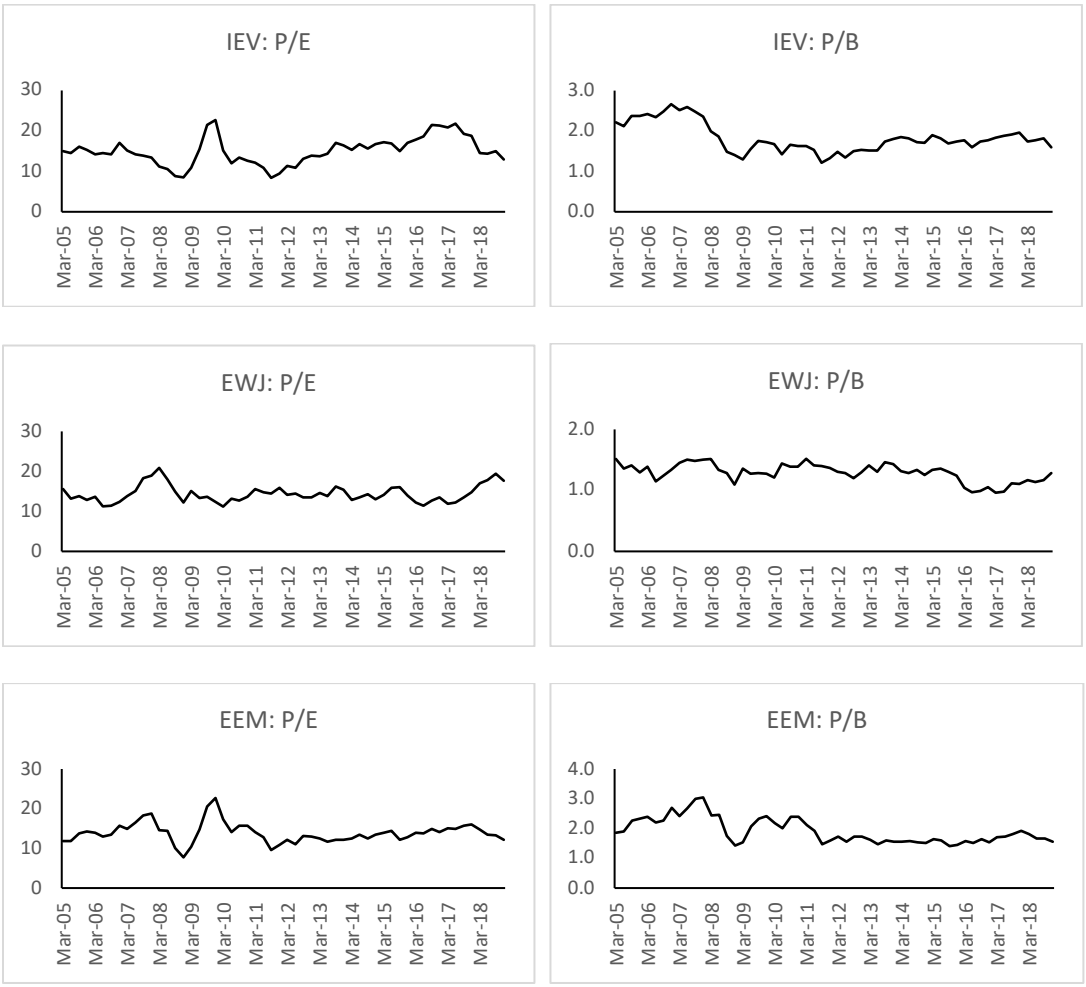

Table 1. Summary of Inputs to the RI Earnings Growth Forecast

ETF	Statistics	P/E	P/B	BETA	PAYOUT	ROE
SPY	Mean	17.20	2.55	0.96	33.90%	14.94%
	SD	2.74	0.41	0.02	7.00%	1.88%
SPTM	Mean	18.65	2.50	0.99	35.09%	13.65%
	SD	6.12	0.40	0.03	14.32%	2.53%
DIA	Mean	17.10	3.06	0.91	40.76%	18.48%
	SD	8.94	0.44	0.06	24.03%	3.53%
IEV	Mean	14.97	1.82	1.18	47.73%	12.59%
	SD	3.42	0.36	0.10	11.10%	2.96%
EWJ	Mean	14.30	1.29	0.81	33.57%	8.26%
	SD	2.14	0.15	0.13	46.58%	1.74%
EEM	Mean	13.77	1.89	1.05	28.85%	13.82%
	SD	2.51	0.42	0.06	3.19%	2.21%

The table summarizes the inputs to the RI earnings growth forecast. The forecast models are Equations (3), (4), and (5). The inputs to the models include P/E, P/B, BETA, PAYOUT, and ROE. Quarterly data are used. The test period is 2005-2018. SD denotes standard deviation.

