THE ROLE OF LONG RETURNS IN SECURITY VALUATION: INTERNATIONAL EMPIRICAL EVIDENCE

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ABSTRACT

This study examines empirically the role of financial information in explaining long return windows in three major capital markets, UK, USA and France. We hypothesize that the relationship between financial information and security returns improves the longer the return window, and that this robustness depends on the country under investigation. The dataset consists of more than 40,000 USA, UK and French firm-year observations over a nine year period. Multivariate statistical regression analysis is undertaken to test the major research hypotheses. Results indicate that the importance of earnings and cash flows in all three countries over a longer period of time (more than a year and up to five years) is more robust, and that investors perceive earnings and cash flows differently. Interestingly, the importance of earnings and cash flows from one to five years, as measured by the R^2, increases the highest in the USA (almost quadruples), whereas increases the least in France. These results are not that surprising in that in Anglo-Saxon countries such as the USA and the UK the increase is greater than in a code law country such as France. This is due to the fact that in the shorter run there is a greater manipulation of financial information in Anglo-Saxon countries than in more conservative countries such as France.

KEYWORDS: Capital markets, earnings, international, empirical.

INTRODUCTION

The value relevance of earnings in the capital markets has been among the primary empirical questions raised in several studies in the past few decades. The usefulness of earnings has also been examined recently in conjunction with cash flows (Bali et al (2009), Banker et al (2009), Bartov et al., 2001; Charitou and Clubb, 1999, Ball et al., 2000, among others). Empirical research provided evidence to support that earnings are more useful than cash flows in the capital markets. Existing evidence on the association of cash flows beyond earnings in explaining security returns in international capital markets has been inconclusive. The present study hypothesizes the value relevance of earnings and cash flows are country specific and it is affected by the security return measurement interval.

Regression analysis was undertaken to test the major hypotheses. A sample of more than 40,000 USA, UK and French firm year observations was used to test the research hypotheses. The major conclusions of the empirical results are summarized as follows. First, regarding our basic proposition which stated that earnings and cash flows are associated with stock prices in USA, UK and France, results indicate that indeed both earnings and cash flows are taken into consideration by investors in their investment decisions. Second, regarding our major hypothesis which stated that the value relevance of earnings and cash flows depends on the measurement interval and on the country under investigation, our results again support the hypothesis that investors in USA, UK and France perceive earnings and cash flows differently. Interestingly, the importance of earnings and cash flows from one to five years, as measured by the R^2, increases the highest in the USA (almost quadruples, 7% to 27.8%), whereas increases the least in France (almost triples, 11.4% for the annual and 32% for the five year interval). These results are not

that surprising in that in Anglo-Saxon countries such as the USA and the UK the increase is greater than in a code law country such as France. This is due to the fact that in the shorter run there is a greater manipulation of financial information in Anglo-Saxon countries than in more conservative countries such as France (Charitou and Vlittis, 2010; Chan et al., 2006; Ali and Hwang, 2000).

In summary, evidence provided in this study supports that indeed there are substantial differences in the way investors and financial analysts perceive financial information such as earnings and cash flows in UK, France and USA over a longer return interval.

The remainder of the study is organized as follows: Section 2 reviews the related literature, motivates the paper and develops the hypothesis. Section 3 provides details on the research design and methodology, section 4 evaluates the empirical results and, finally, section 5 provides concluding remarks.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Earnings are of primary importance to managers, because managerial executive compensation contracts are usually based on earnings. Managers select financial reporting methods to maximize the value of their bonus awards through incentives created by bonus schemes. In addition, managers indulge in income smoothing, that is, taking actions to dampen fluctuations in their organization's earnings, as investors pay more for a firm with a smoother income stream (Ball et al., 2003; Dechow 1994; Barth et al. 2010).

