

# Does Herding Behavior Affect Analysts' Earnings Forecasts? A Study of French Listed Firms

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## Abstract

This paper examines factors that seem to influence analysts' forecasts accuracy over the period 1996-2000. We aim to identify superior analysts in terms of forecasting accuracy. First, our analyses show that more accurate analysts are not more experienced nor have a fewer number of firms followed. However more accurate analysts work for larger brokerage houses, issue shorter forecast horizon. Furthermore, analysts who distort their own information and tend to herd provide biased forecasts. Then, we investigate whether analyst experience and /or brokerage's size attenuate the positive association between herding behaviour and forecast errors. We predict that more experienced and employed by larger brokerages have less incentives to herd. We find a negative and significant association between herding-related-errors and analysts' experience, but we fail to find evidence of the reduction in the association between herding and forecasts errors as brokerage size increases.

**Keywords:** Financial Analyst, Earnings forecast, Herding Behavior, Experience, Brokerage house.

## 1. Introduction

Financial analysts take a place more and more growing on the financial markets. Their task is not reduced solely to the formulation of the recommendations. A significant part of their work also consists in informing the investors on the conjectures of the company. In an uncertain context, his task is summarized to provide estimates or forecasts as precise as possible on the performance of firms whose investors wish to invest there. First, analyst collects financial and economic data relating to the followed firms, and then he analyses and interprets this information. Finally, he formulates earnings forecasts. In the analysis of the same company, earnings forecasts can diverge according to analysts. A huge literature examines if there are more accurate analysts among others. In this aims, several empirical studies were realized and they led to divergent results. Indeed, the very first studies including Brown and Rozeff (1980) find no evidence of the differences between financial analysts. On the other hand, more recent studies, such as, Stickel (1992), Sinha, Brown and Das (1997) find that differences exist in financial analysts' forecasts accuracy: certain analysts provide more accurate forecasts than others. Giving those results, an important goal of American research is to focus on the determinants of individual analyst earnings forecast accuracy. Mikhail, Walther and Willis (1997), Clement (1999), Jacob, Lys and Neale (1999) investigate the effect of experience, the size of the brokerage house that employs analyst and the number of firms and industries followed by an analyst, on his forecast accuracy.

In a French context, Bolliger (2003) investigates the determinants of financial analysts' forecasts differential accuracy during the 1995-1999 period. He examines the relation between forecast accuracy and financial analysts' experience, the size of the brokerage houses (employer) and the complexity of their portfolios.

In this paper, we extend these studies by further examining the effect of a herding behaviour among analysts on their forecast accuracy. For our part, we think that the interaction between analysts leads to a mimetic behavior among certain analysts who abandon their own forecasts to adopt those of the others or to approach to the consensus. Such behavior can affect the analyst's forecast since analyst cared more for her personal reputation than forecast accuracy. This study is the first to consider herding behavior as a determinant of financial analysts' forecasts differential accuracy in a French context.

To our knowledge, Bolliger (2003) is the only study to investigate the determinants of financial analysts' forecasts differential accuracy in 14 different European stock markets (France among other countries). Our study is similar in spirit to Bolliger (2003) in that we investigate whether forecast accuracy is associated with experience, broker size, number of firms followed by analyst and forecast horizon, but our study differs from Bolliger (2003) from three important ways. First, we extend Bolliger (2003) by examining the effect of herding behaviour among financial analysts for explaining forecast errors. Second we consider experience and broker size could attenuate herding-related-error, then we focus whether the association between herding behaviour and analysts' forecasts errors is a function of their experience and /or broker affiliation? Specifically, we predict that the association between herding and forecast errors will be lower when analysts are more experienced and / or when they come from large brokerage houses. To our knowledge our study is the first to investigate such interaction. Third, we focus on analysts' one-year-ahead earnings forecast, whereas Bolliger (2003) focus on the current year earnings forecast.

We contribute to the literature in at least two ways. First, we extend previous researches by further examining whether herding behavior affects analysts' forecasts as well as analyst's experience, brokerage size for which they work, number of firms followed by analyst and forecast horizon or age. Second we investigate whether the association between herding and forecasts errors is moderated by experience and /or brokerage affiliation.

The paper is organised as follows. Section 2 reviews prior literature and describes our hypothesis. Section 3 presents our empirical predictions. Section 4 explains the sample, describes variables and empirical models. Section 5 presents the results, and section 6 concludes.

## **2. The literature Review**

### *2.1 Herding behavior among analysts*

Herding behavior attracted the attention of several researchers. Welch (2000) shows that analysts are mistaken when they decide to issue forecasts which are closer to consensus. For a question of reputation, several authors show that the goal of analysts is not necessarily to produce forecasts which reflect their own information but those which investors think that are better. (Scharfstein and Stein, 1990 ; Trueman, 1994 ; Hong, Kubik and Solomon, 2000).