BETA (0.81). Third, IEV has the highest PAYOUT (47.73%), while EEM has the lowest PAYOUT (28.85%). Fourth, DIA has the highest ROE (18.48%), while EWJ has the lowest ROE (8.26%).

U.S. stock market ETFs

Table 2 shows earnings growth statistics for the individual ETFs in the U.S. stock market. Panel A of Table 2 reports annual average earnings growth in the next 5 years. We observe that the three ETFs (SPY, SPTM, and DIA) show similar forecasting outcomes. First, for the ETF of the S&P 500 (SPY), the mean RI_gEPS is 6.31%, the mean RW_gEPS is 6.73%, and the mean AT_gEPS is 6.06%. The t-value on the mean difference between the RI forecast and actual growth is insignificant (0.27), implying that the regression-implied earnings growth forecast is unbiased, compared to the actual earnings growth. The t-value on the mean difference between the RW forecast and actual growth is also insignificant (0.59), implying that the random-walk earnings growth forecast is unbiased, compared to the actual earnings growth. Second, for the ETF of the S&P Composite 1500 (SPTM), the mean RI_gEPS is 7.95%, the mean RW_gEPS is 6.38%, and the mean AT_gEPS is 7.14%. The t-value on the mean difference between the RI forecast and actual growth is insignificant (0.58), indicating that the regression-implied earnings growth is an unbiased forecast. The t-value on the mean difference between the RW forecast and actual growth is also insignificant (–0.45), indicating that the random-walk earnings growth is an unbiased forecast. Third, for the ETF of the DJ Industrial Average (DIA), the mean RI_gEPS is 6.65%, the mean RW_gEPS is 6.44%, and the mean AT_gEPS is 7.72%. The t-value on the mean difference between the RI forecast and actual growth is insignificant (–0.69), suggesting the regression-implied earnings growth as an unbiased forecast. The t-value on the mean difference between the RW forecast and actual growth is also insignificant (–0.69), suggesting the random-walk earnings growth as an unbiased forecast.

Table 2. Earnings Growth: U.S. Stock Market Individual ETFs

Panel A. Annual average earnings growth in the next 5 years

ETF	Statistics	Forecast: RI_gEPS	Forecast: RW_gEPS	AT_gEPS
SPY	Mean	6.31%	6.73%	6.06%
	SD	5.00%	6.87%	4.96%
	t value on mean difference: RI (or RW) - AT	0.27	0.59	-
SPTM	Mean	7.95%	6.38%	7.14%
	SD	6.99%	9.67%	7.86%
	t value on mean difference: RI (or RW) - AT	0.58	-0.45	-
DIA	Mean	6.65%	6.44%	7.72%
	SD	7.73%	10.60%	8.33%
	t value on mean difference: RI (or RW) - AT	-0.69	-0.69	-

Panel B. Forecast errors

ETF	Statistics	|RI_gEPS - AT_gEPS|		|RW_gEPS - AT_gEPS|
SPY	Mean	3.63%		7.31%
	SD	2.48%		6.92%
	t value on mean difference: |RI-AT| - |RW-AT|		-3.74*	
SPTM	Mean	4.05%		8.89%
	SD	2.85%		12.06%
	t value on mean difference: |RI-AT| - |RW-AT|		-2.92*	
DIA	Mean	3.73%		11.16%
	SD	2.77%		12.44%
	t value on mean difference: |RI-AT| - RW-AT|		-4.25*	

The table shows earnings growth statistics for U.S. stock market individual ETFs. Quarterly data are used. The entire data period is 2000-2023 and the test period is 2005-2018. Panel A reports annual average earnings growth in the next 5 years. Panel B reports forecast errors. SD denotes standard deviation. RI_gEPS denotes the regression-implied annual average earnings growth in the next 5 years. RW_gEPS denotes the random-walk annual average earnings growth in the next 5 years. AT_gEPS denotes the actual annual average earnings growth in the next 5 years. The star (*) represents statistical significance at the 5% level.

