ANALYST FORECASTING BEHAVIOR UNDER UNCERTAIN REGULATORY OUTCOMES: EVIDENCE FROM THE TAX REFORM ACT OF 1986

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ABSTRACT

This study examines the forecasting behavior of financial analysts' surrounding the Tax Reform Act of 1986 (TRA86), which was proposed and debated over a two-year. One of the means of dissemination of this information is through financial analysts who incorporate the wealth re-distribution effect of the proposed tax changes in the forecasts of earnings. Because of the inherent uncertainty during the period in which the proposed tax legislation was debated, we predict that forecasting will be more challenging for firms that were adversely affected by TRA86. We find that both the frequency and magnitude of the forecast revisions was larger for firms that were adversely affected by TRA86. The error and dispersion of these forecasts was also larger, consistent with increased uncertainty and analyst not relying on a common source for information acquisition.

1. INTRODUCTION

Financial analysts play an important role of interpreting and communicating the impact of economic events to the investors. Though the properties of analysts forecasts have been extensively researched in more general settings, our understanding of analysts' incorporation of tax code related information in forecasts is limited. In the context of TRA86, Plumlee (2003) finds that analysts failed to incorporate the more complex components of proposed regulation into their forecasts. More recently, in the context of forecasting of Effective Tax rate (ETR) subsequent to the OBRA, Bratten et al. (2015) show that a majority of analysts' ETR forecasts differed from the ETR guidance provided by the management, and that the analysts' use their information to improve the accuracy of their forecasts. Their findings suggest that analysts have an understanding of tax complexity that is incorporated in the forecasts. Regardless of how well, or lack thereof, the analysts understand the details of the proposed or the existing tax code, timely communication of this information to the investors is equally important. The role that financial analysts play in timely communicating changes in the tax code related information to the investors has not been examined in the prior literature.

The behavior of financial analysts surrounding events, such as tax legislation, should be of interest to capital market participants, particularly when it has large wealth re-distribution implications. Capital market participants who use analysts' forecasts in making investment decisions should be concerned about whether analysts incorporate the effect of these changes in their forecasts. US policymakers have been considering tax reform in recent years. In 2014, the Ways and Means Committee officially released a proposal for tax reform. Our study contributes to the body of literature that examines the efficient of financial analysts in dissemination tax information to the markets (Shaw 1990; Chen et al. 2003; Plumlee 2003).

2. BACKGROUND AND HYPOTHESES

TRA86 affected both corporate and individual taxpayers with the goal of revenue neutrality, which refers to preserving (neither raise nor lower) the overall tax base. However, revenue neutrality inevitably creates winners and losers. Although TRA86 reduced tax rates for both corporate and individual taxpayers, its overall effect was to shift the tax burden away from individuals to corporations. Givoly and Hayn (1991) examine stock prices during the TRA86 debate period and indeed find that TRA86 negatively affected the corporate sector as a whole. In short, corporations appear to be the said losers in the tax reform of 1986. Furthermore, TRA86 also resulted in differential economic effects within the corporate sector, creating relatively few winners and mostly losers. We posit more frequent and substantive revisions of earnings estimates for firms that were more likely to be adversely affected by TRA86 during the year when tax law change was deliberated (the debate period).

H1a: The frequency of analysts forecasts revisions will be larger for firms that are more adversely affected by TRA86 than firms that are less adversely affected by TRA86 during the debate period.

H1b: The magnitude of analysts' forecast revisions will be larger for firms that are more adversely affected by TRA86 than firms that are less adversely affected by TRA86 during the debate period.

Forecasting accuracy is important to financial analysts because it enhances their visibility in the market place, and presumably commanding higher salaries. As complexity increases, forecasting becomes more challenging and forecasts accuracy declines (Haw et al. 1994; Duru and Reeb 2002; Feng and Weimin 2005; Lehavy et al. 2011). Plumlee (2003) examines the relative complexity of six tax law changes resulting from TRA86 and finds that analysts did not incorporate the more complex components into their earnings forecasts. TRA86 introduced complexity into the forecasting process, and since most of the tax provisions eliminated or reduced tax benefits, we predict expect the forecasting will be more difficult for adversely affected firms.