Trueman (1994) suggests that analysts care about their career. This leads certain analysts to abandon their own forecasts to copy superior forecasters. Trueman (1994) adds that the lack of capacity and experience can incite analysts to imitate others' decisions even if their private information justifies a different forecast.

A more recent study developed by Hong et al. (2000) concludes that less experienced analysts are more likely to herd than experienced analysts. Indeed more one is experienced and considered, less one's decisions will be influenced by those of others. Authors explain this result by the fact that the brokerage houses can eliminate less experienced analysts who try to be distinguished from the consensus by bold forecasts. Less experienced analysts avoid issuing a distinct forecast and tend to imitate consensus to not endanger their reputation.

Zitzewitz (2001), Ottaviani and Sorensen (2003) explain herding behavior by the fact that some analysts abandon their own sources of information for blindly following the behavior of others, while the distinction from the consensus reveals a self-confidence, charisma and possession of better information. In the same way, Galanti (2004) conjectures that a distinct forecast from consensus is more accurate than imitated since the analyst has spent all his time studying the company followed. Therefore information obtained by this analyst has a good quality and may even be better than the average forecast (consensus).

Clement and Tsy (2005) are the first to investigate the relation between herding behavior and forecast accuracy. First they classify analysts' earnings forecasts by herding or bold. Then they reported that bold forecasts are more accurate than herding forecasts since bold forecasts have reflected new and pertinent information. Clement and Tsy (2005) add that analysts who have private information issue certainly a bold forecast. Over all this study suggests that bolder analysts are more accurate since they have had information that others don't have. Hence, results of this study attest the superiority of bold forecasts compared to imitated forecasts.

### *2.2 Experience*

Several researches in various disciplines explain the effect of experience on the achievement of individual's professional task. Learning by doing theory (Arrow 1962, Atkinson and Stiglitz, 1969) highlights the importance of this form of learning and associates it in what the action and the practice make it possible to build empirically a certain extent knowledge. According to Dewey (1938), Lindeman (1926) and Knowles (1990), learning is a relatively permanent change of the behavior acquired by the experience. Another stream of research combines

experience with learning. For instance Klob (1975) presents learning as *the process by which the knowledge is created through the transformation of the experience*.

Several authors extend these studies by examining the effect of experience on task's efficiency. Thus, Famose (1990) defines efficiency as «the relationship between the level of performance obtained and the cost of the activity implemented to obtain it ». Georges (1985) gives an example to show that a strategy of expert can appear largely more efficient than that of the beginner. In the same way, Lent, Brown and Hackett (1994) consider the experience as a determinant of individual's performance. In their study, the authors stipulate that individual's success is mainly reinforced by his experiences. This conclusion is interesting because it allows to consider the experience as a premise on which comes to build a capacity, a competence or a performance.

In summary these studies suggest that experience constitutes a solid base to understand the performance in the execution of the task. These studies incite us to investigate the role of experience on the financial analysts' activity. In this setting, several accounting studies examine questions like: does experience affect the accuracy of an individual analyst's forecast? [see, for example, Hutton and McEwen (1997), Mikhail, Walther, and Willis (1997), Clement (1999), Jacob et al. (1999), Mikhail, Walther, and Willis (2003), Bolliger (2003), Clement and Tsy (2005)]. Using a quarterly data, Mikhail et al. (1997) find that forecast accuracy improves as analyst experience increases. Sinha, Brown and Das (1997) provide an implicit obviousness according to which analysts can improve the quality of their forecasts with experience. In a Japanese context, Hutton and McEwen (1997) (Note 1) investigate a qualitative study in order to explore factors influencing analyst forecast accuracy. Authors conclude that inexperienced analysts process all the available data whereas more experienced analysts use the most adequate information and employ also more elaborate strategies. Similarly, Clement (1999) finds that more experienced analysts provide more accurate forecasts. However, this result is inconsistent with this in Jacob et al.'s (1999) study. Controlling for analysts' aptitude (Note 2) Jacob et al. (1999) find that forecast accuracy does not improve with experience. The association between experience and forecast accuracy has attracted also certain recent research such as Mikhail et al. (2003) (Note 3) and Clarke and Subramanian (2005), who provide an additional evidence according to which more experienced analysts are more accurate.

### *2.3 brokerage house's size*

Stickel (1995) underlines the effect of brokerage house's resources on the success of analysts. Stickel (1995) predicts that a higher performance would be deduced by the belonging to a large brokerage house. In the same spirit, Jacob et al. (1999) show a positive relation between brokerage house's size and financial analysts' forecast accuracy. This is explained by tools that are made available to analysts, opportunities for training and evaluation procedure. Clement (1999) find a similar result and he adds that large brokers may provide superior resources. Besides, analysts employed by large brokerage houses may have easier access to better data sets and administrative support, have a good relationship with managers. Hence, they are more likely to acquire new information that all do not have. Brown (1999), draws the same conclusion since he has shown that analysts employed by larger brokerage houses issue more accurate forecasts.

