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Analysts Forecasts, EBO model, and Long-term Stock Returns

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abstract

Following Frankel and Lee (1998), we investigate the correlation between the EBO value measures and contemporaneous stock prices, and examine the ability of predicting future returns of the EBO value measures. For consolidated accounting sample, using EBO model to calculate intrinsic value (V), the V/P measures have additional information to book value to price (B/P) that is not reflected in stock prices. But it is not so for parent-only accounting sample.

The result may be effected strongly by economic conditions. The predictive power is higher for the stable economic environment period, relative to for the bubble economy period and the strong recession period.

1. introduction

Recently Frankel and Lee (1998) study the residual income model using analysts' earnings forecasts and examine its usefulness in predicting cross-sectional stock returns in the US. They find that the resulting measure of firm intrinsic value (Vf) are highly correlated with contemporaneous stock prices, and value to price ratio (Vf/P) is a good predictor of cross-sectional return over longer time horizons. They present that the result is not due to differences in market betas, firm size, or the B/P ratio.

Following Frankel and Lee (1998), we investigate the correlation between the EBO value measures and contemporaneous stock prices, and examine the ability of predicting future returns of the EBO value measures. But our analysis is different form Frankel and Lee (1998) in some points. First, we analyze the time-varying feature of the predicting ability of the EBO measures. As we see later, the economic condition effects the ability of the EBO measures to predict future stock returns. Second, we examine the time-consistency of the residual income that have very large impact to the terminal value of the residual income.

The remainder of this paper is organized as follows. In the next section, we present the residual income model, and describe its features. In Section 3, we discuss the estimation procedure using the residual income model. Section 4 describes the data and sample for details. Section 5 presents the empirical result, and Section 6 concludes with a summary of our findings and their implications.

2. The EBO model, book value, and market efficiency

In this section we derive the Edwards-Bell-Ohlson (EBO) model and present the relation between V/P and B/P from the point of the EBO valuation technique.

In the dividend discount model (DDM), the intrinsic value of a firm is the present value of the future dividend of the firm. The DDM is as follows:

$$V_t = \sum_{\tau=1}^{\infty} \frac{E[d_{t+\tau}]}{(1+r_e)^{\tau}},$$

where V is the intrinsic value and r_e is the cost of equity which is required to the firm. For the derivation of the EBO model, we assume the clean surplus relation(CSR). The CSR is the restriction between accounting earnings(x), book value (bv) and cash dividend (d) through time (t):

$$B_t = B_{t-1} + NI_t - d_t$$

Using the DDM and the CSR, we can easily show the EBO model :

$$\begin{aligned} V_t &= B_t + \sum_{\tau=1}^{\infty} \frac{E[NI_{t+\tau} - r_e \cdot B_{t+\tau-1}]}{(1+r_e)^{\tau}}. \\ &= B_t + \sum_{\tau=1}^{\infty} \frac{E[(ROE_{t+\tau} - r_e)B_{t+\tau-1}]}{(1+r_e)^{\tau}} \end{aligned} \quad (1)$$

Eq.(1) shows that intrinsic value can be constructed with book value and the present value of future residual income. If the future ROE is exactly equal to the cost of capital, then Vt=Bt. This means that B is a special case of V, and that in general V include B as its constructs. Therefore as Frankel and Lee (1998) pointed, the relation between future earnings performance and B/P ratio is not the proof of market efficiency. However, B is a terminal value of a firm that earns only normal incomes forever. In other words, if market expect a firm will earn normal income thereafter, B is an EBO measure about the firm. This means that when EBO measure is calculated, it is important to decide the horizon that a firm earns the residual income.

On the other side, Fama and French () interpreted B/P ratio as default risk proxy. If we follow their interpretation, the relation between future stock return and B/P ratio is the relation between return and risk, and the analysis is for the research of the reward to default risk.