In the past few years there has been an increased interest in the role of earnings and cash flows in explaining security returns. Since one of the major problems of most earnings-returns studies was the low explanatory power of the models, Easton, Harris and Ohlson (1992) extended this type of research by taking into consideration longer windows for the return and earnings variables. By doing that, one of the major problems associated with earnings that have to do with accruals management is mitigated to a great extent as the measurement interval increases. Easton, Harris and Ohlson (1992) used USA data to examine the association of earnings with security returns. The results of these studies provided evidence that the association of earnings with security returns improves over longer measurement intervals. Easton et. al., showed that for a five-year return interval the R^2 is equal to 33%. For the annual return interval the R^2 is only 5%. These researchers examined only the value relevance of earnings over longer return intervals. Dechow (1994) and Charitou and Clubb (1999) examined also the value relevance of cash flows over longer return intervals. They claimed that cash flows suffer more from timing and matching problems over short measurement intervals because they have no accrual adjustments and the accruals associated with cash flows are long term in nature and they do not reverse in the short-run (Vuolteenaho, 2002; Givoli et al., 2009; Dumontier, 1998).

On the other hand, the explanatory power of earnings compared to cash flows is expected to be the highest over short measurement intervals, because earnings include current and noncurrent accruals that mitigate the timing and matching problems related to the organizations operating, investing and financing cash flows. Moreover, Generally Accepted Accounting Principles trade off relevance and reliability so that accruals do not completely mitigate all short term timing and matching problems in realized cash flows. Dechow (1994) used US data. Results show that there is a relative increase in the explanatory power of cash flows compared to earnings over longer measurement intervals. More specifically, Dechow examined the value relevance of earnings and cash flows over a quarterly, annual and a four year period. The explanatory power of the earnings models as measured by the adjusted R^2 was as follows: 3.24% over the quarterly period, 16.20% over the annual period and 40.26% over the four year return interval. As far as the cash flow models are concerned, the explanatory power of these models as measured by the adjusted R^2 was as follows: 0.01% over the quarterly period, 3.18% over the annual period and 10.88% over the four year return interval. The following conclusions can be drawn from this study: a) that the

explanatory power of earnings is greater in all three intervals tested, b) the explanatory power of both earnings and cash flows increases as the measurement interval increases, and c) the explanatory power of the cash flow models compared to the explanatory power of the earnings model increases at a higher rate as the measurement interval increases. It was less than 1% (R^2 of earnings model divided by the R^2 of the cash flow model) in the quarterly interval and it reached 27% in the four year interval.

In summary, these studies provide evidence that as the measurement interval increases, the value relevance of both earnings and cash flows improves. However, none of those studies used multivariate analysis to examine the value relevance of both earnings and cash flows in all those countries tested in the present study (Orpurt and Zang, 2009; Uhrig-Homburg, 2005).

The present study goes a step further to examine whether the value relevance of earnings and cash flows depends on the return interval in an international setting. Extant evidence on the value relevance of cash flows beyond earnings in different countries over a longer measurement interval has been inconclusive (Barth et al., 2010, Bartov et al., 2001). The inconclusive results in prior studies and the limited research on this issue provide motivation for this study. The research hypothesis to be tested is:

H1:   The value relevance of earnings and cash flows improves as the measurement interval increases.

This research hypothesis tests aforementioned model. In this theoretical framework, the market return variable is considered a function of an aggregate earnings (levels) variable. In this framework, the difference between the market value of equity and the book value of equity at time t is called goodwill. Within this framework the change in goodwill captures the 'measurement error' in aggregate earnings, and, for long return intervals, it is hypothesized that the variation in the earnings variable overwhelms the variation in the earnings' error variable.

Thus far, there has been limited research on the value relevance i) of cash flows over long measurement intervals, and ii) of earnings and cash flows in the USA, the UK and France. Studies by Easton et al. (1992), Dechow (1994), and Charitou and Clubb (1999) examined the value relevance of earnings over long return intervals in the US and UK but these studies failed to examine the value relevance issue for a) both earnings and cash flows and b) for common law and code law countries.