### *2.4 Analyst's portfolio*

Prior research examines whether the number of firms followed by an analyst (Note 4) affect his forecast accuracy. Clement (1999) finds that forecast accuracy is negatively associated with the number of firms followed by the analyst and he explains this result by the fact that it is so difficult to an analyst to follow a large set of firms. Jacob et al. (1999) assume that analysts can follow several firms at the same time, and this, does not affect, nor reduce the analyst's forecast quality. Surprisingly, authors fail to confirm empirically this reasoning and results show a relation significantly positive between the number of firms followed by an analyst and the forecast errors. A similar conclusion is also documented by Brown (2001).

### *2.5 forecast horizon*

Several studies showed in terms of precision and accuracy the superiority of analysts' forecasts compared to those generated by time-series models (see for example, Brown, Griffin, Hagerman, and Zmijewski, 1987a, 1987b ; Fried and Givoly, 1982). Mendenhall et al. (1997) explain this superiority by the fact that analysts use relevant and especially recent information.

Several researchers consider that forecasts closer to the announcement date are more accurate (see Brown et al, 1987; Kross, Ro and Schroeder, 1990). Indeed, forecast horizon or age is adopted in several studies as a determinant of analysts' forecast accuracy. Forecast horizon is the difference between the forecast date and the earnings announcement date. In this sense, O'brien (1990) investigates the relation between horizon and forecasts errors and the empirical result underlines a relation significantly positive.

A more recent research realized by Mikhail et al. (1997), tests the effect of forecast horizon on forecast accuracy. Results indicate that more precise forecasts are those published closer to announcement dates. In the same order of ideas, Clement (1999) controls for forecast age when evaluating differences in analysts' forecasts accuracy and he finds that forecast errors increase with forecast age. Jacob et al. (1999) and Brown (1999) provide similar evidence. Jacob et al. (1999) find that the last forecast appears to be better. Brown (1999) shows that forecast age is an important factor to explain differences in analysts' forecasts accuracy.

### 3. Objectives and hypotheses of the research

In this paper we examine the determinants of analysts' forecasts superiority in a French context. The main objective of our study is to explain analyst's earnings forecast error according some factors related to analyst characteristics (experience, broker size, portfolio, forecast horizon and herding behavior). The interest consists in more explaining the differential forecast accuracy among financial analysts. Our study rest on the following idea: certainly there are factors witch could explain the superiority of certain analysts in terms of forecast accuracy. The literature advanced above leads us to formulate our hypothesis:

#### 3.1. *Effect of experience on forecast accuracy*

According to learning by doing theory we predict in our study that analyst could improve his forecast accuracy with experience. Moreover several Anglo Saxon studies affirm that experience allows analysts to acquire a great knowledge which enables them to publish precise forecasts. Our first hypothesis to be tested is thus:

H1: more experienced analysts provide more precise forecasts.

#### 3.2. *Effect of brokerage house's size on forecast accuracy*

Using the size of brokerage house as proxy of both the effectiveness and the rapidity of orders' execution, Clement (1999), Jacob, Lys and Neale (1999) among others underline a positive relation between the broker's size and the forecast accuracy. Consistent with these studies we conjuncture that in French context, the association between forecast accuracy and brokerage houses will be positive. In fact, we assume that larger brokers favour more information for analysts employed there. Also, larger brokerage houses employ and attract certainly more efficient analysts in terms of forecast accuracy. In this way, our second hypothesis is:

H2: analysts employed by larger brokers provide more accurate forecasts than their peers.

#### 3.3. *Effect of portfolio on forecast accuracy*

With respect to the number of firms followed by an analyst (portfolio) we predict a negative association between forecast accuracy and analysts' portfolio. Analyst could lose one's concentration while he is moving on a firm to another, this leads to our third hypothesis:

H3: analysts who follow a large number of firms issue less accurate forecasts than the others.

#### 3.4. *Effect of forecast horizon on forecast accuracy*

With respect to the forecast horizon and consistent with prior research, we assume that analysts revise their forecasts as they have new information, thus when earnings announcement dates are approaching, analysts incorporate in their forecast more recent information, this guarantees its credibility. Moreover, bias in long-horizon forecasts could be explained by uncertainty setting. As uncertainty decreases with time, the nearest forecast to the announcement date reflects certainly all information available and consequently, it is more precise. Hence, we propose to test the following hypothesis:

H4: the higher the forecast horizon is, the more the error is significant.