3. Procedures to estimate EBO value

Eq. (1) shows a firm's intrinsic value. When this value is calculated by using actual data, we must add several assumptions about required parameters. In this section, these assumptions are discussed for details.

Cost of Equity (r_e) must be firm-specific, but, in this study, following Frankel and Lee(1998), we

use a constant cost of equity and industrial cost of equity. A constant cost of equity is an annual average 60 days treasury bond rate, and industrial costs of equity are based on a three-factor model by Fama and French (1997). The risk premiums by the three-factor model are computed by 5-year rolling regressions by industry.

We assume that Dividends are constant for the periods, because it is known that most Japanese firms generally adopt the stable dividend policy. So Book values are forecasted as follows:

$$B_{t+1} = B_t + NI_{t+1} - \bar{d}_{t+1},$$

where $\bar{d}_t$ is a Constant dividend at time t.

We forecast future earnings based on ex ante information, and those are prior period earnings and analysts' earnings forecasts. The latter is I/B/E/S consensus analyst forecasts, which are used for calculating the EBO measures VF1 or VF2, and prior period earnings are used for calculating the EBO measures VH.

In this study, four EBO measures are calculated to analyze the ability of predicting future return of EBO measures. First, we calculate VH based on historical (prior year) earnings. That is as follows:

$$VH_t = B_t + \frac{(ROE_{t+1} - r_e)}{1 + r_e} B_t + \frac{(ROE_{t+1} - r_e)}{(1 + r_e) r_e} B_{t+1}.$$

Next, we can use one-year ahead and two-year ahead earnings forecasts by analysts, so we can calculate two EBO measures as follows:

$$VF1_t = B_t + \frac{(FROE_{t+1} - r_e)}{1 + r_e} B_t + \frac{(FROE_{t+1} - r_e)}{(1 + r_e) r_e} B_{t+1},$$

$$VF2_t = B_t + \frac{(FROE_{t+1} - r_e)}{1 + r_e} B_t + \frac{(FROE_{t+2} - r_e)}{(1 + r_e) r_e} B_{t+1},$$

where FROEt+1 is ROE based on I/B/E/S consensus analyst forecasts about one year-ahead earning. Finally, we also calculate VZ that is assumed residual incomes are zero after three years later. In other words, a firm will earn only normal income after three years later permanently, while VF1 and VF2 is assumed non-zero residual income stream permanently. VZ is examined to recognize the effect of the assumption that a firm makes non-zero residual income during permanent time horizon. Comparing VZ to VF1 or VF2, we can show the effects of residual income dynamics that are expected by market.

$$VZ_t = B_t + \frac{(FROE_{t+1} - r_e)}{1 + r_e} + \frac{(FROE_{t+2} - r_e)}{(1 + r_e)^2}$$

4. Sample and Data

The period chosen for this study is the fiscal year 1987, the beginning year of I/B/E/S forecasting data in Japan, through the fiscal year 1995. In Japan, the I/B/E/S analysts forecasted the future earnings per share for consolidated firms as well as parent-only firms. For these periods, there are 5036 firms for consolidated accounting and 11952 firms for parent-only accounting. Of the I/B/E/S sample firms, we pick up the non-financial firms that were listed in the first section in Tokyo, Osaka and Nagoya Securities Exchanges and whose fiscal year ends in March. And some firm has no earnings data, for the prior, the following or the two following year, and others have no stock price data. Excluding these missing data firms, our samples contain 2680 firms for consolidated and 3254 firms for parent-only accounting for the analyzed period.

In estimating EBO model, we impose a series of additional filters on the sample firms. The purpose of these filters is to eliminate firms with extreme data values that may have an undue influence on the results, or may generate unreasonable input parameters. Table 1 shows the filters, same to Frankel and Lee (1999), and the sample selections. Finally, 2245 firms for consolidated accounting and 3021 firms for parent-only accounting are analyzed in this study.