This hypothesis predicts that the value relevance of earnings and cash flows improves in all three countries as the measurement interval is increased. Over longer measurement intervals, cash flows will suffer from fewer timing and matching problems, the importance of accruals will diminish, and therefore, earnings and cash flows are expected to converge as measures of firm performance (Dechow, 1994; Easton, Harris and Ohlson, 1992). Cash flows suffer more from timing and matching problems over short measurement intervals because they have no accrual adjustments and the accruals associated with cash flows are long term in nature and they do not reverse in the short-run (Dechow, 1994). On the other hand, the explanatory power of earnings compared to cash flows is expected to be the highest over short measurement intervals, because earnings include current and noncurrent accruals that mitigate the timing and matching problems related to the organizations operating, investing and financing cash flows. Prior USA and UK studies showed that there is a relative increase in the explanatory power of earnings over longer measurement intervals (Easton, et al., 1992; Charitou and Clubb, 1999; Dechow, 1994).

RESEARCH DESIGN

All industrial firms that belong in the Manufacturing Industry (SIC 100-4299, 4400-4799), Retail Industry (SIC 5000-5999) and Service Industry (SIC 7000-8999) from the USA, UK and France over a nine year period, starting 1998, were selected. Industrial firms that had all annual information available for the computation of operating cash flows, operating earnings and security returns were included in the sample,

resulting in more than 40,000 annual firm-year observations for the USA, UK and France. Consistent with prior empirical studies, observations that were regarded as outliers were excluded from the sample, i.e. observations with absolute change in earnings/market value, absolute change in cash flows/market value, earnings/market value and cash flow/market value greater than 150%. Also observations that were in excess of three absolute studentized residuals were considered outliers and were excluded from the sample. These restrictions resulted in approximate reduction of the sample size of about 2%, which is consistent with prior empirical studies. The final sample size resulted in approximately 35,000 US firm-year observations, 4,100 U.K firm-year observations and 1,100 French firm-year observations.

In order to examine whether investors in UK, USA and France take into consideration in their investment decisions the levels and changes of earnings and cash flows, independent of each other, the following univariate regression model will be used:

Univariate Model

$$RET_{it} = b_0 + b_i X_i + e_I \tag{1}$$

where:

X_i: is replaced by:

E: Operating Earnings

ΔE: Change in operating-earnings

CFO: Operating cash flows

ΔCFO: Change in operating cash flows.

RET_{it}: stock return for firm i measured over a 12-month return interval ending three months after the fiscal-year-end.

b_0: the intercept term

b_i: slope coefficient

e_i: error term

To test whether both the levels and changes of earnings and cash flows are valued differently in the capital markets, namely in USA, UK and France, the following multivariate regression model will be used:

Long Windows Empirical Models

In order to test the research hypothesis which relates to the long return intervals, the dependent and explanatory variables of the following model will be re-estimated.

$$RET_{it} = b_0 + b_i E + b_2 CFO + e_I \tag{2}$$

where:

E: operating earnings

CFO: Cash flow from operations

Security Returns (RET_{it}): The return for security i in year t is defined as cash dividends (DIV), plus capital gains, divided by security price at the beginning of the fiscal year.

$$RET_t = (P_t - P_{t-1} + DIV_t) / P_{t-1}$$

where:

P_t = security price of the firm at the end of the fiscal year t

DIV_t = cash dividends for the year t Returns will be calculated for the 12 months ending 3 months after the fiscal year-end (Easton and Harris, 1992)

In particular, for longer measurement intervals a) the RET is the product of the annual returns over the relevant period, and b) the level of earnings and cash flows is the sum of the deflated earnings and cash flows over the relevant period.

For longer return intervals where the year T is greater than one (T>1 year), the RET is the sum of the annual returns over the relevant period:

$$RET(t,T) = \sum_{i-0}^{T=1} RET_{t-i}$$

where T=return interval; t=current period. For example, the 3-year return will be estimated as follows:

RET(3-year)=((1+RET_t) * (1+RET_{t-1})*(1+RET_{t-2}))-1.