Panel B of Table 2 reports forecast errors for the individual ETFs in the U.S. stock market. As we note, the three ETFs (SPY, SPTM, and DIA) demonstrate similar error patterns. For SPY, the mean regression-implied forecast error is 3.63%; the mean random-walk forecast error is 7.31%; and the t-value on the mean difference (–3.74) is negative and significant at the 5% level, indicating smaller errors of the RI forecast than those of the RW forecast. For SPTM, the mean regression-implied forecast error is 4.05%; the mean random-walk forecast error is 8.89%; and the t-value on the mean difference (–2.92) is negative and significant, implying smaller errors of the RI (vs. RW) forecast. For DIA, the mean regression-implied forecast error is 3.73%; the mean random-walk forecast error is 11.16%; and the t-value on the mean difference (–4.25) is negative and significant, suggesting smaller errors of the RI (vs. RW) forecast.

Table 3. Earnings Growth: U.S. Stock Market Panel ETFs

Panel A. Annual average earnings growth in the next 5 years

Statistics	Forecast: RI_gEPS	Forecast: RW_gEPS	AT_gEPS
Mean	6.89%	6.43%	6.73%
SD	6.67%	9.10%	7.19%
Median	6.59%	4.99%	5.72%
Max	40.94%	41.89%	41.89%
Min	-4.82%	-20.52%	-5.56%
t value on mean difference: RI (or RW) - AT	0.21	-0.33	

Panel B. Forecast errors

Statistics	|RI_gEPS - AT_gEPS|	|RW_gEPS - AT_gEPS|
Mean	3.77%	8.69%
SD	2.69%	10.84%
Median	3.65%	6.95%
Max	12.22%	60.91%
Min	0.02%	0.06%
t value on mean difference: |RI-AT| - |RW-AT|	-5.66*	

The table shows earnings growth statistics for U.S. stock market panel ETFs. Quarterly data are used. The entire data period is 2000-2023 and the test period is 2005-2018. The U.S. panel contains SPY, SPTM, and DIA during the test period. Panel A reports annual average earnings growth in the next 5 years. Panel B reports forecast errors. SD denotes standard deviation. RI_gEPS denotes the regression-implied annual average earnings growth in the next 5 years. RW_gEPS denotes the random-walk annual average earnings growth in the next 5 years. AT_gEPS denotes the actual annual average earnings growth in the next 5 years. The star (*) represents statistical significance at the 5% level.

Table 3 shows earnings growth statistics for the panel ETFs in the U.S. stock market. The U.S. panel contains quarterly data of SPY, SPTM, and DIA during the test period. Panel A of Table 3 reports annual average earnings growth in the next 5 years. The results here are in line with those in Table 2. For the U.S. panel of SPY, SPTM, and DIA, the mean RI_gEPS is 6.89%, the mean RW_gEPS is 6.43%, and the mean AT_gEPS is 6.73%. The t-value on the mean difference between the RI forecast and actual growth is insignificant (0.21), implying that the regression-implied earnings growth is unbiased. The t-value on the mean difference between the RW forecast and actual growth is also insignificant (–0.33), implying that the random-walk earnings growth is unbiased. Therefore, both the regression-implied and random-walk forecasts of earnings growth in the next 5 years are unbiased for the U.S. stock market panel ETFs.

Panel B of Table 3 reports forecast errors for the panel ETFs in the U.S. stock market. The outcomes here are consistent with those in Table 2. For the U.S. panel of SPY, SPTM, and DIA, the mean regression-implied forecast error is 3.77%, and the mean random-walk forecast error is 8.69%. The t-value on the mean difference (–5.66) is negative and significant at the 5% level, indicating smaller errors of the RI forecast than those of the RW forecast. Thus, for the U.S. stock market panel ETFs, the regression-implied forecast of earnings growth in the next 5 years tends to be more effective than the random-walk forecast.

