Financial Analysts' Accuracy: Do valuation methods matter?

(Elisa Cavezzali, Ugo Rigoni[1])

Abstract

This study investigates how different ways to evaluate a company influence the accuracy of the target price.
We know that finance theory and professional practice propose alternative approaches to the evaluation of a company. The literature on the relationship between the valuation methods used and target price accuracy is still scant, and the results are inconclusive and contradictory.

Coding the valuation methods of 1,650 reports, we find that the accuracy of target prices decreases when the target price is based just on a main method. Furthermore, we show that methods based on company fundamentals and those based on market multiples lead to similar levels of accuracy. Among different classes of methods, there are no superior methods. Therefore, we argue that in order to improve forecast accuracy, analysts need to assess company value by choosing and applying a set of different methods, combining them and getting the average value, but regardless of the specific technique chosen.

Keywords: forecast accuracy, sell-side analysts, equity valuation, valuation methods

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1. Introduction

In this paper we examine how different ways to evaluate a company influence the accuracy of the valuation output, the target price. Our aim is to investigate the task of valuation by sell-side analysts by examining the valuation methods actually used and testing whether different methods have different impacts on the accuracy of the target price.

We know that finance theory and professional practice propose alternative approaches to the evaluation of a company. The traditional distinction is between valuation methods based on the fundamentals of the company (future cash flows, earnings and so on) and the market ratios approach, which is based on the company's market multiples. Furthermore, within each class of method, there are different ways to apply it. Analysts also frequently use some low-cost simplifications of the traditional methods, leading to quick and less accurate value estimates than would have been arrived at with the full implementation of the original models. There are, therefore, a variety of methods for company valuation used by practitioners. Different methods may be applied at the same time in the same report in order to arrive at a target price which is the average result of the various estimation techniques used, while in other cases, the target price is the result of the application of just one method, sometimes checked with other control methods. We try to detect whether different choices of valuation process and technique bring the same final result and this is measured in terms of the accuracy of the target prices.

Through hand coding the valuation content of a sample of 1,650 reports, issued by 53 different international investment brokerage houses and covering a total of 48 companies across 20 different sectors, we find that the accuracy of target prices decreases when the target price is based solely on a main method. Thus, we argue that the analysts can obtain better accuracy performance by simply combining a few selected techniques, instead of using just one method to evaluate a company. Furthermore, we show that methods based on company fundamentals and those based on market multiples lead to similar levels of accuracy. Among the different classes of evaluation method, there are no superior methods in terms of output performance, the one standout being the net asset method as it gives a visibly poorer accuracy level. This latter evidence is consistent with those theories arguing that this method is 'inferior' since it is static and does not capture future opportunities and the different levels of risk of the evaluated company.

Therefore, in summary, we argue that in order to improve forecast accuracy, analysts need to assess company value by choosing and applying a set of different methods, combining them and getting the average value, but regardless of the specific technique chosen.

This paper is mainly related to the literature on target prices and the determinants of their accuracy, providing new empirical evidence. Prior literature has shown that analysts differ in their ability to forecast. However, the empirical research has focused mainly on market reaction to analysts' earnings, recommendations and revisions. Analysis of the accuracy of target prices and the relevance of valuation models in the valuation process are relatively unexplored areas of accounting and finance research. Only a small number of studies have focused on the relationship between the valuation methods used by sell-side analysts in their reports and target price accuracy (e.g. Demirakos et al. (2004), Demirakos (2009) and Asquith et al. (2005)), and the results are still inconclusive and contradictory.

By looking at an extended sample of international analysts' reports covering European companies, this study assesses the performance of different company valuation methodologies and helps to fill a gap in the literature by proposing a new approach for analysing and classifying the valuation methods used in financial analysts' reports.

The importance of equity research is well known. Brokerage houses and investment banks issue thousands of reports on a yearly basis, providing trading advice to investors and forecasts concerning the future market price of listed stocks. The figures on equity research spending are impressive. Johnson (2006) showed that equity research by investment banks has reached over US $20 billion in 2006. Furthermore, both *The Wall Street Journal* and the Institutional Investor (II) annually award an 'oscar' to the best financial analyst on the basis of the performance of the reports issued.

Accuracy is, therefore, the key feature of the output of equity research. However, since the reports are not freely available, studies analysing how the valuation methods used influence the target price accuracy are rare. Consequently, this study may help fill an important gap in the literature.

The paper is organised as follows: Section 2 discusses the main results obtained by prior literature; Section 3 describes the theoretical framework; Section 4 reports the data and data classification criteria; Section 5 presents the research design; Sections 6 and 7 report the empirical results, their discussion and interpretation; and Section 8 concludes the paper.

2. Literature review

Sell-side analysts issue reports about the equity valuation of companies. The more verifiable elements of these reports are earnings forecasts, stock recommendations and target prices.

Earlier studies have mainly focused on the market reaction to analysts' earnings, recommendations and revisions. Despite the empirical evidence which shows the relevance of target prices to the market (see, for instance, Asquith et al. (2005) or Brav and Lehavy (2003)), the research on the accuracy of target prices is still scant and inconclusive. This paper is mainly related to the literature on target prices and the determinants of their accuracy, providing new empirical evidence.

A possible reason for the poor attention given to the target price is that earnings forecasts, recommendations and target price revisions convey homogeneous information to investors, leading to the same market reaction. However, Francis and Soffer (1997), Brav and Lehavy (2003) and Asquith et al. (2005) do not confirm this evidence. They report that target prices convey new information to the market, independent from recommendations and earnings forecasts. For instance, Brav and Leavy (2003) show market reaction to target prices which is both unconditional and conditional on stock recommendations and earning forecast revisions. Similarly, Asquith et al. (2005) demonstrate that the market reacts to target price revisions regardless of earnings forecasts revisions. Furthermore, target price revisions cause a market reaction which is greater than that determined by an equivalent revision in the earnings forecast.

Since target prices are relevant for the market, part of the academic interest in them has focused on the drivers of their accuracy. The empirical evidence shows a certain variability in target price accuracy. For instance, Asquith et al. (2005) and Bradshaw and Brown (2006) report a good level of target price accuracy over a time horizon of 12 months (in at least 50% of cases the target prices are then reached by the market stock prices are, while De Vincentiis (2010) shows a poor level of accuracy (above the 30% of cases are successful). There are multiple factors which have the potential to affect this variability and the empirical results are controversial.

Part of the literature has focused on the features of forecasts, such as the well-documented bias in estimates and the level of analysts' optimism. The main empirical results show that forecasts which are highly inflated with respect to the current market price are more difficult to achieve (Asquith et al. (2005), Bradshaw and Brown (2006), Bonini et al. (2009), Demirakos et al. (2009) and De Vincentiis (2010)).

Another part of the literature has focused on firm, stock and analyst characteristics which affect target price accuracy. Specifically, company size, loss-making firms and company coverage are positively associated with target accuracy, while stock momentum is negatively related (Bonini et al. (2009) and De Vincentis (2010)).

Finally, only a few studies have analysed how the tools used by analysts to reach the target price, i.e. the valuation models, can affect the accuracy of the forecast.

Financial analysts can adopt several different valuation methods to evaluate companies, which are usually categorised into two different macro-classes: single-period valuation methods, i.e. market multiples, and multi-period valuation methods, such as discounted cash flow (DCF) and residual income methods (RIM). Empirical research has shown that financial analysts prefer single-period earnings models, such as market multiples (Barker (1999), Block (1999), Bradshaw (2002), Demirakos et al. (2004) and Asquith et al. (2005)) as they are simple to apply. Analysts adopt more complex and time-consuming multi-period models to value companies which are characterised by high level of uncertainty due to their highly volatile earnings or unstable growth (Demirakos et al., 2004). Imam et al. (2008) reported that sell-side analysts increased their preference for DCF models only in recent years, probably influenced by their clients and their valuation preferences.

Corporate finance theory and the main financial analysis textbooks suggest estimating a company's value using, whenever possible, multi-period valuation methods, the reason being that they should better capture its fair value (Penman (2003) and Koller et al. (2005)). Using 'superior' valuation methods should, therefore, lead to more accurate target prices. This theory is only partially confirmed in practice. Bradshaw (2004) shows that the analysts who issue more accurate earnings forecasts and who employ rigorous valuation methods such as RIM get better target prices. Similarly, Gleason, Johnson, and Li (2007) followed Bradshaw (2004) and inputted analyst earnings forecasts into price-to-earnings-growth (PEG) and RIM in order to generate pseudo target prices, and found that RIM is a superior method in terms of target prices accuracy. Gleason et al. (2006, 2008) found evidence which suggests that market ratio methods produce less accurate and more unreliable target prices than DCF. On the other hand, Demirakos et al. (2009) compared the DCF and the price-to-earnings (PE) ratio approaches and found that it is more likely to arrive at the target price by using the PE ratio (69.88%) rather than the DCF method (56.28%). However, this result holds only for a very short time horizon. Measuring accuracy over a period of 12 months shows, in fact, that the market ratios approach is no longer the most accurate. Asquith et al. (2005) do not find any significant correlation between valuation methods and target accuracy. Specifically, they fail to demonstrate the superiority of the DCF method with respect to other methods. The probability of getting the target price within 12 months is almost the same, regardless of the specific method used (48.8% used the market ratio approach and 52.3% DCF). Even less successful are those analysts who employ the Economic Value Added approach. Finally, Liu, Nissim and Thomas (2002) tested the valuation accuracy of several market ratios and found that the PE approach based on forecast earnings has the greatest accuracy.

The results of this stream of research remain inconclusive and, therefore, the topic needs further investigation. This paper tries to produce new empirical evidence on this relevant issue and aims to enrich the existing literature by investigating how different unexplored features of the procedures followed by analysts to assess the company value can affect target price accuracy.

3. Theoretical framework

The task of sell-side analyst evaluation is a complex process. It starts with the collection of economic and company information, followed by the processing of this qualitative and quantitative data, and it ends with the production of forecasts to be inputted into one or more valuation methods, giving the target prices. Finally, depending on the comparison between the company valuation and the market price, the analyst issues an investment recommendation (buy, hold, sell and so on).