The book values of equity, current earnings, shares outstanding, dividend and executive bonuses are collected from Nippon Kaigin data (Japan Development Bank data) and the stock prices at the end of September are from Stock Price CD-ROM, published by Toyo Keizai Corporation. The stock returns are derived from Nippon ShokenKeizai Kenkyusho, generally acknowledge to be the best source on stock returns, that keeps track of dividend payments, issuance of new listings as well as delisting and other changes in the market.

In estimating EBO model, we use two types of the cost of capital, constant rate and industrial rate. The constant rate is a rate of 60-days treasury bond, cited from "Koushasai-Geppou," Monthly report of public and corporate bond, Treasury Department. The industrial rate is estimated by using the three-factor model, presented by Fama and French (1997).

The following ratios are used for forming portfolios in the investment strategy.

book value of equity per share /stock price (B/P)

VH/stock price (VH/P)

VF1/stock price (VF1/P)

VF2/stock price (VF2/P)

VZ/stock price (VZ/P)

B is book equity per share in fiscal year t-1. P is stock price per share at the end of September of year t. Earnings per share, using in VH/P, is calculated at year t-1. The forecasted earnings per share at year t and year t+1 are the I/B/E/S consensus data which are estimated in August of year t.

5. Forecast errors

Before analyzing EBO measures, the forecast errors of I/B/E/S data, measured by the difference between forecasted earnings data by I/B/E/S and actual earnings per share divided by book value of equity per share, are examined. Table 2 shows the average for forecast errors. FE1 (FE2) presents the difference between forecasted EPSt+1 (t+2) and actual EPSt+1 (t+2) and Abs(FE1) or Abs(FE2) presents the absolute value of it.

In consolidated data of 1987, FE1 and FE2 are negative, namely actual eps > forecast eps, indicating that I/B/E/S analysts are more or less pessimistic. After the fiscal year 1990, the averages for them are positive and the analysts seem to forecast in an optimistic manner. In the absolute value, Abs(FE2) are larger than Abs(FE1) in the all fiscal years because of difference in forecasting periods. The averages for Abs(FE1) and Abs(FE2) are not consistently decreasing and so there is no evidence that the I/B/E/S forecasting improves year by year. They have also the same tendency on forecast errors in parent-only data.

Table 3 shows the descriptive statistics for investment variables, B/P, VH/P, VF1/P, VF2/P and VZ/P. Using two types of the cost of capital, constant rate and industrial rate, two each EBO estimates for VH/P, VF1/P, VF2/P and VZ/P are examined. In the fiscal year 1987, average for B/P is 0.280113 and standard deviation for it is 0.131459. The average increases in and after the year 1990 and in particular, it is highest, 0.600834, in the year 1992. In Japan, periods before the year 1990 were called as the bubble economy periods and the stock market was very active. In January of 1990, Japanese stock price began to decline and Nikkei Stock Index is 14485 yen in 3rd July 1995. The trends of B/P variable is consistent with the situation in Japanese stock market. The values of standard deviation seem to be stable. Other variables, VH/P, VF1/P, VF2/P and VZ/P, also have the increasing tendency for average and stable for standard deviation, except for VH/P in 1995. Comparing EBO valuation to stock price using constant rate and using industrial rate, the former is higher than the latter since the constant rate is a risk free rate, generally a low discount rate.

5.Empirical results

5.1 Correlation with stock prices

Table4 presents cross-sectional Spearman rank correlation coefficients between stock prices and either book value (B) or one of EBO value measures for each consolidated and parent-only accounting data samples. The discount rates used are constant rate (the average annualized 60 days treasury bondl rate for 12 months prior to the portfolio formation dates) and industrial cost of equity.

Over our sample period, the average correlation between stock price and book value (B) was 0.705 for parent-only accounting samples and 0.721 for consolidated accounting samples. Compared to B, VH had a lower average correlation with stock prices (the correlation coefficients were 0.658

and 0.687 for each sample set). This tendency fits to each case which is using a constant rate and an industrial rate, so this means that assuming the procedure to calculate VH2 is appropriate, historical ROE based EBO value (VH) doesn't contain more value relevant information compared to book value.