#### 3.5. *Effect of herding behavior on forecast accuracy*

Analysts are in a good position to issue accurate forecasts because of their education, their training and their experience. However it is difficult to act according his only and single information. Indeed Trueman (1994), Hong et al.(2000) suggest that various pressures encourage the analysts to abandon their own forecasts to herd toward the consensus.

If the analyst acts differently, he could endanger the profitability of the firms followed and he is exposed to criticisms of his employer who is likely to lose his customers. However, analyst who has new and pertinent information is more likely to move away from the consensus and issues a bold forecast. Thus Clement and Tsy (2005) assert that bold forecasts are more accurate and reflect more relevant information than herding forecasts. In agreement to this paper we expect a positive association between forecast errors and herding behavior. This leads to our fifth hypothesis

H5: analysts who tend to herd provide forecasts less precise than bold analysts.

Moreover, Hong et al. (2000), Clement and Tse (2005) report that experience is negatively associated with herding behavior. These studies encourage us to examine the effect of experience on the association between forecast accuracy and herding behavior. Especially we expect that the experience could attenuate the relation between forecast accuracy and herding behaviour. We propose to test the following hypothesis:

H6: herding-related-errors is attenuated as analyst's experience grows.

Besides Clement and Tse (2005) and Krishnan et al.(2005) show that analysts who work for important brokerage houses have less incentive to herd, this leads us to expect that the association between herding behavior and forecast errors will be lower when analysts come from larger brokerage houses. We propose to test the following hypothesis:

H7: herding-related-errors is attenuated when analysts are employed by larger brokerage houses.

#### 4. Data and Methodology

##### 4.1. Sample selection

Our sample begins with all French listed firms with December 31<sup>st</sup> fiscal year ends, appearing in the Worldscope database over the 1996-2000 five-year period. We exclude all financial establishments (SIC codes 6000–6999) because of the specificity of their rules accountants. Institutional Broker Estimate System (I/B/E/S) detail file provides individual analysts' earnings forecasts. We use the last annual forecast made by each analyst within 180 days before year  $t-1$  earnings announcement date. We use also the earnings per share (EPS) provided by I/B/E/S Actual file (Note 5). Earnings announcement dates are obtained from two sources: press release and I/B/E/S Actual file. We require non-missing information for (1) the value of the forecast, (2) the corresponding actual earnings, (3) date of the forecast, (4) earnings announcement date. We exclude firms followed by fewer than three analysts. We require each analyst to issue at least two forecasts for firm  $j$  in year  $t$ . The final sample consists of 262 companies and 10600 firm-year observations for 1996-2000 period.

##### 4.2. Measurement of variables and empirical model

Following prior research we describe our variables:

###### 4.2.1 Dependent variable

Our dependent variable is the relative forecast accuracy measured by the proportional mean absolute forecast error ( $PMAFE$ ) and is calculated as:

$$PMAFE_{ijt} = AFE_{ijt} - \overline{AFE_{jt}} / \overline{AFE_{jt}}, \text{ (Clement 1999)}$$

Where:  $AFE_{ijt}$  is analyst  $i$ 's absolute forecast error of firm  $j$  for year  $t$ . Forecast error is defined as the difference between I/B/E/S actual annual earnings and the last forecast made by the analyst before year  $t-1$  earnings announcement.

$\overline{AFE_{jt}}$  : is the mean absolute forecast error for firm  $j$  for firm  $t$

$PMAFE_{ijt}$  controls for firm-year effects by subtracting from analyst  $i$ 's absolute forecast error of firm  $j$  for year  $t$  ( $AFE_{ijt}$ ) its related firm-year mean ( $\overline{AFE_{jt}}$ ) (Note 6). Following Clement (1999), deflating  $AFE_{ijt} - \overline{AFE_{jt}}$  by  $\overline{AFE_{jt}}$  reduces heteroscedasticity. (Note 7).

###### 4.2.2 Independent variables

$DGEXP_{ijt}$ , is a measure of analyst  $i$ 's experience, calculated by the number of years that analyst appears in the data set minus the average number of years analysts following firm  $j$  at time  $t$  appeared in the data set.

$DBZISE_{ijt}$  is a measure of the analyst  $i$ 's brokerage size, calculated as the number of analysts employed by the brokerage employing analyst  $i$  following firm  $j$  in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ .

$DAPFE_{ijt}$  (analyst's portfolio) is a measure of the number of firms analyst  $i$  follows calculated as the number of firms followed by analyst  $i$  following firm  $j$  in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ .

$DAGE_{ijt}$  (forecast age or horizon) is a measure of time from the forecast date to the year  $t-1$  earnings announcement date, calculated as the forecast horizon (the number of days between the forecast date and the earnings announcement date) for analyst  $i$  following firm  $j$  in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ .

$HERD_{ijt}$  is an indicator variable for herding of analyst  $i$ 's forecast for firm  $j$  in year  $t$ . It is equal to 1 if analyst  $i$ 's forecast moves away from the analyst's own prior forecast and toward the consensus. It is set to 0 otherwise: Bold (Clement and Tse, 2005). In other words the classification of forecast (herd or bold) is based on the analyst's forecast revision:

- Analyst issues a herding forecast when he revises his prior forecast to approach the consensus.
- Analyst issues a bold forecast when it is above both his own prior forecast and the consensus, or else below both.

Figure 1 explains more this variable by providing a bold or herding forecast's classification. In the same way, this variable is adjusted by its related firm-year mean.

After defining variables, we have to describe the model adopted to test our hypothesis. Thus, in a first step we extend Bolliger (2003) by examining how herding behaviour among financial analysts could affect their forecasts accuracy. We follow Clement's (1999) model and we extend it by addition a variable which measures herding behavior ( $HERD_{ijt}$ ). Thus, we obtain a new model, based on our annual data, which is expressed as follows:

$$PMAFE_{ijt} = a_1 DGEXP_{ijt} + a_2 DBZISE_{ijt} + a_3 DAPFE_{ijt} + a_4 DAGE_{ijt} + a_5 DHERD_{ijt} + \varepsilon_{ijt}$$

We do not include a constant term since we have adjusted dependent and independent variable with their respective means. By adjusting variables, we control for firm-year effect (see Greene, 1991).

In a second step, we aim to check how the association between herding behaviour and forecast errors is linked with financial analysts' experience and the size of brokerage houses they work for. So, we add the two interaction terms  $DGEXP * DHERD$  and  $DBZISE * DHERD$  to the model. Then, we obtain the following equation:

$$PMAFE_{ijt} = b_1 DGEXP_{ijt} + b_2 DBZISE_{ijt} + b_3 DAPFE_{ijt} + b_4 DAGE_{ijt} + b_5 DHERD_{ijt} + b_6 DGEXP_{ijt} * DHERD_{ijt} + b_7 DBZISE_{ijt} * DHERD_{ijt} + \omega_{ijt}$$

## 5. Results Analysis

### 5.1. Descriptive statistics and correlations

Table 1 presents descriptive statistics of each variable characterizing our study. Consistent with prior studies, we find that analysts' one-year-ahead earnings forecasts are optimistic on average, the mean forecast error is -1.689. However the median is -0.170 this confirm several studies which document that analysts become less optimistic when earnings announcement dates are approaching (e.g, O'Brien, 1988). Giving that analysts are optimistic, it's crucial to know factors which contribute to such bias. Average experience is 4.102, the majority of analysts constituting our sample are novices. Analyst follows on average 11 French firms and brokerage houses employ approximately 20 analysts on average. With respect to horizon or age forecast, we note that the average age is 49 days, analysts seem to wait for the earnings announcement dates to issue their forecasts certainly to could incorporate more information. With respect to herding behavior, 46.30% (the number of herding forecasts / total forecasts) of analysts tend to herd, i.e to imitate the consensus, the others tend to move away from consensus by issuing bold forecast.

In order to avoid problems of autocorrelation between our independent variables, a survey of correlation matrix has been done: table 2 presents the Pearson correlations for independent variables adopted in our model. In terms of Pearson correlation coefficients, we find that general experience is positively and significantly correlated with analyst's portfolio. Therefore, more experienced analysts tend to follow a larger number of firms. To avoid all problems of auto-correlation in a linear regression, we are going to treat the variable experience and analyst's portfolio in two separated equations. Finally we test our hypothesis using the following equations:

$$PMAFE_{ijt} = \alpha_1 DGEXP_{ijt} + \alpha_2 DBZISE_{ijt} + \alpha_3 DAGE_{ijt} + \alpha_4 DHERD_{ijt} + \varepsilon_{ijt}; \quad (1)$$

$$PMAFE_{ijt} = \beta_1 DAPFE_{ijt} + \beta_2 DBZISE_{ijt} + \beta_3 DAGE_{ijt} + \beta_4 DHERD_{ijt} + \varepsilon'_{ijt}. \quad (2)$$

$$PMAFE_{ijt} = \gamma_1 DGEXP_{ijt} + \gamma_2 DBZISE_{ijt} + \gamma_3 DAGE_{ijt} + \gamma_4 DHERD_{ijt} + \gamma_5 DGEXP_{ijt} * DHERD_{ijt} + \gamma_6 DBZISE_{ijt} * DHERD_{ijt} + \omega_{ijt} \quad (3)$$

$$\begin{aligned} \text{PMAFE}_{ijt} = & \delta_1 \text{DAPFE}_{ijt} + \delta_2 \text{DBZISE}_{ijt} + \delta_3 \text{DAGE}_{ijt} + \delta_4 \text{DHERD}_{ijt} \\ & + \delta_5 \text{DGEXP}_{ijt} * \text{DHERD}_{ijt} + \delta_6 \text{DBZISE}_{ijt} * \text{DHERD}_{ijt} + \omega'_{ijt} \end{aligned} \quad (4)$$

First, we predict that forecast errors decrease with experience and brokerage house's size and increase with herding behaviour, number of firms that analyst follows and forecast horizon. Then, we expect that the positive association between herding and forecast errors will be negative when analysts are more experienced and / or when they come from larger brokerage houses. To our knowledge, our study is the first to examine such interactions.