Finance theory and professional practice propose alternative approaches to the evaluation of a company. The traditional distinction is between valuation based on the fundamentals of the company (future cash flows, earnings and so on) and the market ratios approach, which is based on the market multiples of a company. Penman (2001) gives a definition of the fundamental analysis as a five-step process consisting of: 1) knowing the business through the strategic analysis; 2) analysing the accounting and non-accounting information; 3) specifying, measuring and forecasting the value relevant payoffs; 4) converting the forecast to a valuation; and 5) trading on the valuation. In contrast to fundamental analysis, the market multiple approach requires an active market of fair stock prices. A fundamental valuation can be done without reference to a market.[2]

With respect to the quality of the different methods, finance theory considers the company fundamentals-based valuation methods to be superior tools for the evaluation of a company in comparison to the market multiples approaches. Therefore, finance textbooks recommend their use whenever possible as they bring a more reasonable and well-grounded estimation of company value. Thus, market multiples are indicated as control methods, to be used as a second step in estimating a range of control company values.

Given this theoretical difference between the methods, this paper aims to investigate better whether different approaches to valuation can have a different impact on the output of the valuation process conducted by practitioners. Specifically, we test whether different valuation practices affect the accuracy of target prices.

In order to do this, we analyse the distribution of valuation methods adopted by financial analysts amongst different industries and the differences in valuation practices over the years. Then, we test whether there is a link between the method of valuation method and the final output.

Asquith et al. (2005), for instance, found no correlation between valuation methods and their accuracy in predicting target prices. However, this study suffers from a selection bias issue as it only focuses on celebrity analysts, excluding others. Demirakos et al. (2009) did not find significant differences in target price performance depending on the specific model used.

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[2] In reality, the discount rate and the market risk premium, the basic elements for the fundamental analysis, do require an active market.

However, this research was based on a small sample of sell-side analyst reports only covering UK companies. Furthermore, they did distinguish between DCF and PE methods and did not consider the wide range of methods which analysts use and personalise.

If a relationship exists, it would be of great interest because it would show that target prices, and thus investment recommendations, are linked to the specific criteria chosen for the analysis. Even if there is only a partial relationship or indeed no relationship at all, it would, nevertheless, be an interesting result. On one hand, for example, the lack of a relationship should rationally mean that every method employed by analysts should achieve the same result, as expressed by the recommendation or target price. However, this lack of relationship could also indicate that valuation methods are regarded as 'tools' for achieving a predetermined result, which is consistent with the conflict of interest hypothesis. Bradshaw (2002), for example, finds that valuations based on price earnings multiples and expected growth are more likely to be used to support favourable recommendations, while qualitative analysis (which is less verifiable) of a firm is more likely to be associated with less favourable recommendations. In other words, the analyst evaluates firms regardless of the best criteria which could be used and only afterwards does he or she select the method which better argues and supports the expected result.

First, in line with Bradshaw (2002), we test whether analysts' reticence in disclosing the methods used for company valuation is related to the accuracy of their estimates. Our expectation is to find no significant relationship as, in the absence of opportunistic behaviour, the analyst should disclose the valuation method used, regardless of the level of boldness of the estimate. The first hypothesis tested is, therefore, the following:

H1: Analysts who make explicit the valuation methods which they use are more accurate than those who do not disclose the specific tools which they use to arrive at their estimate of companies..

Then, we verify whether the different valuation practices which go towards the estimation of the final target price can produce more or less accurate target prices. By analysing the actual reports of the financial analysts, it is possible to distinguish between the target prices which have been obtained as a result of the linear combination of different methods and those which have been obtained by applying a 'primary' method and then checked by the implementation of other control methods. Since the valuation methods require subjective estimations and assumptions about a company's future, our expectation is that target prices which have been obtained as the result of an average of different techniques are more accurate than those based on a primary method considered as superior and a set of control methods.

The specification of the second hypothesis is therefore:

H2: Target prices derived from an average of different valuation methods are more accurate than those obtained with one primary method which is then checked by other valuation techniques.

The third hypothesis follows on from H2. Specifically, we test whether the accuracy level of the sub-sample of target prices based on just one primary method can change if this method is the only one implemented by the analyst or if it is considered to be superior amongst a set of different methods used as controls. The specification of the third hypothesis is:

H3: Target prices based on only one valuation method have a different accuracy level depending on the analyst's choice of method.

We then focus on the type of valuation method used in the report. Our aim is to test whether a hierarchy exists amongst different valuation criteria. According to finance theory, our expectations should be that alternative fundamental valuation methods should yield the same results when applied to the same set of data. At the same time, market multiple approaches should be inferior to fundamental valuation methods and thus perform worse. However, among the fundamental valuation methods, some of them could be more appropriate for the evaluation of specific companies than others. For instance, insurance and utility stocks are often considered to be 'nearly bond' because the future cash flows that such stocks generate are usually positive and easy to predict, and the payout ratio is high and constant. Therefore, the discounted cash flow or dividend discounted models, which are close to those usually used for bond valuation, could be preferable for company valuations. Conversely, banking and especially manufacturing stocks are more similar to dynamic companies which operate in a much more competitive environment and exposed to higher technological risk. It is much more difficult for an analyst to forecast the future cash flow, profits and dividends of these types of stock by applying methods belonging to fundamental analysis; it is much easier to collect data from the market using the growth rate of future cash flows, profits and dividends implied in the market ratios.

The set of hypotheses for testing different levels of analysis is therefore:

H4: The specific types of valuation method (DCF, DE, NAV and so on) used in the report overall have different impacts on target price accuracy. In other words, we test whether some methods are better than others in obtaining more accurate estimates.

H5: At the macro category level, target prices resulting from fundamentals-based methods are more accurate than those derived from market multiple-based methods.

H6: The latter hypothesis is also verified in correspondence to primary valuation methods. In other words, we investigate whether the general finance textbook suggestion of using fundamentals-based methods instead of market multiple methods make sense in terms of estimate performance.

4. Sample selection & description

4.1. Sample selection

Most of the earlier research on financial analysts is based on commercial financial databases (e.g. *I/B/E/S* or First Call), collecting only a small proportion of the overall information which is potentially included in a report. Usually, these datasets catalogue the basic elements of a report, such as earnings forecasts, target prices and analyst recommendations, but do not provide any other additional elements which support the valuation procedure. The full body of the report, at least in some cases, could be much more exhaustive than this and include the additional information used by the analysts, such as accounting forecasts, valuation methods, qualitative analysis, actualisation rates, market risk premium or other justifications. The only way to discover this information is to read the text of the reports and to code their content by hand.

For our purposes, we downloaded approximately 2,200 reports from Investext, a database which contains the full text of financial analyst reports. We examined the European market, collecting reports over a three-year period (from January 2007 to April 2009) for the 50 companies and 20 industries included in the EuroStoxx50 Index.

Some of the reports have been excluded from the analysis because they were too short or did not contain any relevant information for this analysis. Therefore, the final sample consists of 1,650 reports issued by 53 international investment brokerage houses, covering a total of 48 companies across 20 sectors. Each report was read in its entirety and its content coded by hand. The aim was to identify the valuation models employed by the analysts and, in particular, which of them was chosen to be the main one used in the valuation task.

Some of the variables were easy to classify (e.g. report date, analyst's name, target prices and so on), while others (e.g. valuation methods) needed more attention in order to be successfully classified.

With regard to the recommendations issued, since we refer to the original ones issued by the analysts, caution needed to be used in their classification. Most analysts use a three-level scale (i.e., 'buy', 'hold' and 'sell'), while others use a larger scale, which also includes 'strong buy' or 'strong sell'. Furthermore, some analysts use different terminology, such as 'market perform' or 'market outperform', 'reduce', 'add' and so on. We reduced all of the recommendations to three different categories, classifying them depending on their meaning, that is, good, bad or neutral.

For firm-level data, such as company market capitalisation, P/BV ratios, the industry code and the time series of stock prices, we used Datastream.

4.2. A structured analysis of the evaluation methods used in the reports

The identification and classification of the valuation methods used by analysts was a complex procedure. Differently from Asquith et al. (2005), in the reports which we analysed, the analysts seldom explained the specific valuation methods used for the company.

Furthermore, the analysts often combine different methods and approaches, creating new ones or personalising valuation procedures, probably in order to fit them to the firm-specific characteristics of the companies analysed better. This forced us to deduce, whenever possible, the methods from the reports by building a structured framework to capture their variety and reduce the different (and more or less sophisticated) procedures to some known evaluation methods.

Initially, we started from the theoretical ranking proposed for valuation methods by most of the finance books which identifies the following five classes of method: net assets-based methods, cash flow-based methods, earnings-based methods, hybrid methods and market ratios methods. However, during our empirical work, several valuation methods emerged to a more significant extent than expected and we needed to add some specifications about each class. Analysts frequently use low cost simplifications of the traditional techniques leading to quick and less complex value estimates than those which would be achieved by fully implementing the original models. For instance, within the net asset methods, we included the net asset value approach (*NAV*) and the embedded value (*EV*) and appraisal value (*AV*) methods.[3] We classified as 'earnings-based methods' discounted shareholder profit (*DSP*) and discounted earnings (*DE*), but also other heuristic methods.[4] Among these heuristic methods, one is based on the *ROIC* index, another one named Warranty Equity Valuation (*WEV*) and finally, one called Required *ROE* (*RR*).[5] We included in 'financial methods' the dividend discounted model (*DDM*), discounted cash flows (*DCF*), the Gordon growth model (*GGM*), the adjusted present value (*APV*) and a particular model based on the actualisation of cash flow which is used by a small number of brokers called *HOLT-CFROI*.[6] We named as 'hybrid models' the economic value added (*EVA)* and regulatory asset based methods (*RAB*)[7] which are particularly used by the energy companies

[3] The *NAV* approach considers the underlying value of the company assets net of its liabilities. In this approach, the book value is adjusted by substituting the market value of individual assets and liabilities for their carrying value on the balance sheet. This approach is most applicable in the context of asset holding companies, real estate holding companies or natural resources companies. *EV* is the valuation of a company's current in-force value without taking into account its capacity to generate new business. It is then a minimum value for the company. The embedded value can then be adjusted by adding the estimated value of future new sales in order to obtain the *AV* of the company. Both the *EV* and the *AV* approaches are particularly appropriate for the evaluation of the insurance industry.