Table 4 also presents that analyst forecasts based EBO measures (VF1, VF2 and VZ2) had a higher correlation coefficients with stock price than VH on average for parent-only and consolidated accounting samples. This means that VF1, VF2 and VZ had more value-relevant information than VH. Comparing to B, the result is mixed. The each correlation coefficients of VF1 and VF2 to price is lower than B (except for the case of parent-only samples with constant discount rate), but the correlation coefficients of VZ to price is always slightly above its of B for every year. This may reflects the inappropriateness of the procedure to calculate VF1 and VF2. VZ is the EBO measure assuming that residual incomes are zero after the third year, but VF1 or VF2 contain the terminal value of the permanent non-zero residual income. The difference is the assumption about dynamics of residual income. Our sample period contains bubble economy period and thereafter recession period, so corporate income changed rapidly in the period. If market expects F1 and F2 leave from long-term forecasts, then market prices are not near the VF1 or VF2. In the case, EBO measure using the myopic analyst forecasts as long-term forecasts is not good value measure, and VZ may be more appropriate value measures.

Unlike the result in Japan by Frankel and Lee(1999), EBO measures containing the terminal value of residual income did not have more value-relevant information than book values in Japan. Conversely, book values have relatively high correlation to stock prices. Table 4 shows that VZ containing short-term residual income has useful information to price stocks. But it dose not mean VZ is good predictor of long-term stock return.

5.2 Future returns and value measures

In this section, we focus on the predictive ability of EBO measures.

Since the result is not affected by the defference of costs of equity, we explain the result based of the EBO measures computed by industrial rate. The Figure 1A and Figure 2A illustrate the cumulative returns from a 36 month buy-and-hold strategy involving B/P, VH, VF2 and VZ for the overall period for each sample sets (parent-only and consolidated). The strategy is that a long-position is taken in the top quintile firms of each ratio, and a short-position is taken in the bottom quintile firms. The figures present that the portfolio return of the strategy for 36 months after portfolio formations. Over all period, for both parent-only and consolidated accounting samples, the B/P strategy outperforms the VH/P, VF1/P and VF2/P strategy. This is so different from the result in the US by Frankel and Lee(1998). In Japan, the B/P strategy had very good performance during the

overall period (after 36 months, the strategy earns the abnormal return which is almost more than 20% for each sample). Compared to Frankel and Lee (1998), the VF2/P had lower performance for each sample. Especially, we cannot recognize abnormal return for the parent-only accounting sample. This may mean that parent-only accounting presents inappropriate information relative to consolidated accounting.

Fig.1 B and Fig.2 B present the results for sub-period (1987-1989). From 1987 to 1989, Japanese economy expanded rapidly, and it was so-called "bubble economy". The result for parent-only sample (Fig,1 B) shows that both the B/P strategy and the VF/P strategy had abnormal returns, and the VF/P strategy had slightly worse performance than the B/P strategy. The result for consolidated accounting sample(Fig.2 B) is different slightly, returns form the strategy exhibits seasonal pattern, which abnormal returns are big for financial statement publishing month.

Fig.1C and Fig.2C present the results for the sub-period (1990-1993). From 1990 to 1993, the bubble economy shrunk rapidly, and Japanese economy was damaged and it was the depression. For this sub-period, the difference between the B/P strategy and the VF/P strategy is relatively big, and abnormal return form the VF/P strategy is small.

Fig.1D and Fig.2D present the result for the sub-period (1994-1995). In 1994 and 1995, Japanese economy is still in the depression, but more stable relative to prior sub-period. As you can see, the result change drastically, compared to the other sub-periods. For parent-only accounting samples, returns from the B/P strategy is so small and returns from the VF/P strategy is negative. For consolidated accounting samples, similar to Frankel and Lee(1998), returns from the VF/P strategy is so high, and they are above the B/P strategy.