EMPIRICAL RESULTS

Table 1 presents descriptive statistics for all earnings, cash flows and security returns variables examined in the study for all three countries (USA, UK and France) for the recent nine year period. Results indicate the following: a) the mean security return for UK and USA is the highest (0.092 and 0.08, respectively), whereas in France is somewhat lower, 0.055, b) the mean earnings level is higher for UK (0.057) and lowest for USA.

Table 1: Descriptive statistics for all firms for the USA, UK and France

Country	Variable	Mean	Median	Standard Deviation	Minimum	Maximum
	E	-0.008	0.038	0.192	-1.485	1.437
	ΔE	0.007	0.051	0.187	-1.477	1.499
USA	CFO	0.057	0.078	0.226	-1.496	1.488
	ΔCFO	0.009	0.005	0.245	-1.479	1.499
	RET	0.08	0.005	0.562	-0.998	3.778
	E	0.057	0.072	0.144	-1.416	1.375
	ΔE	0.005	0.008	0.157	-1.497	1.481
UK	CFO	0.123	0.107	0.204	-1.397	1.479
	ΔCFO	0.002	0.007	0.245	-1.487	1.356
	RET	0.092	0.073	0.372	-0.957	1.699
	E	0.037	0.058	0.135	-1	0.582
	ΔE	0.008	0.005	0.144	-1.114	1.092
FRANCE	CFO	0.184	0.134	0.237	-0.989	1.455
	ΔCFO	0.006	0.005	0.269	-1.335	1.224
	RET	0.055	0.03	0.318	-0.82	1.16

Where: E: operating earnings, ΔE: Changes in earnings, CFO: Operating cash flows, ΔCFO: changes in Operating Cash flows; RET: annual security returns

For the French dataset the mean of earnings levels is 0.037; c) the mean of the cash flow levels is shown to be the highest for the French dataset (0.184) and lower for UK and USA (0.123 and 0.057, respectively); d) as expected the standard deviation of the levels and changes of cash flows is always higher than the level and changes of earnings in all three countries. These results are consistent with the results provided in prior empirical studies. Moreover, untabultated correlation analysis results indicate that there are no significant correlations that may possibly affect the results.

To test the hypothesis proposed in this study, both univariate and multivariate regression analysis results are provided in this section. Univariate results presented in Table 2 indicate the following. First, as far as the value relevance of earnings is concerned, as expected, the results indicate that both the levels and changes in earnings are positive and statistically significant in all three countries. Interestingly, the size of the levels of earnings and the size of the changes in earnings is approximately equal in all three countries, in spite of the fact that the French financial reporting system is much more conservative. Specifically, the coefficients of the level of earnings are 0.759, 0.767 and 0.793 for the USA, the UK, and France, respectively. The coefficients of the changes in earnings are 0.701, 0.612 and 0.669, for the US, UK and France, respectively. As far as the R^2 is concerned, results indicate that French earnings (levels and changes) are more value relevant than the earnings in the USA and the UK, even though the financial reporting system in France in more conservative. The R^2 for the level of earnings is 11.20%, 8.80% and 6.70% for France, the UK and the USA. The same ranking applies to the changes in earnings, although the R^2 is somewhat lower, indicating that the level of earnings is more value relevant than the changes in earnings.