[4] According to both *DSP* and *DE*, the value of a company's stock is calculated on an accounting basis and is equal to the present value of all of the expected future profits or earnings, discounted at the shareholders' required rate of return.

[5] The warranty equity evaluation method establishes that the value of equity (*E*) is given by this formula: $E = (ROE – g) / (COE – g). P/BV$, where ROE is the return on equity, g is long term growth rate, *COE* is the cost of equity and *P/BV* is price to book value. *ROE* required is the same as *WEV*, but g is equal to zero.

[6] The financial method category is a multi-criteria framework including cash flow-based methods. *DDM* considers cash flow as company dividends, *DCF* free cash flow, *GGM* is a specification of *DDM* which assumes a constant dividend growth rate and *APV* first estimates the value of an unlevered firm to consider the net effect on value of both the benefits and costs of borrowing. *HOLT-CFROI* is the acronym of Cash Flows Return on Investment and is a model originally developed in 2002 by *HOLT* Value Associates, based in Chicago. Basically, it is an inflation-adjusted indicator for measuring a company's ability to generate cash flows.

[7] Both the *EVA* and *RAB* methods are approaches which adjust the *NAV* approach with the present value of future company performances.

to estimate the value of net invested capital. With regard to market ratio methods, we included the approaches of both comparable companies and trades.[8]

Table 1 summarises the classification of these methods.

Insert Table 1

Furthermore, since analysts often adopt two or more methods to evaluate a firm simultaneously, whenever possible we tried to identify the main one, that is, the valuation method upon which the final recommendation relies on most. All of the methods not explicitly defined or indicated as 'primary' have been classified as 'secondary.

5. The research design

In order to analyse the effects on the predictive performance of the reports of the different valuation methods, we run some industry fixed effects regressions. We assumed target price accuracy as the dependent variable and, as independent variables, both of the alternative variable specifications related to the valuation method issue and a group of control variables, as the main literature suggests. By including industry fixed effects in our regressions, we control for average differences across industries.

With regard to the dependent variable, in order to control for the possibility that the results could be biased by the accuracy measure, we repeated the analysis using two alternative proxies of the target prices performance from those proposed by the main literature.[9] The first (*FE1*), derived from De Vincentiis [2010], is calculated as:

$$FE1 = \left\{ \begin{array}{ll} \dfrac{TP - P_{\max 12m}}{P_t} & \text{upward} \\ \dfrac{TP - P_{\min 12m}}{P_t} & \text{downward} \end{array} \right\}$$

[8] The market multiple approaches consider the market value of companies similar to the company being valued, as observed either in the trading prices of publicly traded companies or the purchase prices in business sales, with respect to earnings, cash flow or the book value of those businesses.

[9] We also used a naive measure of target price accuracy (*ACC*) used in Bradshaw and Brown (2006]). According to their definition, a target price can be assumed to be accurate if it is achieved by the market price 365 days after the forecast. However, since the results were not robust, we did not report this analysis.

(1)

where FE represent the forecast error, TP is the target price, P_{max12m} (P_{min12m}) is the maximum (minimum) market stock price recorded during the 12 months following the report date and P_t is the current market stock price.

The second accuracy measure ($FE2$), derived from Bradshaw and Brown (2006]), Bonini et al. (2009) and De Vincentiis (2010) is instead:

$$FE2 = \left| \frac{TP - P_{+365}}{P_t} \right|$$

(2)

where FE is the forecast error, TP is again the target price, P_t is the current market price and P_{365} is the stock price registered in the market 365 days after the forecast date.

We report and discuss only the results based on *FE1* because of their comparability with those obtained with *FE2*.

With regard to the independent variables, in order to test the first hypothesis, that is, whether analysts' disclosure of their valuation methods is related to the accuracy of their estimates, we distinguish between the reports which disclose the valuation methodology used and those which do not. So, the variable *DISCLOSED_NOTDISCLOSED* is equal to 1 if a valuation method is disclosed in the report, 0 otherwise. Our expectation is that, because of the conflicts of interest which beset financial analysts, their accuracy level is greater whether the valuation methodology used is made explicit. Hiding the valuation procedure could be a tool to justify, for instance, a price decided a priori by the broker and not supported by any of the valuation techniques.

Secondly, we focus on the hierarchy among the methods in order to test whether the target prices which are derived as an average of different valuation methods are more accurate than those obtained by the use of one main method and then checked by other secondary valuation techniques. So, we distinguish between primary and secondary methods through the *PRIMARY_SECONDARY* dummy variable, which is equal to 1 if there is a primary valuation method, 0 otherwise. Furthermore, we focus only on those reports which contain an explicit main valuation method. We define the *PRIMARY* dummy variable as equal to 1 if the analyst uses only that main method to evaluate the company and 0 if the method is selected as primary in a group of other, secondary methods.

We then investigate the effect of the type of valuation method used on the accuracy achieved more specifically. In order to test the fourth hypothesis, we include the different method categories (financial, income-based, net asset, hybrid and market ratios methods) in the regression specification.[10] We define five dummy variables, each representing one specific method category, respectively: *M_FIN*, *M_INC*, *M_NAV*, *M_HYB* and *M_MRATIO*. Each dummy gives the value of 1 to the category it represents, 0 otherwise. Conceptually, all of the five dummies can be inserted simultaneously into the model since the analyst can theoretically use all of the methods at the same time, so all of the dummies can assume value equal to 1.

In order to test the fifth hypothesis, we only focus on the primary methods, we distinguish between the methods based on company fundamentals (such as financial, income-based, hybrid and net asset) and those based on company market multiples. Thus, the regression includes the dummy *FUNDAMENTAL_MULTIPLE*, which is equal to 1, if the analyst uses a fundamentals-based method, 0 if he or she uses a market ratios approach. Then, we include the dummy of each method category again in the model specification, this time equal to 1, if the analyst uses that specific method as the main valuation method (*MM_FIN*, *MM_INC*, *MM_NAV*, *MM_HYB* and *MM_MRATIO*). As we just focus on the primary methods, only one dummy per report can assume the value of 1, i.e. a report has only one primary valuation method. Hence, in this case, we insert only four out of five dummies as the others residually define the last one.

With regard to the control variables, we first insert the boldness of the target price (*BOLDNESS*). This is the absolute value of the difference between the target price and the current stock price, scaled by the current stock price. We expect that the larger the absolute difference between the target price and the current price, the more difficult it is to meet the target price. Consistent with the literature, we expect a negative association between target price accuracy and boldness.

The second control variable included in the regressions is price volatility (*VOL*), which is a proxy for the difficulty in predicting the company value. This is measured as the standard

[10] For the method classification, see section 4.

deviation of company prices for each of the three years considered. Based on option pricing theory, Bradshaw and Brown (2006) predicted that target price accuracy is higher for stocks with higher price volatility. However, consistent with Demirakos et al. (2009), we expect a negative association between a firm's risk and the accuracy of the forecast. This is because, although it is easier for the target price of a highly volatile stock to be met at some point during a 12- month forecast horizon, it is more challenging for the analyst to predict the price of a volatile stock at the end of that period.

SIZE is another control variable which we use in the various regression specifications. This is the natural logarithm of the firm's market capitalisation on the report's date of issue. We expect a positive association between target price accuracy and firm size and a negative association between forecast error measures and size, based on the argument that it is easier for an analyst to value a large, mature and well-established firm, which has readily available information about its future prospects. On the other hand, small firms are less complicated in structure but usually operate in niche markets and their future performance is more uncertain. For these reasons, we expect that *SIZE* is positively related to accuracy and negatively correlated to forecast error.

The *GROWTH* variable, measured by the price-to-book-value ratio, represents the growth associated with the firm. As more stable companies are also more predictable than those with greater growth opportunities, we expect a negative association between this variable and target price accuracy.

Then, we include the accuracy of earnings forecasts in the model. Consistent with the results obtained by Loh and Mian (2006), Gleason et al. (2006) and Ertimur et al. (2007), our expectation is that we will find a positive relationship between the accuracy of the earnings forecasts and the target price. The prediction is that a more accurate input forecast (earnings forecast) should provide a better output forecast (target price) in terms of accuracy. In order to measure the accuracy of earnings forecasts, we use two measures proposed by the main literature. Specifically, we calculate both the *Absolute Forecast Error* (*AFE*) and *Proportional Mean Absolute Forecast Error* (*PMAFE*) measured as the following ratios:

$$PMAFE_{ijt} = \frac{AFE_{ijt} - AAFE_{jt}}{AAFE_{jt}}(-1)$$

(3)

where EPS_{ijt} is the actual earnings per share of company *j*, in year *t*, $AVG(EPS_{ijt})$ the average earnings per share forecast issued by analyst *i* in relation to company *j* during year *t* and P_j the mean price of the stock during year *t*.

$$AFE_{ijt} = \frac{ACTUAL_{jt} - FORECAST_{ijt}}{ACTUAL_{jt}}$$

(4)

where AFE_{ijt} is defined above and $MAFE_{jt}$ is the mean absolute error of all of the analysts of company *j* during year *t*.

We also include three other control variables. The first (*FORAGE*) is strictly related to earnings forecast accuracy and the forecast horizon and is measured as the time interval between the forecast date and the end of the fiscal year. This variable should capture the effects of factors which impact upon the accuracy of earnings forecasts, but which are unexplained by earnings forecast errors. Our expectation, in line with the literature, is to find that this variable has a negative impact on target price accuracy.

The second control variable is year dummies to distinguish between the different years when reports are issued (*D_2007, D_2008* and *D_2009*). This variable aims to capture the unexplained effects of time-related factors which have the potential to modify the dependent variable, but which are not revealed by the regressions.