Foreign stock market ETFs

Table 4 presents earnings growth statistics for the individual ETFs in the foreign stock market. Panel A of Table 4 reports annual average earnings growth in the next 5 years. We note that the three ETFs (IEV, EWJ, and EEM) display various forecasting outcomes. First, for the ETF of the S&P Europe 350 (IEV), the mean RI_gEPS is –19.07%, the mean RW_gEPS is 10.06%, and the mean AT_gEPS is 0.81%. The t-value on the mean difference between the RI forecast and actual growth is significant and negative (–4.62), implying that the regression-implied earnings growth is biased downward. The t-value on the mean difference between the RW forecast and actual growth is significant and positive (2.06), implying that the random-walk earnings growth is biased upward. Second, for the ETF of the MSCI Japan (EWJ), the mean RI_gEPS is –19.97%, the mean RW_gEPS is 19.92%, and the mean AT_gEPS is 1.85%. The t-value on the mean difference between the RI forecast and actual growth is significant and negative (–5.80), indicating that the regression-implied earnings growth is biased downward. The t-value on the mean difference between the RW forecast and actual growth is significant and positive (3.85), indicating that the random-walk earnings growth is biased upward. Third, for the ETF of the MSCI Emerging Markets (EEM), the mean RI_gEPS is –4.26%, the mean RW_gEPS is 3.12%, and the mean AT_gEPS is –0.45%. The t-value on the mean difference between the RI forecast and actual growth is insignificant (–1.63), suggesting the regression-implied earnings growth as an unbiased forecast. The t-value on the mean difference between the RW forecast and actual growth is significant and positive (2.71), suggesting the random-walk earnings growth as an upward-biased forecast.

Panel B of Table 4 reports forecast errors for the individual ETFs in the foreign stock market. We note that the three ETFs (IEV, EWJ, and EEM) demonstrate comparable error patterns. For IEV, the mean RI forecast error is 22.33%; the mean RW forecast error is 18.05%; and the t-value on the mean difference is insignificant (0.79), indicating similar errors of the RI and RW forecasts. For EWJ, the mean RI forecast error is 24.71%; the mean RW forecast error is 18.73%; and the t-value on the mean difference is insignificant (1.48), implying similar errors of the RI and RW forecasts. For EEM, the mean RI forecast error is 9.02%; the mean RW forecast error is 7.16%; and the t-value on the mean difference is insignificant (1.10), suggesting similar errors of the RI and RW forecasts.

Table 5 provides earnings growth statistics for the panel ETFs in the foreign stock market. The foreign panel contains quarterly data of IEV, EWJ, and EEM during the test period. Panel A of Table 5 reports annual average earnings growth in the next 5 years. The results here are analogous to those in Table 4. For the foreign panel of IEV, EWJ, and EEM, the mean RI_gEPS is –14.48%, the mean RW_gEPS is 8.51%, and the mean AT_gEPS is 0.81%. The t-value on the mean difference between the RI forecast and actual growth is significant and negative (–6.87), implying that the regression-implied earnings growth is biased downward. The t-value on the mean difference between the RW forecast and actual growth is significant and positive (3.90), implying that the random-walk earnings growth is biased upward. Therefore, both the RI and RW forecasts of earnings growth in the next 5 years are biased for the foreign stock market panel ETFs.

Panel B of Table 5 presents forecast errors for the panel ETFs in the foreign stock market. The results here are comparable to those in Table 4. For the foreign panel of IEV, EWJ, and EEM, the mean RI forecast error is 18.47%, and the mean RW forecast error is 14.58%. The t-value on the mean difference (1.51) is insignificant, indicating similar errors of the RI and RW forecasts.

Thus, for the foreign stock market panel ETFs, the RI forecast of earnings growth in the next 5 years holds no advantage over its RW counterpart.

Table 4. Earnings Growth: Foreign Stock Market Individual ETFs

Panel A. Annual average earnings growth in the next 5 years

ETF	Statistics	Forecast: RI_gEPS	Forecast: RW_gEPS	AT_gEPS
IEV	Mean	-19.07%	10.06%	0.81%
	SD	29.44%	30.80%	6.44%
	t value on mean difference: RI (or RW) - AT	-4.62*	2.06*	-
EWJ	Mean	-19.97%	12.92%	1.85%
	SD	25.04%	18.39%	8.08%
	t value on mean difference: RI (or RW) - AT	-5.80*	3.85*	-
EEM	Mean	-4.26%	3.12%	-0.45%
	SD	14.17%	7.44%	3.56%
	t value on mean difference: RI (or RW) - AT	-1.63	2.71*	-

Panel B. Forecast errors

ETF	Statistics	|RI_gEPS - AT_gEPS|		|RW_gEPS - AT_gEPS|
IEV	Mean	22.33%		18.05%
	SD	26.32%		27.38%
	t value on mean difference: |RI-AT| - |RW-AT|		0.79	
EWJ	Mean	24.71%		18.73%
	SD	22.78%		16.70%
	t value on mean difference: |RI-AT| - |RW-AT|		1.48	
EEM	Mean	9.02%		7.16%
	SD	8.72%		6.03%
	t value on mean difference: |RI-AT| - |RW-AT|		1.10	

The table presents earnings growth statistics for foreign stock market individual ETFs. Quarterly data are used. The entire data period is 2000-2023 and the test period is 2005-2018. Panel A reports annual average earnings growth in the next 5 years. Panel B reports forecast errors. SD denotes standard deviation. RI_gEPS denotes the regression-implied annual average earnings growth in the next 5 years. RW_gEPS denotes the random-walk annual average earnings growth in the next 5 years. AT_gEPS denotes the actual annual average earnings growth in the next 5 years. The star (*) represents statistical significance at the 5% level.