Table 2: Univariate Regression Analysis Results for USA, UK and France

Xi E	USA	UK	FRANCE
Coefficient	0.759 *	0.767 *	0.793 *
t-statistic	50.864	20.128	12.179
P-value	0	0	0
N	35873	4178	1165
F-value	2587.17 *	405.13 *	148.33 *
R^2 Adj	6.70%	8.80%	11.20%
ΔE			
Coefficient	0.701 *	0.612 *	0.669 *
t-statistic	45.442	17.205	10.86
P-value	0	0	0
N	35873	4178	1165
F-value	2064.98	296.00 *	117.94 *
R^2 Adj	5.40%	6.60%	9.10%
CFO			
Coefficient	0.447 *	0.451 *	0.197 *
t-statistic	34.617	16.46	5.061
P-value	0	0	0
N	35873	4178	1165
F-value	1198.31 *	270.94 *	25.61 *
R^2 Adj	3.20%	6.10%	2.10%
ΔCFO			
Coefficient	0.196 *	0.202 *	0.072 **
t-statistic	16.274	8.686	2.09
P-value	0	0	0.037
N	35873	4178	1165
F-value	264.84 *	75.45 *	4.36 **
R^2 Adj	0.70%	1.80%	0.30%

where E: operating earnings, ΔE: Changes in earnings, CFO: Operating cash flows,ΔCFO: changes in Operating Cash flows; RET: annual security returns. All Independent variables (E, ΔE, CFO, ΔCFO) are deflated by the market value of the firm at fiscal year end of the previous year. *, **, *** statistically significant at a=1%, 5% and 10%, respectively.

As far as the value relevance of cash flows is concerned, as expected, results indicate that cash flows are value relevant in all three countries. All the coefficients of the levels and changes in cash flows are positive and statistically significant. The size of the coefficients of cash flows as well as the magnitude of the R^2 are somewhat higher in the Anglo-Saxon countries, suggesting that cash flows could be less value relevant in France. Moreover, as it was expected the size of the earnings coefficients and the magnitude of the R^2 are relatively higher than the equivalent cash flow statistics. These results are consistent with our hypotheses, expectations and consistent with prior empirical evidence. This is due to the fact that earnings are considered more value relevant in the stock markets.

Results in Table 3 provide multivariate regression results over longer-return intervals. Thus far, results were presented using annual return windows. That means that all returns, earnings and cash flow variables included in the model were measured on an annual basis, i.e., the way they are reported in the annual reports of the firms. Results in this table are presented for measurement intervals of 1, 2, 3, 4 and 5 years, for each country. For example, to test the five year model all variables included in the model, returns, earnings and cash flows were measured over a five year period., i.e. for the earnings variable the earnings of a five year period were added together. The same applies to cash flows and returns. Results in table 3 indicate the following: first, as expected, for all countries, the five-year models have the highest R^2, compared to the other one to four year models. For example, for the one year models, the R^2 is 11.4%, 10.1% and 7%, for France, the UK and the USA respectively, whereas the five year model R^2 results are 32%, 35.2% and 27.8%, for France, the UK and the USA, respectively.

Table 3: Multivariate Regressions over Longer Return Intervals (Model : Ret = a + b_1 E + b_2 CFO)

Country	Interval	Constant	E	CFO	R^2 Adj %
FRANCE	Annual	0.014	0.756	0.072	11.40%
		-1.23	(11.13')*	(1.87')***	
	2 Years	0.04	1.05	0.09	20.30%
		(2.3)**	(15.6)*	(3.22)*	
	3 Years	0.09	0.82	0.12	26.50%
		(3.5)*	(14.4)*	(4.2)*	
	4 Years	0.063	0.92	0.17	30.60%
		(1.83)***	(13.9)*	(5.76)*	
	5 Years	0.1	0.64	0.23	32.00%
		(1.89)***	(10.3)*	(6.7)*	
UK	Annual	0.029	0.598	0.239	10.10%
		(4.49')*	(13.68')*	(7.71)*	
	2 Years	0.11	0.73	0.06	15.20%
		(14.8)*	(24.3)*	(2.8)*	
	3 Years	0.16	0.72	0.12	19.40%
		(14.6)*	(23.4)*	(5.4)*	
	4 Years	0.17	0.94	0.146	24.50%
		-10.8	-26.3	-6.8	
	5 Years	8.5	1.13	0.07	35.20%
		(8.2)*	(29.5)*	(1.68)***	
USA	Annual	0.076	0.666	0.152	7.00%
		(25.27)*	(38.13)*	(10.28)*	
	2 Years	0.26	0.57	0.11	9.80%
		(43.6)*	(35.5)*	(7.4)*	
	3 Years	0.45	0.6	0.09	13.60%
		(44.8)*	(32.6)*	(5.9)*	
	4 Years	0.57	0.62	0.15	21.40%
		(44.3)*	(38.5)*	(9.4)*	
	5 Years	0.68	0.75	0.16	27.80%
		(43.7)*	(41.3)*	(9.53)*	