### 5.2. The determinant of financial analysts' accuracy

We begin by examining the effect of analyst characteristics (general experience, brokerage size, number of companies the analyst follows, forecast horizon and herding behaviour) for explaining forecast accuracy.

In table 3, we begin by presenting results from the estimation of equations (1) and (2). In our sample, no consistent with expectations, the coefficient on general experience is insignificant in the formation of forecast error. Thus we fail to find evidence consistent with our prediction that analysts improve their forecasts as their experience grows. With respect to brokerage size, consistent with previous researches and our expectations, it is significantly negatively associated with forecast errors.

The coefficient on brokerage size is -2.62 and -2.55 (both significant are at the 5% level) respectively from the estimation of equations (1) and (2). This suggests that analysts employed by larger brokerage houses provide more accurate forecasts.

Regarding forecast horizon or age is positively significant for all the cases. Forecast horizon amplifies and doesn't attenuate the forecast errors. The coefficient attached to this variable has a positive sign and is significant even at the 1% level. Thus, when analyst is more far from the earnings announcement date, earnings will be so difficult to estimate. Considering these results we could conclude that forecast error grows as forecast horizon increases. Our assumption is then confirmed: The higher the horizon of forecast is, the more the error is significant. This can be explained by the fact that the future is, by nature, opaque and subjected to a radical uncertainty which prevents analysts from issuing accurate earnings forecasts. However, as the announcement date approaches, uncertainty is dissipated for analysts who have more and more necessary data and revise their forecast according to perfect and recently collected information.

It arises from table 3 that the coefficient on analyst's portfolio is positive but insignificant. This suggests that the number of firms followed by an analyst doesn't have any effect on his forecast accuracy. This result can be explained by the fact that analyst look after all firms followed by the same manner. Another explanation which can be advanced is that the analysts who follow a significant number of firms could be most famous and enjoying a great capacity of analysis, therefore they maintain good relations with managers.

As for herding behavior, it seems positive and significant at the 5% level in equation (1), and remains significant in equation (2), indicating as expected that analysts could distort their forecasts by mimicking the existing consensus. Consistent with expectations, herding tends to amplify forecasts errors. Considering this result, we could conclude that in our sample analysts who tend to herd issue less accurate forecasts.

On the other hand, analysts who tend to move away from consensus and issue bold forecasts are more accurate certainly because bold forecast incorporate analysts' private information and provide more relevant information than herding forecasts.

### 5.3. Additional test

Since we have been showing a positive association between herding behaviour and forecasts errors, our second aim is to examine the effect of experience and brokerage house on this association. In this section, we present the result of this test. Table 4 presents results from the estimation of equation (3) and (4). Consistent with expectations and results in table 3, the coefficient on DHERD is still positive and significant at the 10% and 5% level in equations (3) and (4) respectively, confirming that analysts who tend to herd issue less accurate forecasts. Consistent with our prediction the coefficient on the interaction term DGEXP\*DHERD is negative and significant at the 5% level, confirming that the positive association between herding and forecasts errors is attenuated as the analyst's experience increases. Inconsistent with our expectations the coefficient on the interaction term DBZISE\*DHERD is negative but insignificant for both equations. Thus we fail to find evidence that the positive association between herding forecasts errors is attenuated when analysts are employed by larger brokerage houses.

## 6. Conclusion

In this study we take an interest in identifying, in a French context, the determinants which can explain disparity of analysts' forecasts accuracy. It is a question of determining the characteristics associated with more superior analysts in terms of forecasts accuracy. We begin by extending Bolliger (2003) by examining the effect of a herding behaviour among financial analysts on their forecasts accuracy. We find that general experience doesn't have any effect on forecast accuracy. Although studies related to the psychological field affirm that evaluation, analysis, comprehension and particularly the individual's efficiency in the achievement of a task improve with experience, we fail to find evidence that more experienced analysts provide more accurate forecasts than inexperienced analysts. Maybe, the most experienced analysts maintain good relations with managers of firms followed, thus more experienced analysts could skew their forecasts to please these managers. Or maybe in a French context, the formulation of forecasts differs from a firm to another or from one year to another and even the most experienced analyst can fail to issue accurate forecasts.