Table 5. Earnings Growth: Foreign Stock Market Panel ETFs

Panel A. Annual average earnings growth in the next 5 years

Statistics	Forecast: RI_gEPS	Forecast: RW_gEPS	AT_gEPS
Mean	-14.48%	8.51%	0.81%
SD	25.24%	22.17%	6.51%
Median	-12.35%	5.14%	0.00%
Max	40.01%	155.89%	38.11%
Min	-111.05%	-20.05%	-20.05%
t value on mean difference: RI (or RW) - AT	-6.87*	3.90*	-

Panel B. Forecast errors

Statistics	|RI_gEPS - AT_gEPS|	|RW_gEPS - AT_gEPS|
Mean	18.47%	14.58%
SD	22.38%	20.23%
Median	14.19%	10.38%
Max	116.43%	155.89%
Min	0.05%	0.13%
t value on mean difference: |RI-AT| - |RW-AT|	1.51	

The table presents earnings growth statistics for foreign stock market panel ETFs. Quarterly data are used. The entire data period is 2000-2023 and the test period is 2005-2018. The foreign panel contains IEV, EWJ, and EEM during the test period. Panel A reports annual average earnings growth in the next 5 years. Panel B reports forecast errors. SD denotes standard deviation. RI_gEPS denotes the regression-implied annual average earnings growth in the next 5 years. RW_gEPS denotes the random-walk annual average earnings growth in the next 5 years. AT_gEPS denotes the actual annual average earnings growth in the next 5 years. The star (*) represents statistical significance at the 5% level.

IV. Conclusions

We forecast earnings growth in the next 5 years for six stock-market-indexed ETFs. Our approach is the model-implied estimates of expected earnings growth, including the RI and RW estimates. Our forecasts adopt quarterly rolling and point-in-time evaluations. Our results differ between the U.S. and foreign ETFs.

For the three U.S. stock-market-indexed ETFs (SPY, SPTM, and DIA), both the RI and RW forecasts of earnings growth are unbiased in comparison with the actual earnings growth. Moreover, the RI method generates smaller forecast errors than the RW method. Therefore, the RI forecast seems a better method than the RW forecast for the U.S. ETFs during 2000-2023.

For the three foreign stock-market-indexed ETFs (IEV, EWJ, and EEM), the RI forecast of earnings growth is biased downward and the RW forecast is biased upward when both forecasts are compared with the actual earnings growth. Furthermore, the RI and RW methods generate similar forecast errors. Hence, the RI forecast seems to hold no advantage over the RW forecast for the foreign ETFs during 2000-2023.

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Appendix A: BETA Estimation

The appendix shows the data sources in the BETA estimation for the six ETFs. BETA is estimated based on monthly data in the past three years, and it is the slope coefficient in the following regression:

$$Ri\text{-}Rf = intercept + slope*(Rm\text{-}Rf),$$

where Ri is the monthly return of an ETF, Rf is the monthly return of 1-month Treasury bills, and Rm-Rf is the monthly excess market return. Rf and Rm-Rf are obtained from the Fama-French three-factor data sources.

ETF	*Data Sources for Rf and Rm-Rf*
SPY	U.S. market: Fama-French three-factor returns
SPTM	U.S. market: Fama-French three-factor returns
DIA	U.S. market: Fama-French three-factor returns
IEV	Developed markets: Fama-French three-factor returns
EWJ	Developed markets: Fama-French three-factor returns
EEM	Emerging markets: Fama-French three-factor returns

Appendix B: RI_gEPS Estimation

The appendix shows the data sources used in the RI_gEPS estimation for the six ETFs. For the RI_gEPS estimation, see equations (3), (4), and (5) in Section 2.2.

ETF	*Data Sources for Regression Coefficients*
SPY	U.S. companies: P/E and P/B regressions
SPTM	U.S. companies: P/E and P/B regressions
DIA	U.S. companies: P/E and P/B regressions
IEV	European companies: P/E and P/B regressions
EWJ	Japanese companies: P/E and P/B regressions
EEM	Emerging market companies: P/E and P/B regressions