In summary, the ability of the VF/P strategy as a predictor of future returns was changing over the sample period as same as the ability of the B/P strategy. The results shows that superiority of the V/P strategy relative to the B/P strategy is not stable (Frankel and Lee (1998)) in Japan. It may be because of economic environment changes. While the ability is very changeable by the time, the ability for each sample set is different. The ability for consolidated accounting samples is relatively high to the ability for parent-only samples. It may be in part because of "slow converge" problem that is pointed by Frankel and Lee (1999).

6. Summary

We analyze the EBO measures form two points of view. First, we examine the correlation between the EBO measures and stock prices. VF1 and VF2 have not always higher correlation than B, that is different from the result by Frankel and Lee(1998,1999). The reason in part that the measures are computed by permanent non- zero residual incomes. VZ that assume zero residual incomes after third year has always higher correlation than B.

Second, the ability of the EBO measures to predict future stock returns is analyzed. The ability of the EBO measures based on consolidated accounting is better than that based on parent-only accounting for overall period and sub-periods. It may be because of inferiority ("slow converge" problem") of parent-only accounting, or, efficiency of parent-only accounting data. But, unlike the result in the US by Frankel and Lee (1998), the VF2/P strategy cannot outperform the B/P strategy in Japan, except for consolidated accounting sample for the 1994-95 sub-period.

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Table 1 Sample

	1987	1988	1989	1990	1991	1992	1993	1994	1995	合計
Consolidated accounting data										
Firms with the IBES data	321	498	464	503	566	567	595	692	830	5036
Firms in non-financial sectors, listed in the 1st section of Tokyo, Osaka and Nagoya securities exchanges and whose fiscal year end in March.	172	297	315	358	388	395	402	415	454	3196
(-) firms without earnings data from t-1 to t+2.	9	39	34	15	8	8	10	6	35	164
(-) firms without stock price data	10	17	15	25	45	49	51	65	75	352
Firms with financial and stock data.	153	241	266	318	335	338	341	344	344	2680
(-) firms with negative book equity	1	2	2	1	0	0	0	1	1	8
(-) firms with extreme current or forecasted ROEs, | ROEt | or | FROEt+2 | >2. 0	0	0	0	1	1	2	3	4	5	16
(-) firms with extreme divident payout ratios, K>2 or K<0	12	10	5	9	18	43	91	109	99	396
(-) firms with negative EBO values, VF2 <0	0	0	2	0	0	0	5	7	1	15
Sample Firms	140	229	257	307	316	293	242	223	238	2245
Parent-only accounting data										
Firms with the IBES data	227	662	636	651	1805	1963	2006	2004	1998	11952
Firms in non-financial sectors, listed in the 1st section of Tokyo, Osaka and Nagoya securities exchanges and whose fiscal year end in March.	89	341	397	431	510	530	538	546	548	3930
(-) firms without earnings data from t-1 to t+2.	0	46	50	27	13	15	6	10	5	172
(-) firms without stock price data	14	35	28	33	91	89	82	68	64	504
Firms with financial and stock data.	75	260	319	371	406	426	450	468	479	3254
(-) firms with negative book equity	0	0	1	0	0	0	0	0	0	1
(-) firms with extreme current or forecasted ROEs, | ROEt | or | FROEt+2 | >2. 0	0	0	0	0	0	1	0	0	2	3
(-) firms with extreme divident payout ratios, K>2 or K<0	2	4	2	1	4	18	45	43	36	155
(-) firms with negative EBO values, VF2 <0	3	2	0	2	3	3	18	24	19	74
Sample Firms	70	254	316	368	399	404	387	401	422	3021