The third and final control variable is the analyst's nationality (*NAZ*), which controls for the effect of nationality. The aim of this is to understand whether a coincidence of analyst and company nationality can improve the level of target price accuracy. It is a dummy variable that is equal to 1 when the analyst's nationality coincides with that of the company, 0 otherwise. We expect a positive correlation between price accuracy and the nationality variable as we assume that there is less information available to analysts on foreign companies than there is on domestic firms.

Table 2 summarises the definition of the variables used in the analysis.

Insert Table 2

6. Results

6.1. Descriptive results

This section reports the main descriptive statistics of the variables of the model.

Table 3 reports the main descriptives with regard to the dependent variable of the regression models, the measures of forecast accuracy, distinguishing by year and recommendation type (Panel A) and by valuation method features (Panels B to F).

Insert Table 3

First, consistent with prior empirical evidence, Panel A and B show that, on average, forecast errors fluctuate, but maintain a constant positive sign, indicating a general excess of optimism through all of the years, regardless of the specific recommendation issued.

Panel C focuses on the relationship between forecast errors and disclosure of the valuation method. As illustrated, the mean forecast errors (both *FE1* and *FE2*) do not change substantially between the reports which disclose their valuation method(s) and those which do not.

Similarly, Panels D shows that there is no significant evidence of the superior performance of those forecasts which were obtained as a result of an average of different valuation methods rather than those made with only one primary method.

Focusing on the different method categories, and consistent with prior literature, both the methods based on company fundamentals and those based on market multiples perform in a similar way in terms of forecast accuracy (see Panel E). Furthermore, we cannot clearly discriminate whether some specific methods outperform the others from the simple descriptive analysis as the forecast errors grouped by method depend on the specific forecast error measure used (Panels F and G). For instance, the hybrid methods are the most accurate, according to *FE1* but, according to *FE2*, they are ranked third. However, this consideration does not apply to *NAV*-

based methods. The mean forecast errors based on these methods are in fact higher according to both measures (*FE1*=45% and *FE2*=64%).

An analysis of forecast errors by sector is reported in Graph 1.

Insert Graph 1

Overall, the different sectors are ranged around a mean forecast error of 20-30% according to *FE1*, and 30-45% according to *FE2*. The top value is 60%, by the automobile sector. Other sectors which are quite difficult to predict seem to be the banking and the insurance industries.

Graph 2 shows different boldness classes with respect to target price accuracy. In the lowest boldness class (between 0% and 10%), the forecast error is approximately 30% (28% with *FE1* and 33% with *FE2*). The difference between *FE1* and *FE2* increases in the intermediate boldness classes but returns to a similar level for very high boldness (>70%). In the latter class, the means of both *FE1* and *FE2* are very high (approximately 65% of the stock value at the time of the issue of the report).

Insert Graph 2

With regard to the independent variables in the regression models, Table 4 reports the main descriptive statistics of the control variables by year, while Table 5 summarises the main statistical features of the different valuation method variables.

Insert Table 4

Insert Table 5

As indicated in Table 5, in our sample only 39% of reports express the valuation method(s) used for analysis, meaning that in about 60% of cases, the investor does not know how the target price has been estimated. This means that, in these latter cases, the valuation procedure is just a black box for investors. With regard to the group of 'transparent' reports, in approximately 40% of cases the analysts are explicit about the main valuation methodology adopted. Approximately 38% of cases are in line with the finance textbooks which suggest checking the estimate of company value with just one method (the main one) with a set of control methods (secondary ones). In the other 62% of cases, there is no main method and the target price is a simple average of the application of different techniques. Furthermore, at odds with the theory, in about 67% of cases, the analysts obtain the target price by applying only one method, without any further checks (see Table 5).

In relation to the choice of valuation method made by the financial analyst, Graphs 3, 4 and 5 show a breakdown of the methods across different years and industries.

Insert Graph 3

Insert Graph 4

Insert Graph 5

As illustrated above, the trend of the methods used over the three years examined changed. Specifically, in 2007 the proportions of the market ratios approach and the other valuation procedures based on the fundamentals of a company were clearly unbalanced. In that year, analysts reduced the market ratios approach considerably and favoured the other methods. In 2009, the proportions of the two approaches were more balanced. Generally, the analysts used market ratios as the 'control' secondary method in the majority of cases (53.33% in 2007, 69.39% in 2008 and 67.36% in 2009).

Graph 4 shows that among the fundamentals-based methods, the most frequently used by analysts to justify their target prices are financial methods (from 63.6% in 2007 to 98.3% in 2009). The hybrid method (27.3%) and the income-based methods (9.1%) are frequent in 2007, but decrease in the following two years.

Graph 5 reports the different valuation methods across different industries. In line with other studies (see, for instance, Abrosetti Stern Stewart Italia (2008) and Bertinetti et al. (2006)), market ratios are the most used amongst all of the sectors overall. There are some exceptions, however. For instance, analysts evaluating the banking sector prefer the market ratios approach (80%), whilst in other sectors, such as technology hardware and equipment, utilities and electricity, and energy and oil, they prefer fundamental analysis. Net asset value methods are preferred for the evaluation of the insurance sector, while the automotive sector is characterised by financial methods.

To conclude the descriptive analysis, Tables 6 and 7 report the Pearson and Spearman correlations among the variables, respectively. No multicollinearity issues seem to arise.

Insert Table 6

Insert Table 7

6.2. Inferential analysis

In this section, we test our research hypothesis. Specifically, we investigate whether the accuracy of target prices depends on the financial analyst's choice of valuation method, controlling for variables at both firm and analyst level.

The results, obtained using a naïve accuracy measure (*ACC*) did not show any systematic relationship between the variables, and the determination coefficient was close to zero. Therefore, we decided not to report this set of results, focusing only on the other two measures of accuracy, used alternatively (*FE1* and *FE2*).[11]

In order to test the first research hypothesis, we run the following fixed-effect regression model:

$$ACCURACY_{ijt} = \alpha + \beta 1 DISCLOSED\_NOTDISCLOSED_{ijt} + \beta 2 CONTROL\_VARIABLES i_{jt} + \varepsilon_{ijt} \quad (5)$$

where *i*, the fixed effect, represents the sector, *t* the year and *j* the single analyst. With respect to the variables, the dependent variable is forecast error while the independent variables are *DISCLOSED_NOTDISCLOSED*, indicating whether or not the report discloses the valuation method(s) used, and the set of control variables specified and defined above.

Table 8 provides the results of different specifications of the model, obtained with a bottom-up procedure. Specifically, the columns show that that *VOL*, *PMAFE* and *FORAGE* are not significant, while the other control variables are significant at 5%. In particular, *BOLDNESS* and *GROWTH* are positively (negatively) related with forecast error (accuracy), while *SIZE* has a negative (positive) impact. The *DISCLOSED_NOTDISCLOSED* variable is statistically insignificant in all of the model specifications, meaning that the presence of a valuation method does not affect the level of accuracy.

[11] As mentioned earlier, we only report the results based on *FE1* as comparable to those obtained with *FE2* in this paper.

Insert Table 8

We then test the second hypothesis, investigating the relationship between target price accuracy (*FE1*) and the ranking of the primary and secondary valuation models, represented by the *PRIMARY_SECONDARY* variable. As control, we add the chosen set of control variables.

Therefore, the tested equation is:

$$ACCURACY_{ijt} = \alpha + \beta 1 PRIMARY\_SECONDARY_{ijt} + \beta 2 CONTROL\_VARIABLES i_{jt} + \varepsilon_{ijt} \quad (6)$$

Table 9 reports the results.

Insert Table 9

The different model specifications show evidence that *VOL*, *PMAFE* and *FORAGE* are insignificant, but *PRIMARY_SECONDARY* is significantly positive, indicating that target prices based on a main valuation method are systematically less accurate than those based on a group of methods.

We then substitute in equation (6) the *PRIMARY_SECONDARY* variable with the *PRIMARY* variable, capturing whether the primary valuation technique is also the only one used in the report (*PRIMARY*=1) or whether it is chosen from amongst others considered to be superior by the analyst (*PRIMARY*=0). In other words, we test the following equation and report the results in Table 10:

$$ACCURACY_{ijt} = \alpha + \beta_1 PRIMARY_{ijt} + \beta_2 CONTROL\_VARIABLES_{ijt} + \varepsilon_{ijt} \quad (7)$$

The columns confirm the prior evidence and specify the previous results. In fact, the set of control variables is consistent with the previous signs, while the *PRIMARY* variable is not statistically significant.

Insert Table 10

This means that the forecasts based on only one primary valuation method are in general less accurate, regardless of whether it is chosen from amongst others or used as uniquely.

Furthermore, we focus on the specific valuation methods used and examine whether or not target price accuracy is dependent on the specific technique used, regardless of the ranking between the consideration of primary or secondary methods. Hence, the model that we test is the following:

$$ACCURACY_{ijt} = \alpha + \beta_1 VALUATION\_METHODS_{ijt} + \beta_2 CONTROL\_VARIABLES_{ijt} + \varepsilon_{ijt} \quad (8)$$

where *VALUATION METHOD/S* is a matrix of the five dummy variables defined above and represents the different evaluation methods categories. Table 11 reports the findings.

Insert Table 11

The control variables confirm the results of the previous regressions (Columns (2), (3) and (4)), while the evaluation method dummies are insignificant (Columns (1) and (4)), with the exception of the *M_NAV* variable, which has a positive and statistically significant coefficient.

This means that, in general, the accuracy of target prices is independent of the different valuation techniques, with the exception of *NAV*-based prices which are systematically less accurate than those based on the other methods.