H2: Analysts' forecasts will be less accurate for firms that are more adversely affected by TRA86 than those firms that are less adversely affected by TRA86.

Our third hypothesis makes predictions about analysts' forecast dispersion surrounding the passage of TRA86. Major tax reforms often leave uncertainties as to their effect on firm earnings that are not resolved until the tax return is actually filed in the subsequent year. Forecast dispersion is not only a function of uncertainty, but also reflects disagreement among analysts (Barron et al. 1998). Additionally, prior research has also shown that analysts differ when it comes to their ability to forecast earnings (Sinha et al. 1997). We expect that superior analyst will be able to decipher and incorporate the tax law changes into their forecasts more efficiently than an inferior analyst. Bratten et al. (2015), in the context of ETR forecasting, show that the increase in complexity of the tax code also results in increased variance in the analysts' forecast. These results collectively suggest that there should be greater dispersion among analysts' forecasts during the debate period, particularly for firms that are more affected by TRA86.

H3: The dispersion in analysts' forecasts will be greater for firms that are more adversely affected by TRA86 than those firms that are less adversely affected by TRA86 during the debate period.

3. RESEARCH DESIGN

The first tax reform plan was revealed in late 1984 and hotly debated until the final version was enacted in October 1986. We omit the year of enactment and use 1985 as the debate period and 1987 as the post-enactment period. To identify which firms were more adversely affected by TRA 86, we rely on Givoly and Hayn (1992), which provides a ranking of 40 industry groups based on abnormal returns during the major developments of the debate period, with the highest ranked industry representing the least adversely affected industry. Each firm in our sample is ranked accordingly. To the increase power of our tests, we focus on the firms at the top and bottom of the TRA86 impact ranking. The top (bottom) tercile includes firms that were less (more) adversely affected by TRA86. We use a difference-in-differences design to investigate change in analysts' forecasting behavior (a) during the two periods– before and after the enactment of TRA86 and (b) for two categories of firms– most and least adversely effected by TRA86. To test our first three hypotheses, we use the following model specification:

$$\text{Analyst Variable} = \beta_0 + \beta_1 \, POST + \beta_2 \, LOSERS + \beta_2 \, LOSERS*POST + \text{Controls} \qquad (1)$$

Where *POST* is an indicator variable for forecasts made in the post-TRA86 periods, *LOSERS* is an indicator variable for forecasts made for firms that were adversely affected by TRA86. For hypotheses H1a and H1b, we use the mean forecast revision, *FREV*, and absolute magnitude of the forecast revision, *ABSREV*, as the dependent variable, respectively. For *H2* and *H3*, the dependent variable is replaced with analyst forecast error, *AFE*, and forecast dispersion, *DISP*. *FREV* is the number of forecast revisions of annual earnings (issued between January 1 of the fiscal year until the earnings announcement date), scaled by the number of analysts.

4. DATA & SAMPLE

We obtain firm-level industry affiliation and financial information from Industrial COMPUSTAT and the individual financial analysts' dated earnings forecasts from I/B/E/S U.S. detailed files. To ensure the uniformity of period in which the firms are examined, we confine our analysis to firms with fiscal years ending in December and include only those forecasts that were made after January 1 and prior to the earnings announcement for the fiscal year. These filters reduced the sample to 567 firms. We further restricted our sample to those firms with at least 3 analysts following the firm and a total of 5 forecasts in each period (1985 and 1987). This resulted in a final sample of 216 firms (432 firm-years) with non-missing variables. For our primary analysis, to increase the power of our tests, we omit the firms that were relatively less affected, and retain only those that most positively and most negatively effected by TRA86. The subsample of 294 observations used to test the first three hypotheses is further reduced to 87 observations for the last hypothesis due to missing values of GRREV. In our additional analysis section, we use the full sample and also include an additional continuous variable, RANK that represents the rank of the firms' industry, based on the average market impact of TRA86 on that industry. Highest ranked industries were most negatively effected by TRA86.