Table 2 Forecast Errors

	FE1	FE2	Abs(FE1)	Abs(FE2)
Consolidated accounting data				
1987	-0.022	-0.034	0.028	0.039
1988	-0.024	-0.029	0.037	0.047
1989	-0.003	-0.005	0.027	0.048
1990	-0.005	0.034	0.031	0.055
1991	0.021	0.054	0.036	0.061
1992	0.026	0.043	0.032	0.052
1993	0.015	0.012	0.026	0.039
1994	0.010	0.008	0.027	0.035
1995	0.007	-0.016	0.030	0.054
Parent-only accounting data				
1987	-0.009	-0.031	0.028	0.043
1988	-0.014	-0.040	0.032	0.057
1989	-0.019	-0.009	0.032	0.046
1990	-0.001	0.005	0.028	0.052
1991	0.008	0.043	0.035	0.055
1992	0.017	0.033	0.026	0.047
1993	0.009	0.021	0.020	0.035
1994	0.007	0.012	0.024	0.034
1995	0.005	0.014	0.026	0.029

Footnotes:

FE1=(Forecasted EPSt+1 − actual EPSt+1) / book value of equity per share

FE2=(Forecasted EPSt+2 − actual EPSt+2) / book value of equity per share

Abs(FE1)= | Forecasted EPSt+1 − actual EPSt+1 | / book value of equity per share

Abs(FE2)= | Forecasted EPSt+2 − actual EPSt+2 | / book value of equity per share

Table 3 Descriptive statistics of B/P and The EBO measures to price ratio

		Constant Rate				Industrial Rate			
	B/P	VH/P	VF1/P	VF2/P	VZ/P	VH/P	VF1/P	VF2/P	VZ/P
Consolidated accounting ata									
1987 Average	0.280	0.451	0.412	0.395	0.284	0.072	0.074	0.065	0.246
S.D	0.131	0.267	0.237	0.239	0.131	0.053	0.055	0.048	0.118
1988 Average	0.282	0.483	0.506	0.507	0.290	0.069	0.081	0.071	0.248
S.D	0.139	0.358	0.258	0.262	0.139	0.050	0.040	0.036	0.120
1989 Average	0.233	0.393	0.414	0.412	0.240	0.059	0.070	0.061	0.204
S.D	0.107	0.201	0.208	0.235	0.108	0.030	0.034	0.033	0.092
1990 Average	0.435	0.448	0.497	0.484	0.438	0.187	0.215	0.200	0.401
S.D	0.217	0.230	0.267	0.231	0.211	0.149	0.165	0.161	0.197
1991 Average	0.407	0.385	0.378	0.376	0.405	0.206	0.208	0.200	0.375
S.D	0.176	0.240	0.179	0.180	0.172	0.194	0.170	0.178	0.154
1992 Average	0.601	0.674	0.647	0.667	0.604	0.560	0.540	0.553	0.598
S.D	0.251	0.635	0.359	0.342	0.246	0.541	0.299	0.279	0.244
1993 Average	0.488	0.657	0.680	0.736	0.495	0.337	0.339	0.358	0.480
S.D	0.184	0.827	0.387	0.374	0.183	0.348	0.209	0.196	0.176
1994 Average	0.495	0.926	1.018	1.115	0.506	0.366	0.408	0.440	0.493
S.D	0.165	1.102	0.715	0.640	0.165	0.430	0.286	0.250	0.161
1995 Average	0.573	1.457	1.747	1.698	0.589	0.491	0.590	0.561	0.571
S.D	0.205	2.390	1.494	1.081	0.206	0.830	0.582	0.394	0.200
Parent-only accounting data									
1987 Average	0.297	0.398	0.410	0.399	0.300	0.069	0.076	0.064	0.259
S.D	0.119	0.829	0.666	0.299	0.118	0.118	0.113	0.057	0.104
1988 Average	0.269	0.414	0.458	0.464	0.276	0.066	0.079	0.071	0.238
S.D	0.134	0.337	0.238	0.250	0.133	0.061	0.047	0.045	0.117
1989 Average	0.205	0.330	0.331	0.338	0.211	0.055	0.061	0.055	0.181
S.D	0.175	0.268	0.169	0.170	0.170	0.048	0.035	0.032	0.148
1990 Average	0.367	0.381	0.389	0.381	0.368	0.213	0.227	0.221	0.344
S.D	0.174	0.251	0.195	0.199	0.170	0.217	0.215	0.231	0.162
1991 Average	0.369	0.313	0.331	0.328	0.367	0.221	0.241	0.235	0.345
S.D	0.171	0.276	0.171	0.162	0.164	0.254	0.242	0.246	0.153
1992 Average	0.558	0.636	0.585	0.635	0.561	0.534	0.493	0.533	0.557
S.D	0.256	0.726	0.385	0.315	0.249	0.626	0.332	0.272	0.247
1993 Average	0.457	0.593	0.615	0.697	0.464	0.311	0.324	0.359	0.451
S.D	0.191	1.087	0.480	0.342	0.188	0.576	0.272	0.199	0.184
1994 Average	0.489	0.793	0.933	1.076	0.500	0.313	0.374	0.423	0.486
S.D	0.199	1.770	0.828	0.626	0.197	0.691	0.332	0.245	0.192
1995 Average	0.589	0.895	1.649	1.704	0.605	0.311	0.597	0.602	0.589
S.D	0.236	6.037	1.561	0.909	0.235	2.290	0.600	0.353	0.230