In the following regressions, the analysis focused only on methods considered as primary by analysts in their reports. The reason is that the target prices often are the output of a main valuation method, sometimes accompanied by other control methods. In these cases, if the valuation methods were different in terms of forecasting power, then they should affect the accuracy of the target price in a clearer way. Hence, we first aggregate the various methods in two macro-categories of methods: those based on company fundamentals and those on the comparison with market prices, that is, market multiple approaches. We define the *FUNDAMENTAL_MULTIPLE* dummy variable by this distinction. Table 12 reports the results of the following regression:

$$ACCURACY_{ijt} = \alpha + \beta_1 FUNDAMENTAL\_MULTIPLE_{ijt} + \beta_2 CONTROL\_VARIABLES_{ijt} + \varepsilon_{ijt} \quad (9)$$

Insert Table 12

The variable *FUNDAMENTAL_MULTIPLE* is not significant, indicating that, with regard to the accuracy of price forecasts, valuation techniques based on market multiples are the equivalent of more conceptually sophisticated methods, such as, for instance, *DCF*.

Secondly, we disaggregate the primary methods and test the following regression:

$$ACCURACY_{ijt} = \alpha + \beta_1 TYPE\_OF\_PRIMARY\_METHOD_{ijt} + \beta_2 CONTROL\_VARIABLES_{ijt} + \varepsilon_{ijt} \quad (10)$$

where *TYPE OF PRIMARY METHOD* is a matrix of vector variables (dummies), each representing the specific type of method used as a main valuation technique.

As already discussed, we only insert four out of five dummy variables in the model because of the problem of over-identification. For this reason, we run five different regressions, excluding one of the dummies in turn. Table 13 reports the results of this model.

Insert Table 13

Overall, the empirical findings document that financial, income-based, hybrid and market ratios methods lead to similar levels of accuracy, but perform better than the net asset value method.

A significance test run on the difference between the coefficients confirms this latter result.

7. Discussion of the results

The regression outputs allow the comparison of the results obtained using the two different accuracy measures.

The determination coefficient (R^2 *adj*) is always not very high. However, this evidence is consistent with prior literature. The factors influencing the accuracy of target prices can be various and each study aims to analyse the relationship between the dependent variable and a specific small group of independent variables.

With regard to the signs of the control variables, when significant they are consistent with our expectations: *BOLD*, *VOL*, *GROWTH* and *PMAFE* are negatively correlated with accuracy, while *SIZE* is positively correlated. Specifically, with regard to forecast-related variables, these results indicate that the greater the difference between the forecast and the current stock price (greater boldness), the lower the probability that the forecast will be achieved (less accuracy)., Focusing on the accuracy of earnings forecasts, the results show that less precise earnings forecasts lead to less accurate target prices, which is consistent with prior literature and expectations.

With regard to firm-specific variables, the findings suggest that stable companies are easier to predict. Furthermore, the stock volatility coefficient confirms that the more volatile stock prices are, the more difficult it is to forecast a value 12 months ahead.

At odds with our expectations, the nationality of analysts (*NAZ*) is not statistically significant in any of our model specifications, indicating that this variable does not add any useful information to our analysis.

The age of the forecast is not significant in any of the model specifications. This result is partially in line with expectations as this variable mainly refers to the age of the earnings forecast. However, we decided to include it in the analysis since we did not find any significant correlation between this and *PMAFE*. It had the potential to affect the accuracy of the prediction as an individual element.

Focusing on the main variables of interest in this study, that is, the variables related to valuation methods, as expected, *DISCLOSED_NOTDISCLOSED* is not significant with both the dependent variables. This means that the disclosure of the valuation method used in a report is not related to the level of target price accuracy (Table 8). This result is in line with the descriptive analysis: with both the accuracy measures, the mean forecast error is similar regardless of the disclosure of the valuation method. Therefore, there is no evidence to support the initial hypothesis that a hidden valuation is worst than a disclosed one. We argue that analysts can base their estimations on very rigorous and precise procedures, but they can decide not to disclose them as they prefer to keep the data and procedure used private. Another explanation can be derived from the reputation effect, which assures analysts strong credibility even when they issue black-box reports.

In the second level analysis, introducing ranking among the valuation methods (primary and secondary), the results are consistent with our expectations and theory (see Section 3) overall. They show that the target prices only based on one method are systematically inferior to others (see Table 9). This result holds regardless of whether the main method is the only one used or it is chosen as primary from a set of others (Table 10). The message of these results is that in order to obtain a more accurate forecast, it is better to choose the right combination of different methods. Hence, the problem can be shifted as it is worth not choosing the right model, but taking advantage of the benefits and merits of different methods.

In the analysis of the different method categories, the only method which is different from the others in terms of target price accuracy is the net asset value method. This method leads to significantly less accurate estimates than those obtained with others (Tables 11 and 12). Therefore, divergent from both our expectations and finance theory, diverse valuation approaches (fundamental valuation methods vs market multiple approaches) do not exhibit different performance in the forecast of target prices. On the contrary, as expected, different fundamental valuation methods yield the same results when applied to the same sets of data. The exception of the *NAV* method can be explained by its features, which are backward oriented and do not capture the future profitability of the company, the main driver of value. However, this latter consideration cannot be generalised out of this sample because of the few observations related to net asset value methods (only 5% of the sample presents this valuation technique).

8. Conclusions

This study analyses the full text of financial analyst reports and aims to understand whether the choice of a specific evaluation method affects target price accuracy.

The diffusion of numerous, often personalised, techniques and the frequent use of the market ratios approach to estimate the future value of a company lead the author to speculate whether different methods should be considered as equivalent to each other or whether there are factors which differentiate them in terms of final result.

After the recent financial scandals, which have highlighted the poor reliability of the forecasts issued by financial analysts, the issue of target price accuracy is very timely and bears investigation, particularly the variable of valuation methods, which has so far been neglected.

The expectation is that both the hypothesis and the assumptions of methods could lead analysts to greater discretion in their choice of model parameters and, therefore, lead them to different levels of accuracy.

The literature has already demonstrated that there are some variables which affect the output of the reports, but only a handful number of prior studies have analysed the impact of 'structural' elements of a company valuation, such as valuation methods. Furthermore, prior results are scant and inconclusive. Some of these studies do not find any evidence to support the notion that different methods display varying abilities in the forecast of company value, while others show that a superior forecasting performance is associated with more rigorous techniques. This study provides new empirical evidence on this issue as it adopts a wider perspective and considers different features of the actual valuation procedure followed by financial analysts.

We use a sample of 1,650 reports, issued between 1 January 2007 and 30 April 2009, and two measures of target price accuracy, based on forecast errors.

In relation to our research hypothesis, we find that target prices supported by the disclosure of the valuation methods used are as accurate as those issued without contemporaneous disclosure. Moreover, the accuracy of the target price decreases when the target price is based on a main method. We argue that this result suggests that analysts evaluating companies can obtain more accurate performances by simply combining a few wisely chosen techniques, instead of using only one method.

Furthermore, when considering primary methods only, there are no significant differences in the accuracy associated with methods based on company fundamentals and those on market multiples.

Lastly, our analysis of the different types of valuation method shows that they lead to the same level of accuracy. This is a relevant result since it indicates that the development of a complex and time-consuming company fundamental analysis in the hope of achieving better company evaluation is not enough. The market and fundamental approaches do not differ significantly in the accuracy levels of their results, apart from the net asset method, which leads to a visibly poorer accuracy level. This result is consistent with those theories which have labelled this method 'inferior' since it is static and does not capture either potential future opportunities or the different levels of risk of the evaluated company.

Overall, this research indicates that target price accuracy does not depend on the choice of specific valuation method, but on the valuation procedure adopted by the analysts. In other words, our empirical evidence suggests that in order to improve the accuracy of their forecasts, analysts need to assess company value by choosing and applying a set of different methods, combining them and obtaining an average value, regardless of the specific technique chosen. Therefore, as we find no differences in the performance ability of the methods, we do not confirm the finance textbooks' theory of a hierarchy amongst methods, promoting the multi-period valuation models as superior. If the method is not so important for accuracy, this rationale may also justify the widespread use among analysts of market ratios approaches or other low-cost techniques in order to achieve their conclusions on company value.

Furthermore, this research, although with some limitations, provides results which could be a starting point for future analysis. For instance, since the literature has only been focused on the contraposition between financial and market ratios methods, it could be interesting to extend this field of research to all of the valuation methodologies and, in particular, to analyse the forecasting ability of the net assets-based methods, which are often used to evaluate insurance companies.

It could also be interesting to re-analyse the numerous reports which do not explicitly disclose the valuation methods adopted in them. These reports could be without an explicit valuation method merely because they are an update of a recent report, in which case the target prices would be estimated starting from the previous valuation procedure. For this reason, the econometric analysis should be repeated following a new reports classification, whereby the reports without an explicit valuation procedure could be associated with the last available method(s) disclosed by the same analyst.

Tables

Table 1. The method classification.

Method class	Method technique
Net Assets based Methods (NAV)	Embedded Value (*EV*) and Appraisal Value (*AV*).
Earnings-based Methods	Discounted Shareholder Profit (DSP), Discounted Earnings (DE), heuristic methods (WEV, RR).
Cash flows-based Methods	Dividend Discounted Model (DDM), Discounted Cash Flows (DCF), Gordon Growth Model (GGM), Adjusted Present Value (APV), *HOLT-CFROI.*
"Hybrid" Methods"	Economic Value Added (EVA), Regulatory Asset Based methods. (RAB).
Market ratios Methods	Comparables companies and comparable trades

Notes. This table summarizes the method classification criteria followed. The *NAV* approach considers the underlying value of the company assets net of its liabilities. In this approach, the book value is adjusted by substituting the market value of individual assets and liabilities for their carrying value on the balance sheet. This approach is most applicable in context of asset holding companies, real estate holding companies or natural resources companies. The Embedded Value is the valuation of a company's current in-force value without taking into account its capacity to generate new business. it is then a minimum value for the company. The Embedded Value can be then adjusted by adding the estimated value of future new sales to obtain the Appraisal Value of the company. Both the *EV* and the *AV* approaches are particularly indicated to evaluate the insurance industry.
According to both the *DSP* and the *DE*, the value of a company stock is calculated on a n accounting basis and it is equal to the present value of all expected future profits or earnings, discounted at the shareholders required rate of return. Warranty equity evaluation method establishes that the value of equity (*E*) is given by this formula: $E = (ROE - g) / (COE - g) \cdot P/BV$, where *ROE* is return on equity, g is long term growth rate, *COE* is the cost of equity and *P/BV* is price to book value. *ROE* required is the same of *WEV*, but g is equal to zero.
The financial method category is a multicriteria framework including cash flows-based methods. The *DDM* considers as cash flows company dividends, the *DCF* the free cash flows, the *GGM* is a specification of the *DDM* model, assuming a constant dividend growth rate; the *APV* estimates first the value o fan unlevered firm to consider the net effect on value of both the benefits and the costs of borrowing. The *HOLT-CFROI* is the acronym for Cash Flows Return on Investment and it is a model originally developed in 2002 by *HOLT* Value Associates, based in Chicago. Basically it is an indicator inflation-adjusted to measure the company ability to generate cash flows.
Both *EVA* and *RAB* methods are approaches that adjust the *NAV* approach with the present value of future company performances.
The market multiple approaches consider the market value of business companies similar to the company being valued, as observed either in trading prices of publicly traded companies or the purchase prices in the business sales, with respect to earnings or cash flows or book value of those business.