Table 1 provides descriptive statistics for the full sample in Panel A. Over the two periods, analysts revised their forecasts about three times a year and generally the forecasts were revised downward. Panel B provides the variable means for the most and least adversely affected group. Hereafter, we refer to the most adversely affected group as Loser (*LOSERS* = 1) and the least adversely affected group as Non-Losers (*LOSERS* = 0) for brevity.

5. RESULTS

Table 2 presents the regression results for *H1a* in the first three columns, with frequency of forecast revisions, *FREV*, as the dependent variable, and for *H1b* in the last three columns, with absolute magnitude of forecast revisions, *ABSREV*, as the dependent variable. The coefficient on *LOSERS* is positive and statistically significant in both models (t-statistic = 3.21 in the *FREV* model and t-statistic = 2.37 in the *ABSREV* model). In addition, the coefficient on the interaction of *LOSERS* and *POST* is negative and significant in both models (t-statistic = -2.11 in the *FREV* model and t-statistic = -2.31 in the *ABSREV* model). These results indicate that analysts revised their forecast more frequently and to a greater extent for Losers than Non-Losers during the debate period. However, during the post-enactment period, we find that the frequency and absolute magnitude of analysts' forecast revisions are both lower for Losers than Non-Losers. The results also indicate no statistically significant difference in the frequency or absolute magnitude of revisions between Losers and Non-Losers over the two periods combined. These results are consistent with more frequent news about TRA86 being released during the debate period and that news having a greater impact on firms that were more adversely affected.

Table 3 presents the regression results for H2 the first three columns, where analyst forecast errors, *AFE*, is the dependent variable. The coefficient on *LOSERS* in the *AFE* model is positive, but not statistically significantly different from zero (t-statistic = 1.19). However, we do find that analysts' forecast errors were larger for Losers than for Non-Losers during the two periods combined (coefficient = 0.456) and statistically significant at the five percent level (p-value = 0.0214). These results are consistent with TRA86 having a greater impact on Losers compared to Non-Losers and the complexity of TRA86 making it more difficult for analysts to forecast earnings for firms that were more adversely affected by it. Columns (4) to (6) of Table 4 present the results for *H3*, where the dependent variable is forecast dispersion, *DISP*. In this model, the coefficient on *LOSERS* is positive and significant (t-statistic = 1.91), which supports the prediction of *H3* that analyst forecast dispersion is greater for Losers than for Non-Losers during the debate period. We do not find evidence of a greater disagreement among analysts for Losers than for Non-losers during the post-enactment period. These results are consistent with greater uncertainty about the effect of TRA86 on future earnings during the debate period than during the post-enactment period.

6. CONCLUSION

In this study, we examine the behavior of financial analysts surrounding the passage of the Tax Reform Act of 1986. Specifically, we conduct tests on the frequency, magnitude, accuracy, and dispersion of earnings forecasts, as well as long-term earnings growth rate estimates during that period to evaluate if the behavior of the financial analysts was consistent with the expected differential impact of the legislation on corporations. Our results indicate that as new information about TRA86 was released during the debate period, analysts revise their forecasts more frequently for firms that were more adversely affected. These revisions during the debate period were also more substantive for firms that were more adversely affected by TRA86. We also find evidence that complexity and uncertainty contributed to greater forecast errors and dispersion for adversely affected firms. Although TRA86 removed many tax benefits and tax incentives for corporations, analysts did not seem to believe that TRA86 would have a lasting negative effect on growth for these adversely affected firms.