Similarly, we fail to provide evidence that the portfolio designed by the number of firms followed by an analyst is associated with their forecasts accuracy. Consistent with American studies but inconsistent with Bolliger (2003) we find that brokerage house's size is negatively and significantly associated with forecast errors suggesting that analysts employed by larger brokerage houses issue more accurate forecasts than their peers who work for medium and small-sized houses. In fact, although analysts are supposed to have an excellent formation, the problem lies rather in the lack of information. The role of brokerage house is to place at the disposal of their analysts all tools and means to provide forecasts as precise as possible. Moreover, larger brokerage houses recruit more superior analysts in terms of forecast accuracy and offer attractive rewards to their analysts. Thus, the analyst's success depends on his employer. We also find that forecast horizon is positively and significantly associated with forecasts errors. We could explain this result by the fact that, when announcement dates are approaching, analysts incorporate more recent and relevant information in their forecasts which improve their accuracy. We also show that analysts who tend to herd are misled. Analysts who abandon their own forecast to copy the consensus, or the average of forecasts published by the preceding analysts, provide less accurate forecasts than analysts who publish forecasts which reflect their own information. Supplementary, we investigate whether experience and/or brokerage house attenuate the positive effect of herding behaviour on forecast accuracy. Our analyses reveal a reduction in the association between herding and forecasts errors as the general experience of analyst increases. However, we find no evidence of the reduction in the association between herding and forecasts errors as brokerage size increases. In our study we have examined factors that create differences in analysts' forecasts accuracy and results raises the question as are investors conscious of the existence of disparity between financial analysts? Do they consider that analysts employed by larger brokerage houses are more efficient in term of forecasts accuracy? Such are the questions to which we seek to answer in a future studies.

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### Notes

Note 1. Hunton and McEwen build on a hypothesis formulated by Yales (1990) according to which that the most tested individuals have more specific knowledge and are ready to use this knowledge more effectively.

Note 2. Gosh and Whitecotton (1997) take care of the difference between the effect of experience and capacity on performance task.

Note 3. Mikhail and al. (2003) examine the effect of experience on security analyst underreaction to prior earnings information.

Note 4. By portfolio we designate the number of firms followed by an analyst.

Note 5. IBES adjusts EPS to be in the same basis as analysts' forecasts.

Note 6. see Greene (1991) for more detail of using mean adjusted data to control for fixed effects.

Note 7. For example, if three analysts follow firm  $j$  in a given year  $t$  and their absolute forecast error are 0.15, 0.2 and 0.1 respectively, the mean absolute forecast error for firm  $j$  in that year  $\overline{AFE}_{jt}$  would be 0.15 (i.e.,  $(0.15 + 0.2 + 0.1)/3$ ). The proportional mean absolute forecast error  $PMAFE$  of firm  $j$  in that year would be 0 (i.e.,  $(0.2 - 0.15)/0.15$ ), 0.33 (i.e.,  $(0.15 - 0.15)/0.15$ ) and -0.33 (i.e.,  $(0.1 - 0.15)/0.15$ ) respectively for analyst 1, 2 and 3.

Table 1. Descriptive statistics

Variables	Observations	Mean	Sdt.dev	Median
FE	10600	-1.689	10.702	-0.170
EXP	10600	4.102	2.495	3
APF	10600	11.067	19.823	6
BZISE	10600	20.069	8.802	19
AGE	10600	49.334	39.956	42
		HERD		BOLD
Observations	4907		5693	
Percentage	46.30%		53.70%	

FE is the forecast error calculated as the difference between I/B/E/S actual annual earnings and the last analyst  $i$ 's forecast made by the analyst within 180 days before year  $t-1$  earnings announcement. EXP is the number of years that analyst  $i$  appears in the data set. APF is number of firms followed by analyst  $i$  following firm  $j$  in year  $t$ . BZISE is the number of analysts employed by the brokerage employing analyst  $i$  following firm  $j$  in year  $t$ . AGE is the number of days between the forecast dates and the earnings announcement dates. HERD is an indicator variable for herding of analyst  $i$ 's forecast for firm  $j$  in year  $t$ . It is equal to 1 if analyst  $i$ 's forecast moves away from the analyst's own prior forecast and toward the consensus. It is set to 0 otherwise (BOLD).

Table 2. Correlation matrix

Variables	DGEXP	DAPFE	DBZISE	DAGE	DHERD
DGEXP	-				
DAPFE	0.684***	-			
DBZISE	-0.049***	-0.107***	-		
DAGE	0.017	-0.038***	-0.060***	-	
DHERD	-0.071***	-0.043***	-0.028***	0.008	-

\*\*\*: Correlation is significant at the 1% level (2-tailed)

Table 3. Determinants of individual analysts' forecast accuracy.