Table 2. Summary of variable definitions.

Variable name	Description	Measure
FE1	First proxy for the forecast error	$FE1 = \begin{cases} \dfrac{TP - P_{\max 12m}}{P_t} & \text{upward} \\ \dfrac{TP - P_{\min 12m}}{P_t} & \text{downward} \end{cases}$
FE2	Second proxy for the forecast error	$FE2 = \left\lvert \dfrac{TP - P_{+365}}{P_t} \right\rvert$
DISCLOSED_NOTDISCLOSED	Indicating those reports disclosing the valuation methodology from those without any explanation of the methods used	Dummy variable equal to 1 if in the report a valuation method is disclosed, 0 otherwise.
PRIMARY_SECONDARY	Indicating the method hierarchy (primary vs secondary) in the report.	Dummy variable equal to 1 if there is a primary valuation method, 0 otherwise.
PRIMARY	Indicating those reports using just a primary valuation method to get the target price.	Dummy variable equal to 1 if the analyst uses just a main method to evaluate the company, 0 if the method is selected as primary in a group of other, secondary, methods.
M_FIN, M_INC, M_NAV, M_HYB, M_MRATIO	Set of variables indicating the different kinds of valuation methodologies used in the report	Set of dummy variables representing the kind of method/s used in the report (*M_FIN* is the financial method, *M_INC* is an earnings-based method, *M_NAV* a NAV-based method, *M_HYB* represent the hybrid methods, *M_RATIO* indicates the market ratios methods). Each dummy gives value 1 to the category it represents, 0 otherwise.
FUNDAMENTAL_MULTIPLE	Variable indicating methods based on company fundamentals and methods based on company market multiples	Dummy variable equal to 1 if the analyst uses a fundamentals-based method, 0 if he/she uses a market ratios approach.
MM_FIN, MM_INC, MM_NAV, MM_HYB, MM_MRATIO	Set of variables indicating the different kinds of valuation methodologies used in the report as main method.	Set of dummy variables representing the kind of main method used in the report. Each dummy gives value 1 to the category it represents, 0 otherwise. *(MM_FIN* is the financial method, *MM_INC* is an earnings-based method, *MM_NAV* a NAV-based method, *MM_HYB* represent the hybrid methods, *MM_RATIO* indicates the market ratios methods)
BOLDNESS	Indicating the analyst boldness with respect to the prices.	It is measured as the absolute value of the difference between the target price and the current stock price scaled by the current stock price
VOL	Indicating the price volatility.	It is the standard deviation of company prices for each of the three years considered
SIZE	Indicating the company size.	It is the natural logarithm of the firm's market capitalization at the report issuing date
GROWTH	Indicating the company growth.	It is the price-to-book-value ratio
PMAFE	First proxy for earnings forecasts.	$PMAFE_{ijt} = \dfrac{AFE_{ijt} - AAFE_{jt}}{AAFE_{jt}}$
AFE	Second proxy for earnings forecasts.	$AFE_{ijt} = \dfrac{ACTUAL_{jt} - FORECAST_{ijt}}{ACTUAL_{jt}}$
FORAGE	It is a proxy for the forecast age.	It is measured as the time interval between the forecast date and the fiscal year end
NAZ	It is a proxy for the analyst nationality.	It is a dummy variable It is a dummy variable that is equal to 1 when the analyst nationality coincides with the company one, 0 otherwise.

Notes. This table summarizes the definition of the variables used in the regression models.

Table 3. Descriptive statistics on target price accuracy

Panel A. Descriptive statistics on target price accuracy – by analyst's recommendation type								
Recommendation Type	**Positive Reccomendation**		**Neutral Reccomendation**		**Negative Reccomendation**		**Total**	
	FE1	**FE2**	**FE1**	**FE2**	**FE1**	**FE2**	**FE1**	**FE2**
No.	945	945	356	356	223	223	1524	1524
Mean	0.317	0.404	0.329	0.363	0.294	0.401	0.317	0.394
Std. Dev.	0.353	0.299	0.486	0.309	0.304	0.338	0.382	0.308
Median	0.24	0.36	0.2	0.29	0.19	0.3	0.23	0.34
Max	6	2.38	6.75	2.29	1.89	1.72	6.75	2.38
Min	0	0	0	0	0	0	0	0
Skewness	7.321	1.822	7.334	2.027	1.817	1.375	7.234	1.773
Kurtosis	100.288	9.803	89.124	9.514	6.914	4.823	100.195	8.638
Panel B. Descriptive statistics on target price accuracy – by year								
Year	**2007**		**2008**		**2009**		**Total**	
	FE1	**FE2**	**FE1**	**FE2**	**FE1**	**FE2**	**FE1**	**FE2**
No.	162	162	753	753	614	614	1524	1524
Mean	0.247	0.461	0.288	0.410	0.372	0.358	0.317	0.394
Std. Dev.	0.296	0.366	0.260	0.304	0.502	0.292	0.382	0.308
Median	0.16	0.4	0.22	0.36	0.25	0.29	0.23	0.34
Max	1.48	1.99	2.37	2.33	6.75	2.38	6.75	2.38
Min	0.01	0.01	0	0	0	0	0	0
Skewness	2.736	1.618	2.349	1.752	7.160	1.813	7.234	1.773
Kurtosis	10.655	6.278	12.515	9.331	79.195	8.590	100.195	8.638

Notes. Table 3 reports the main descriptives on forecast accuracy measures. Panel A and B report some descriptive statistics on the target price accuracy measures, distinguished by recommendation type and report year. The variable definitions are reported in Table 2.

Panel C. Descriptive statistics on target price accuracy – by level of disclosure of the valuation method used

	DISCLOSED_NOTDISCLOSED=0						DISCLOSED_NOTDISCLOSED =1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	840	0.321	0.328	0.24	4.74	0	584	0.310	0.457	0.21	6.75	0	1424	0.316	0.386	0.23	6.75	0
FE2	840	0.405	0.324	0.35	2.38	0	584	0.371	0.276	0.315	2.29	0	1424	0.391	0.306	0.34	2.38	0

Panel D. Descriptive statistics on target price accuracy – by hierarchy of valuation methods

	PRIMARY_SECONDARY =0						PRIMARY_SECONDARY =1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	361	0.285	0.256	0.21	1.49	0	231	0.345	0.651	0.21	6.75	0	592	0.308	0.454	0.21	6.75	0
FE2	361	0.370	0.250	0.33	1.27	0.01	231	0.372	0.309	0.3	2.29	0	592	0.371	0.274	0.32	2.29	0
	PRIMARY=0						PRIMARY=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	78	0.287	0.275	0.205	1.46	0.01	154	0.372	0.773	0.215	6.75	0	232	0.344	0.650	0.21	6.75	0
FE2	78	0.412	0.301	0.375	1.59	0.01	154	0.354	0.313	0.285	2.29	0	232	0.373	0.309	0.305	2.29	0

Panel E. Descriptive statistics on target price accuracy – by fundamental-based and multiple-based valuation methods

	FUNDAMENTAL_MULTIPLE =0						FUNDAMENTAL_MULTIPLE =1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	110	0.398	0.860	0.22	6.75	0	123	0.293	0.367	0.2	2.53	0.01	233	0.343	0.649	0.21	6.75	0
FE2	110	0.393	0.282	0.345	1.59	0.01	123	0.356	0.331	0.28	2.29	0	233	0.373	0.309	0.31	2.29	0

Panel F. Descriptive statistics on target price accuracy – by type of valuation method

	M_FIN=0						M_FIN=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	315	0.343	0.563	0.22	6.75	0	269	0.271	0.281	0.2	2.53	0	584	0.310	0.457	0.21	6.75	0
FE2	315	0.393	0.270	0.35	2.29	0.01	269	0.345	0.282	0.28	1.82	0	584	0.371	0.276	0.315	2.29	0
	M_INC=0						M_INC=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	577	0.310	0.459	0.21	6.75	0	7	0.267	0.227	0.21	0.76	0.1	584	0.310	0.457	0.21	6.75	0
FE2	577	0.370	0.276	0.31	2.29	0	7	0.489	0.249	0.56	0.76	0.13	584	0.371	0.276	0.315	2.29	0
	M_NAV=0						M_NAV=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	559	0.303	0.452	0.21	6.75	0	25	0.448	0.551	0.26	2.37	0.04	584	0.310	0.457	0.21	6.75	0
FE2	559	0.359	0.261	0.31	1.82	0	25	0.641	0.426	0.51	2.29	0.15	584	0.371	0.276	0.315	2.29	0
	M_HYB=0						M_HYB=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	570	0.312	0.461	0.21	6.75	0	14	0.198	0.184	0.13	0.53	0.02	584	0.310	0.457	0.21	6.75	0
FE2	570	0.370	0.277	0.31	2.29	0	14	0.416	0.213	0.385	0.8	0.07	584	0.371	0.276	0.315	2.29	0
	M_MUL=0						M_MUL=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	96	0.311	0.395	0.23	2.53	0.01	488	0.309	0.468	0.21	6.75	0	584	0.310	0.457	0.21	6.75	0
FE2	96	0.358	0.351	0.285	2.29	0	488	0.374	0.259	0.33	1.59	0.01	584	0.371	0.276	0.315	2.29	0