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TABLE 1. DESCRIPTIVE STATISTICS

PANEL A. FULL SAMPLE

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
LOSERS	294	0.510	0.501	0.000	1.000	1.000
RANK	432	19.782	12.660	6.000	19.000	32.000
POST	432	0.500	0.501	0.000	0.500	1.000
FREV	432	2.807	0.734	2.320	2.728	3.250
ABSREV	432	0.776	1.870	0.108	0.213	0.616
MREV	432	-0.172	1.146	-0.146	-0.012	0.064
AFE	432	0.409	0.948	0.033	0.112	0.328
DISP	432	0.131	0.203	0.016	0.049	0.158
GRREV	142	-0.842	5.178	-3.000	-0.747	1.667
COVERAGE	432	18.058	12.339	8.000	15.000	26.500
SIZE	432	6.561	1.555	5.352	6.710	7.738
BTM	432	0.679	0.381	0.393	0.611	0.861
ROA	432	0.106	0.118	0.028	0.087	0.176

PANEL B. PARTITIONED SAMPLE

	LOSERS = 1		*LOSERS* = 0		
	N	Mean	N	Mean	Difference
FREV	150	2.960	144	2.658	0.302 ***
ABSREV	150	1.185	144	0.585	0.600 **
MREV	150	-0.258	144	-0.157	-0.101
AFE	150	0.628	144	0.339	0.289 **
DISP	150	0.177	144	0.101	0.076 ***
GRREV	46	-0.173	41	-0.126	-0.047
COVERAGE	150	17.980	144	17.222	0.758
SIZE	150	6.457	144	6.497	-0.040
BTM	150	0.712	144	0.686	0.026
ROA	150	0.091	144	0.096	-0.005

TABLE 2. FREQUENCY AND MAGNITUDE OF ANALYST FORECAST REVISIONS

Dependent Variable	*FREV*			*ABSREV*		
	Coefficient (1)	t statistic (2)	p-value (3)	Coefficient (4)	t statistic (5)	p-value (6)
Intercept	2.252	4.97	<.0001	2.019	1.33	0.1856
LOSERS	0.430	3.21	0.0015	0.929	2.37	0.0187
POST	-0.253	-0.46	0.6436	0.202	0.10	0.9198
*LOSERS*POST*	-0.347	-2.11	0.0358	-1.025	-2.31	0.0213
COVERAGE	0.019	2.89	0.0042	0.089	2.51	0.0125
*COVERAGE*POST*	-0.003	-0.31	0.7571	-0.049	-1.15	0.2521
SIZE	0.009	0.15	0.8786	-0.510	-2.41	0.0165
*SIZE*POST*	0.040	0.51	0.6128	0.176	0.62	0.5338
BTM	0.182	0.65	0.5184	1.095	0.84	0.3995
*BTM*POST*	-0.041	-0.13	0.8979	-0.917	-0.67	0.5040
ROA	-1.158	-1.72	0.0866	-3.244	-1.69	0.0929
*ROA*POST*	1.082	1.24	0.2157	0.694	0.31	0.7579
*LOSERS+LOSERS*POST*	0.084		0.3761	-0.096		0.6381
Adj. R2	0.173			0.180		
N	294			294		

TABLE 3. ANALYST FORECAST ERRORS AND DISPERSION

Dependent Variable	*AFE*			*DISP*		
	Coefficient (1)	t statistic (2)	p-value (3)	Coefficient (4)	t statistic (5)	p-value (6)
Intercept	0.254	0.35	0.7291	0.047	0.31	0.7582
LOSERS	0.214	1.19	0.2356	0.072	1.91	0.0570
POST	0.338	0.38	0.7032	-0.064	-0.35	0.7258
*LOSERS*POST*	0.242	0.90	0.3664	0.006	0.12	0.9025
COVERAGE	-0.006	-0.67	0.5007	-0.002	-0.84	0.3995
*COVERAGE*POST*	-0.007	-0.58	0.5627	0.002	0.54	0.5876
SIZE	0.101	1.09	0.2769	0.017	0.77	0.4410
*SIZE*POST*	-0.068	-0.58	0.5593	-0.001	-0.05	0.9606
BTM	-0.482	-1.16	0.2451	0.030	0.42	0.6724
*BTM*POST*	0.438	0.92	0.3599	0.030	0.33	0.7381
ROA	-2.071	-1.58	0.1150	-0.385	-1.88	0.0611
*ROA*POST*	-0.282	-0.16	0.8767	0.045	0.17	0.8635
*LOSERS+LOSERS*POST*	0.456		0.0214	0.078		0.0143
Adj. R2	0.043			0.056		
N	294			294		