PMAFE <sub>ijt</sub> = $\alpha_1$ DGEXP <sub>ijt</sub> + $\alpha_2$ DBZISE <sub>ijt</sub> + $\alpha_3$ DAGE <sub>ijt</sub> + $\alpha_4$ DHERD <sub>ijt</sub> + $\varepsilon_{ijt}$ . (1)			
PMAFE <sub>ijt</sub> = $\beta_1$ DAPFE <sub>ijt</sub> + $\beta_2$ DBZISE <sub>ijt</sub> + $\beta_3$ DAGE <sub>ijt</sub> + $\beta_4$ DHERD <sub>ijt</sub> + $\varepsilon'_{ijt}$ . (2)			
	Coefficient	t-statistic	p-value
<b>Model (1)</b>			
DGEXP	0.003	1.13	0.260
DBZISE	-0.002	-2.62**	0.009
DAGE	0.001	5.78***	0.000
DHERD	0.016	2.04**	0.041
F-stat	12.09		
p-value	0.000		
<b>Model (2)</b>			
DAPFE	0.0003	1.04	0.299
DBZISE	-0.002	-2.55**	0.011
DAGE	0.001	5.83***	0.000
DHERD	0.016	2.01**	0.044
F-stat	12.04		
p-value	0.000		

\*\*\*Significant at the 1% level. \*\* Significant at the 5% level.

Table 4. Coefficient estimates from regression forecast errors on experience, analyst's portfolio, Brokerage house, forecast age, herding behaviour and interaction terms.

	Expected	Model (3)			Model (4)		
	sign	Coefficient	t-stat	p-value	Coefficient	t-stat	p-value
DGEXP		0.002	0.85	0.398			
DAPFE					0.0002	0.64	0.525
DBZISE		-0.002	-2.53**	0.012	-0.002	-2.49**	0.013
DAGE		0.001	5.83***	0.000	0.001	5.87***	0.000
DHERD	+	0.015	1.96**	0.050	0.015	1.93*	0.053
DGEXP* DHERD	-	-0.013	-2.80**	0.005	-0.013	-2.78**	0.006
DBZISE * DHERD	-	-0.0006	-0.44	0.659	-0.0005	-0.42	0.671
F-stat		9.37			9.32		
p-value		0.000			0.000		

\*\*\*Significant at the 1% level. \*\* Significant at the 5% level. \* Significant at the 10% level.

PMAFE is the individual analyst  $i$ 's forecast error of firm  $j$  for year  $t$  minus the mean of all analysts' forecast errors of firm  $j$  for year  $t$  scaled by the mean of all analysts' forecast errors of firm  $j$  for year  $t$ . forecast errors is the difference between I/B/E/S actual annual earnings and analyst's forecast. DGEXP is the number of years that analyst  $i$  appears in the data set minus the average number of years analysts following firm  $j$  at time  $t$  appear in the data set. DBZISE is the number of analysts employed by the brokerage employing analyst  $i$  following firm  $j$  in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ . DAPFE is the number of firms analyst  $i$  follows in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ . DAGE is the forecast horizon (the number of days between the forecast date and the earnings announcement date) for analyst  $i$  following firm  $j$  in year  $t$  minus the mean value of this variable for all analysts following the firm  $j$  in year  $t$ .

HERD is an indicator variable for herding of analyst  $i$ 's forecast for firm  $j$  in year  $t$ . It is equal to 1 if analyst  $i$ 's forecast moves away from the analyst's own prior forecast and toward the consensus. It is set to 0 otherwise.

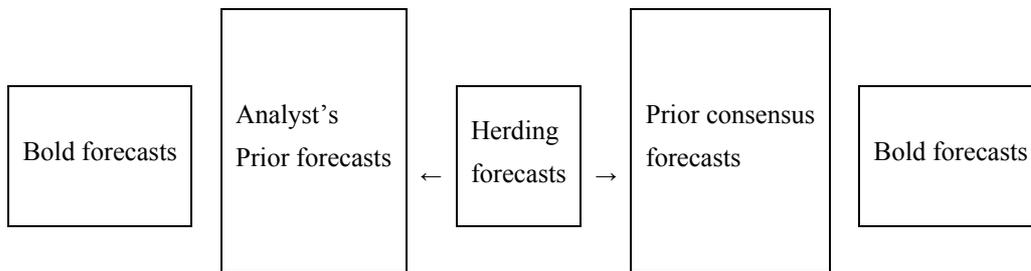


Figure1. Bold and herding forecasts: Clement and Tse's (2005) classification.

Forecasts are classified as bold if they are above both the analyst's own prior forecast and the consensus forecast immediately prior to the analyst's forecast. All other forecasts are classified as herding.