Panel G. Descriptive statistics on target price accuracy – by type of main valuation method

	MM_FIN=0						MM_FIN=1						TOTAL					

	No.	Mean	Std. Dev.	Median	Max	Min	No.	Mean	Std. Dev.	Median	Max	Min	No.	Mean	Std. Dev.	Median	Max	Min
FE1	118	0.404	0.852	0.22	6.75	0	114	0.281	0.324	0.2	2.53	0.01	232	0.344	0.650	0.21	6.75	0
FE2	118	0.414	0.330	0.35	2.29	0.01	114	0.331	0.282	0.275	1.82	0	232	0.373	0.309	0.305	2.29	0
	MM_INC=0						MM_INC=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	230	0.345	0.653	0.21	6.75	0	2	0.170	0.085	0.17	0.23	0.11	232	0.344	0.650	0.21	6.75	0
FE2	230	0.373	0.310	0.305	2.29	0	2	0.365	0.332	0.365	0.6	0.13	232	0.373	0.309	0.305	2.29	0
	MM_HYB=0						MM_HYB=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	227	0.346	0.656	0.21	6.75	0	5	0.234	0.220	0.08	0.48	0.07	232	0.344	0.650	0.21	6.75	0
FE2	227	0.370	0.310	0.3	2.29	0	5	0.512	0.293	0.65	0.8	0.07	232	0.373	0.309	0.305	2.29	0
	MM_MUL=0						MM_MUL=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	122	0.294	0.368	0.2	2.53	0.01	110	0.398	0.860	0.22	6.75	0	232	0.344	0.650	0.21	6.75	0
FE2	122	0.355	0.332	0.28	2.29	0	110	0.393	0.282	0.345	1.59	0.01	232	0.373	0.309	0.305	2.29	0
	MM_NAV=0						MM_NAV=1						TOTAL					
	No.	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**	**No.**	**Mean**	**Std. Dev.**	**Median**	**Max**	**Min**
FE1	231	0.335	0.638	0.21	6.75	0	1	2.370	.	2.37	2.37	2.37	232	0.344	0.650	0.21	6.75	0
FE2	231	0.365	0.283	0.3	1.82	0	1	2.290	.	2.29	2.29	2.29	232	0.373	0.309	0.305	2.29	0

Notes. This table (Panel B to G) report the main descriptive statistics on the target price accuracy measures, grouped by the valuation method characteristics of the report used in this study. The variable definitions are reported in Table 2.

Panel H. Other descriptive statistics on target price accuracy – by report valuation method features

	DISCLOSED_NOTDISCLOSED =0								**DISCLOSED_NOTDISCLOSED =1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	4.209998	43.776	0	0.02	0.11	0.41	0.945	1.41	8.741532	111.675	0.01	0.03	0.1	0.38	0.86	1.46
FE2	1.903732	9.137	0.01	0.04	0.17	0.53	1.02	1.65	1.611262	8.403	0.01	0.04	0.16	0.51	0.89	1.24
	PRIMARY_SECONDARY =0								**PRIMARY_SECONDARY =1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	1.606958	5.931	0.01	0.03	0.1	0.39	0.8	1.22	7.358732	66.769	0.01	0.02	0.1	0.36	0.98	2.53
FE2	0.85305	3.328	0.02	0.05	0.17	0.51	0.89	1.07	2.200216	11.304	0.01	0.04	0.16	0.5	0.85	1.59
	PRIMARY=0								**PRIMARY=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	2.25932	8.787	0.01	0.05	0.11	0.35	0.96	1.46	6.477379	49.678	0.01	0.02	0.1	0.36	1.01	6
FE2	1.08061	4.675	0.01	0.03	0.17	0.6	1.02	1.59	2.725243	14.640	0.01	0.04	0.15	0.46	0.83	1.82
	FUNDAMENTAL_MULTIPLE=0								**FUNDAMENTAL_MULTIPLE =1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	6.281608	44.299	0.01	0.02	0.11	0.36	0.98	6	3.809336	21.152	0.01	0.02	0.1	0.35	0.96	2.37
FE2	1.351354	5.5780	0.02	0.06	0.18	0.54	0.95	1.3	2.674807	14.001	0.01	0.03	0.13	0.45	0.83	1.82
	M_FIN=0								**M_FIN=1**							

	skewness	kurtosis	p1	p5	p25	p75	p95	p99	skewness	kurtosis	p1	p5	p25	p75	p95	p99
FE1	8.186869	86.807	0.01	0.03	0.11	0.42	0.86	1.49	3.166292	19.812	0.01	0.02	0.09	0.34	0.87	1.33
FE2	1.682951	10.181	0.03	0.07	0.2	0.56	0.85	1.08	1.594552	6.823	0.01	0.03	0.14	0.46	0.9	1.24
	M_INC=0								**M_INC=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	8.719091	110.884	0.01	0.02	0.1	0.38	0.87	1.46	1.685403	4.402	0.1	0.1	0.11	0.29	0.76	0.76
FE2	1.635258	8.5016	0.01	0.04	0.16	0.5	0.9	1.24	-0.5852587	1.801	0.13	0.13	0.16	0.7	0.76	0.76
	M_NAV=0								**M_NAV=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	9.255953	121.626	0.01	0.02	0.1	0.38	0.84	1.26	2.234125	7.470	0.04	0.09	0.12	0.4	1.49	2.37
FE2	1.282099	5.634	0.01	0.04	0.16	0.5	0.85	1.17	2.373052	9.999	0.15	0.24	0.39	0.84	1.04	2.29
	M_HYB=0								**M_HYB=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	8.68665	109.91	0.01	0.03	0.1	0.38	0.87	1.46	0.7789851	2.034	0.02	0.02	0.07	0.36	0.53	0.53
FE2	1.630386	8.442	0.01	0.04	0.16	0.51	0.9	1.24	0.0693842	2.229	0.07	0.07	0.27	0.57	0.8	0.8
	M_MUL=0								**M_MUL=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	3.599761	19.076	0.01	0.02	0.075	0.38	0.97	2.53	9.293103	119.2	0.01	0.03	0.1	0.38	0.84	1.43
FE2	2.823189	14.014	0	0.02	0.14	0.445	0.97	2.29	0.9911456	4.035	0.02	0.05	0.17	0.535	0.88	1.08
	MM_FIN=0								**MM_FIN=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	6.099276	42.883	0.01	0.02	0.1	0.39	1.02	6	3.774152	23.224	0.01	0.02	0.1	0.34	0.96	1.33
FE2	2.245488	11.664	0.02	0.06	0.18	0.57	1.02	1.59	2.021524	9.552	0.01	0.02	0.13	0.44	0.83	1.24
	MM_INC=0								**MM_INC=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	7.34038	66.456	0.01	0.02	0.1	0.36	0.98	2.53	0	1	0.11	0.11	0.11	0.23	0.23	0.23
FE2	2.189838	11.2405	0.01	0.04	0.16	0.5	0.85	1.59	0	1	0.13	0.13	0.13	0.6	0.6	0.6
	MM_HYB=0								**MM_HYB=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	7.309883	65.801	0.01	0.02	0.11	0.35	0.98	2.53	0.4079907	1.168	0.07	0.07	0.07	0.47	0.48	0.48
FE2	2.240929	11.501	0.01	0.04	0.16	0.49	0.85	1.59	-0.6554944	1.979	0.07	0.07	0.37	0.67	0.8	0.8
	MM_NAV=0								**MM_NAV=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	7.748807	72.716	0.01	0.02	0.1	0.35	0.97	2.53	.	.	2.37	2.37	2.37	2.37	2.37	2.37
FE2	1.598129	7.093	0.01	0.04	0.16	0.5	0.85	1.3	.	.	2.29	2.29	2.29	2.29	2.29	2.29
	MM_MUL=0								**MM_MUL=1**							
	skewness	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**	**skewness**	**kurtosis**	**p1**	**p5**	**p25**	**p75**	**p95**	**p99**
FE1	3.791858	20.984	0.01	0.02	0.1	0.35	0.96	2.37	6.281608	44.299	0.01	0.02	0.11	0.36	0.98	6
FE2	2.669866	13.913	0.01	0.03	0.13	0.45	0.83	1.82	1.351354	5.578	0.02	0.06	0.18	0.54	0.95	1.3

Notes. Panel G reports other descriptive statistics on the target price accuracy measures, grouped by the valuation method characteristics of the report used in this study. The variable definitions are reported in Table 2.