Table 4 Correlation between B or the EBO measures and contemporaneous stock prices

A. Parent-only accounting sample

			constant rate				Industrial rate			
Year	Obs.	B	VH	VF1	VF2	VZ	VH	VF1	VF2	VZ
1987	70	0.795	0.544	0.514	0.614	0.808	0.402	0.401	0.513	0.800
1988	254	0.591	0.570	0.595	0.616	0.606	0.492	0.533	0.548	0.597
1989	316	0.607	0.597	0.628	0.629	0.621	0.553	0.598	0.595	0.616
1990	368	0.616	0.588	0.654	0.617	0.629	0.411	0.484	0.434	0.629
1991	399	0.650	0.721	0.745	0.759	0.670	0.562	0.587	0.572	0.674
1992	404	0.692	0.711	0.779	0.802	0.712	0.704	0.772	0.792	0.711
1993	387	0.771	0.731	0.782	0.837	0.787	0.679	0.734	0.775	0.784
1994	401	0.826	0.715	0.795	0.830	0.838	0.715	0.796	0.831	0.838
1995	422	0.798	0.743	0.792	0.833	0.810	0.702	0.745	0.777	0.807
All year	3021	0.705	0.658	0.698	0.726	0.720	0.580	0.628	0.649	0.717

B. Consolidated accounting sample

			constant rate				Industrial rate			
Year	Obs.	B	VH	VF1	VF2	VZ	VH	VF1	VF2	VZ
1987	140	0.640	0.559	0.546	0.601	0.649	0.516	0.491	0.525	0.633
1988	229	0.576	0.609	0.597	0.557	0.583	0.660	0.642	0.616	0.586
1989	257	0.633	0.614	0.623	0.531	0.643	0.673	0.681	0.595	0.647
1990	307	0.712	0.697	0.715	0.708	0.722	0.553	0.625	0.605	0.720
1991	316	0.694	0.667	0.729	0.732	0.710	0.465	0.576	0.551	0.706
1992	293	0.743	0.733	0.795	0.793	0.756	0.722	0.786	0.785	0.753
1993	242	0.791	0.767	0.790	0.823	0.803	0.700	0.741	0.768	0.802
1994	223	0.861	0.789	0.826	0.842	0.871	0.788	0.825	0.841	0.869
1995	238	0.840	0.752	0.785	0.775	0.849	0.689	0.721	0.722	0.847
all year	2245	0.721	0.687	0.712	0.707	0.732	0.641	0.676	0.668	0.729