where E: operating earnings, CFO: operating cash flows, RET: security returns
*, **, ***: statistically significant at a= 0.01, 0.05 and 0.10 respectively. *First line is the slope coefficient, 2nd line is t-statistic)*

As it can be seen, by increasing the measurement interval from one year to five years, the explanatory power of the regression model increases about three times. From the practitioner point of view, it means that the annual earnings and cash flows explain about 11.4% of the variability of the security returns in France, but in a five-year period the same earnings and cash flows explain about 32% of the variability of stock returns. Second, again as hypothesized, in all countries, the explanatory power of the model increases when I increase the measurement interval. For example, in the UK, the R^2 is only 10.1% in the one year interval, and it goes up to 15.2%, 19.4%, 24.5% and finally to 35.2% when I increase the interval to two, three, four and five years. Third, in all models tested for all countries for all measurement intervals, the earnings variable is positive and statistically significant, as it was expected. Fourth, similar to the earnings variable, the cash flow variable is positive and statistically significant in all models tested in all three countries. Fifth, interestingly, the explanatory power of the model from one to five years increases the highest in the USA (almost quadruples, 7% to 27.8%), whereas increases the least in France (almost triples, 11.4% for the annual and 32% for the five year interval). These results are not that surprising and they are consistent with my expectation. These results are due to the fact that in the shorter run there is a greater manipulation of financial information in Anglo-Saxon countries than in more conservative countries such as France. Thus, in Anglo-Saxon countries, such as the USA and the UK, the increase in the value relevance of financial information over longer-return windows is greater than in a code law country, such as France.

CONCLUSIONS

This major objective of this study was to examine empirically the value relevance of financial information in explaining long return windows in three major capital markets, UK, USA and France. It was hypothesized that the relationship between financial information and security returns improves the longer the return interval, and that this increase in power depends on the country under investigation. The dataset consists   of more than 40,000 USA, UK and French firm-year observations over a nine year period. Multivariate statistical regression analysis is undertaken to test the research hypothesis.

Consistent with the hypothesis tested and expectations, results indicate that the value relevance of earnings and cash flows depends on the measurement interval and on the country under investigation. , i.e., that investors in USA, UK and France perceive earnings and cash flows differently. Results show that the importance of earnings and cash flows from one to five years, as measured by the R^2, increases the highest in the USA, whereas increases the least in France. These results may be due to the fact that in the shorter run there is a greater manipulation of financial information in Anglo-Saxon countries than in more conservative countries such as France. The results of this study maybe limited due to the fact that there are timing and matching differences, as well accounting differences over time. Future research may take those factors into consideration, if any, in evaluating the value relevance of financial information. Nevertheless, this study encourages further research that may improve our understanding of the value relevance of financial information explaining stock prices in international capital markets. Future research may examine in more depth industry and firm specific factors, such as earnings transitoriness, default risk, and quality of financial information.

There exist practical implications as well from this study and should be of great importance to the major stakeholders such as investors, creditors, financial analysts, especially with the latest events that are taking place, and the major collapses of giant organizations worldwide such as Lehman Brothers, Bear Stearns, General Motors, among others. Regulatory bodies, investors, financial analysts and the financial press, blamed among others, the possible manipulation of financial information supplied to the investors by these organizations. The question raised, is whether this type of information is taken into consideration by investors in their investment decisions.

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