Figure 1 cumulative returns by the parent-only accounting data based strategies

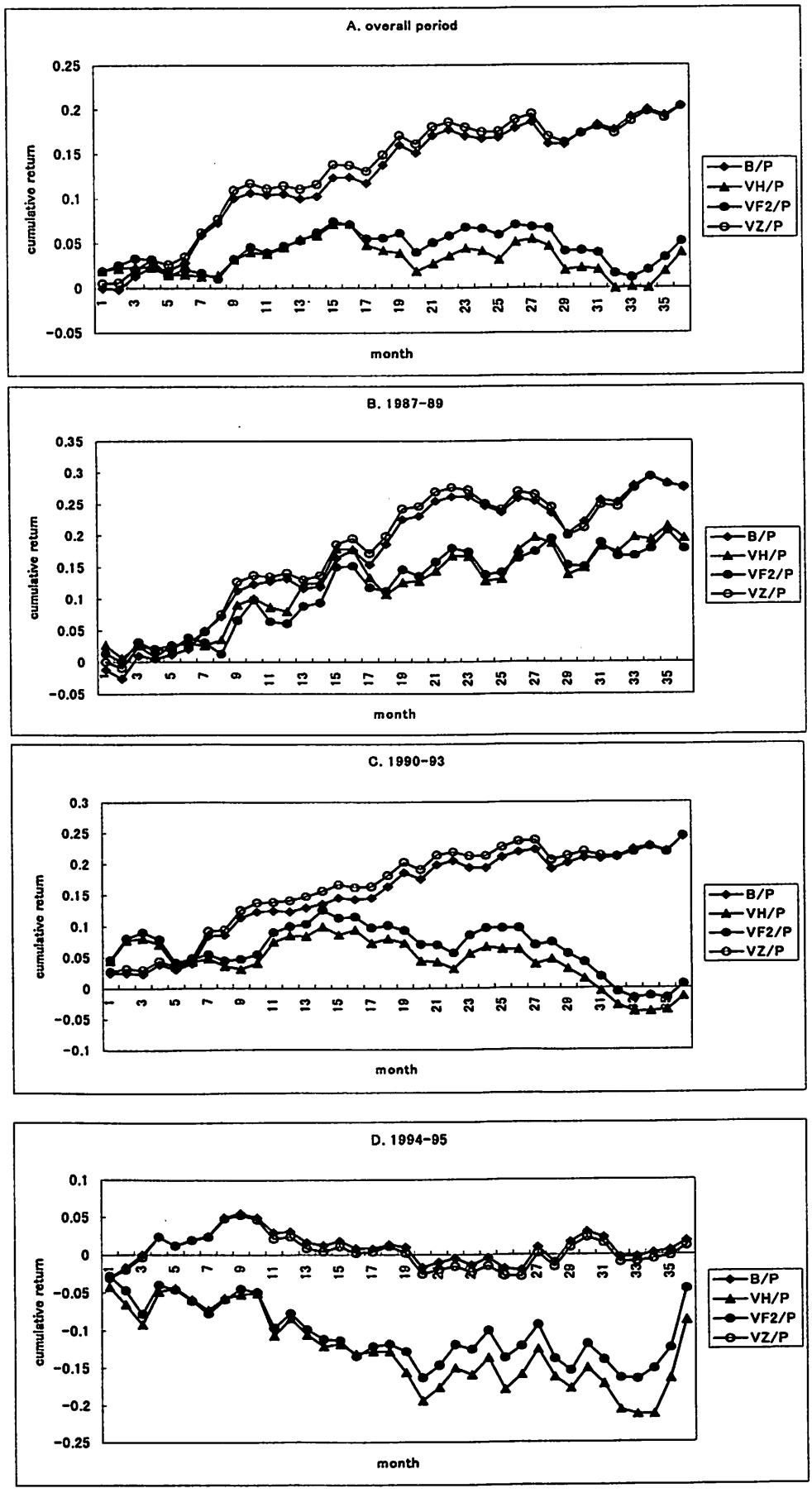

Figure 2 cumulative returns by the consolidated accounting data based strategies