Table 4. Descriptive statistics of the control variables of the models

	BOLDNESS	FORAGE	PMAFE	VOL	GROWTH	SIZE	NAZ
2007							
No.	168	132	132	171	171	171	147
Mean	0.22	190.90	0.02	4.31	2.71	10.81	0.69
Std. Dev.	0.34	95.55	0.54	3.53	1.69	0.45	0.46
Median	0.14	192	0	3.45	2.18	10.87	-
Max	1.61	354	1.72	13.69	7.69	11.6	1
Min	-0.16	21	-0.97	0.12	1.18	9.45	0
Skewness	2.67	0.01	0.67	0.79	1.69	-0.93	-0.84
Kurtosis	10.34	1.85	3.34	2.48	4.80	4.03	1.71
p1	-0.13	24	-0.95	0.12	1.29	9.45	0
p5	-0.06	46	-0.83	0.76	1.34	9.91	0
p25	0.03	103.5	-0.4	1.31	1.51	10.6	0
p75	0.29	257	0.295	7.04	3.15	11.12	1
p95	1.2	340	0.97	11.42	7.06	11.45	1
p99	1.6	353	1.46	12.88	7.66	11.57	1
2008							
	BOLDNESS	**FORAGE**	**PMAFE**	**VOL**	**GROWTH**	**SIZE**	**NAZ**
No.	753	671	681	813	805	805	774
Mean	0.36	100.97	0.01	6.10	1.85	10.33	0.39
Std. Dev.	0.33	71.00	0.52	5.77	1.27	0.64	0.49
Median	0.3	85	0.02	4.43	1.38	10.4	-
Max	2.95	358	4.41	24.29	6.55	11.67	1
Min	-0.37	0	-1	0.33	0.26	7.63	0
Skewness	1.993	1.440	2.359	1.734	1.443	-1.075	0.450
Kurtosis	12.627	5.413	17.081	5.663	4.681	4.687	1.203
p1	-0.18	8	-0.95	0.33	0.35	8.24	0
p5	-0.07	16	-0.77	0.62	0.51	9.2	0
p25	0.16	52	-0.24	2.08	0.93	10.01	0
p75	0.5	146	0.17	8.46	2.36	10.79	1
p95	0.89	272	0.63	20.4	4.58	11.17	1
p99	1.45	342	2.13	24.29	6.12	11.37	1
2009							
	BOLDNESS	**FORAGE**	**PMAFE**	**VOL**	**GROWTH**	**SIZE**	**NAZ**
No.	614	557	550	666	663	663	643
Mean	0.31	306.29	0.00	3.97	1.30	9.99	0.35
Std. Dev.	0.34	30.06	0.54	3.33	0.87	0.75	0.48
Median	0.27	308	-0.01	2.495	1.12	10.04	-
Max	3.12	359	6.46	11.32	4.16	11.51	1
Min	-0.55	160	-1	0.09	0.03	5.71	0
Skewness	1.782	-0.774	3.522	0.861	1.284	-1.511	0.622
Kurtosis	12.188	5.020	39.603	2.547	4.418	8.666	1.387
p1	-0.3	208	-0.95	0.09	0.2	7.87	0
p5	-0.12	259	-0.77	0.38	0.35	8.55	0
p25	0.1	287	-0.3	1.27	0.68	9.68	0
p75	0.47	328	0.25	5.91	1.73	10.39	1
p95	0.93	353	0.74	11.24	3.2	11.04	1
p99	1.33	358	1.58	11.32	3.9	11.46	1
Total							
	BOLDNESS	**FORAGE**	**PMAFE**	**VOL**	**GROWTH**	**SIZE**	**NAZ**
No.	1535	1360	1363	1650	1639	1639	1564
Mean	0.32	193.79	0.01	5.05	1.72	10.24	0.40
Std. Dev.	0.34	114.79	0.53	4.82	1.26	0.71	0.49
Median	0.27	170	0	3.81	1.36	10.3	-
Max	3.12	359	6.46	24.29	7.69	11.67	1
Min	-0.55	0	-1	0.09	0.03	5.71	0
Skewness	1.924	-0.092	2.690	39.751	1.781	-1.292	0.396
Kurtosis	11.816	1.411	25.619	1603.309	6.787	7.018	1.157
p1	-0.24	12	-0.95	0.12	0.29	8.11	0
p5	-0.09	26.5	-0.77	0.47	0.395	8.96	0
p25	0.11	78	-0.28	1.76	0.87	9.91	0
p75	0.46	307	0.21	7.04	2.135	10.75	1
p95	0.92	343	0.74	12.88	4.33	11.18	1
p99	1.45	356	1.82	24.29	6.47	11.47	1

Notes. This table reports the descriptive statistics (grouped by year and reported in total) of the control variables used in the different model specifications. Specifically, as reported in Table 2, *BOLDNESS* is the target price boldness and is measured as the absolute value of the difference between the target price and the current price scaled by current price; *VOL* indicates the market price volatility measured as the standard deviation of company prices for each of the three years considered; *SIZE* indicates the natural logarithm of the firm's market capitalization at the report issuing date; *GROWTH* is the company price-to-book-value ratio; *PMAFE* is the Proportional Mean Absolute Forecast Error and is the earnings forecast accuracy measure. It is computed as:

$$PMAFE_{ijt} = \frac{AFE_{ijt} - AAFE_{jt}}{AAFE_{jt}} \text{ (-1)}$$

It measures the difference between the absolute forecast error (*AFE*) of analyst *i* forecasting earnings for firm *j* in the fiscal year *t* and the average absolute forecast error across all analyst forecasts of firm *j*'s fiscal year *t* earnings, expressed as a fraction of the average absolute forecast error across all analyst forecasts of firm *j*'s fiscal year *t* earnings. *PMAFE* controls for firm-year effects by subtracting the mean absolute forecast error, *AAFE* , from the analyst's absolute forecast error. Deflating by *AAFE* reduces heteroskedasticity in forecast error distributions across firms (Clement (1999)). Multiplying by -1 ensures that higher values for *PMAFE* correspond to higher levels of accuracy.
FORAGE is the time interval (in number of days) between the forecast date and the fiscal year end, while *NAZ* is a dummy variable equal to 1 whether the analyst's nationality coincides with the company nationality, 0 otherwise.

Table 5. Descriptive statistics on the main independent variables of the models

Year		DISCLOSED_NOTDISCLOSED	PRIMARY_SECONDARY	PRIMARY	FUNDAMENTAL_MULTIPLE	MM_FIN	MM_INC	MM_HYB
2007	**No.**	166	85	33	33	33	33	33
	% (=1)	51.20%	38.82%	39.39%	33.33%	21.21%	3.03%	9.09%
2008	**No.**	746	258	90	91	90	90	90
	% (=1)	34.18%	34.50%	68.89%	60.44%	55.56%	0.00%	3.33%
2009	**No.**	612	262	111	111	111	111	111
	% (=1)	41.99%	42.37%	72.97%	52.25%	51.35%	0.90%	0.00%
Total	**No.**	1524	605	234	235	234	234	234
	% (=1)	39.17%	38.51%	66.67%	52.77%	48.72%	0.85%	2.56%
Year		**MM_NAV**	**MM_MRATIO**	**M_FIN**	**M_INC**	**M_NAV**	**M_HYB**	**M_MRATIO**
2007	**No.**	33	33	85	85	85	85	85
	% (=1)	0.00%	66.67%	50.59%	2.35%	12.94%	4.71%	91.76%
2008	**No.**	90	90	255	255	255	255	255
	% (=1)	1.11%	40.00%	43.53%	1.18%	3.14%	2.75%	80.78%
2009	**No.**	111	111	257	257	257	257	257
	% (=1)	0.00%	47.75%	46.30%	0.78%	3.50%	2.33%	83.27%
Total	**No.**	234	234	597	597	597	597	597
	% (=1)	0.43%	47.44%	45.73%	1.17%	4.69%	2.85%	83.42%

Notes. This table reports the descriptive statistics (grouped by year and reported in total) of the main independent variables of the models. They synthesize the report valuation methods features. Specifically, as reported in Table 2, *DISCLOSED_NOTDISCLOSED* is a dummy variable assuming value equal to 1 whether in the report has a distinguishable valuation method, 0 otherwise. *PRIMARY_SECONDARY* is equal to 1 if there's a primary valuation method, 0 otherwise; the *PRIMARY* variable is equal to 1 if the analyst uses just that method to evaluate the company, 0 if the method is chosen as primary in a group of other secondary methods; *M_FIN, M_INC, M_NAV, M_HYB, M_MRATIO indicate* different methods categories, respectively financial methods, income-based ones, net asset methods, hybrid and market ratios methods. Each variable is a dummy assuming value 1 in correspondence to the category it represents, 0 otherwise; *FUNDAMENTAL_MULTIPLE* is a variable assuming value equal to 1 if the analyst uses an absolute method (such as a financial method, an income based method, a hybrid or a net asset method, 0 if he/she uses a market ratios approach).;*MM_FIN, MM_INC, MM_NAV, MM_HYB, MM_MRATIO* are dummy variables representing the main valuation method used by the analyst. Each one is equal to 1 whether the analyst uses that specific method as main valuation method.

Table 6. The correlation matrix among variables.

Panel A - The Pearson’s correlation.

	FE1	FE2	DISCLOSED_NOTDISCLOSED	PRIMARY_SECONDARY	PRIMARY	M_FIN	M_INC	M_NAV	M_MRATIO	M_HYB
FE1	1									
FE2	0.4617*	1								
DISCLOSED_NOTDISCLOSED	-0,0148	-0.0551*	1							
PRIMARY_SECONDARY	0,064	0,0034	0.1026*	1						
PRIMARY	0,0624	-0,0883			1					
M_FIN	-0.0785*	-0.0857*		0.1665*	-0.3348*	1				
M_INC	-0,0102	0,047		-0,0237	-0.1313*	-0.0687*	1			
M_NAV	0,0644	0.2069*		0,0494	-0.3185*	-0.0923*	0.1230*	1		
M_MRATIO	-0,0017	0,0217		-0.3165*	-0.4761*	-0.4315*	0,0486	0,035	1	
M_HYB	-0,0384	0,0258		-0,0057	-0,0887	-0,0359	-0,0186	0.1526*	-0.0861*	1
FUNDAMENTAL_MULTIPLE	-0,0814	-0,0606			-0.1634*	0.7701*	0,0877	-0.1940*	-0.6351*	0.1658*
MM_FIN	-0,0953	-0.1338*			-0.1270*	0.8643*	-0,0905	-0.2098*	-0.6170*	-0,121
MM_INC	-0,0249	-0,0025			-0.1313*	-0,1047	1.0000*	-0,0234	0,0625	-0,0163
MM_MRATIO	0,0804	0,0614			0.1634*	-0.7782*	-0,0882	0.1934*	0.6397*	-0.1668*
MM_HYB	-0,0251	0,0667			-0,0574	-0.1829*	-0,0151	-0,0409	-0,0658	0.9238*
BOLD	0.3770*	0.3416*	-0.1293*	-0,0341	0,0248	-0,0541	-0,0493	0,0657	0,0245	0,0629
FORAGE	0.0921*	-0,0162	0.0888*	0.0758*	-0,0155	0,0075	0,0326	0,0188	0,0491	0,0496
PMAFE	0,0262	0.1035*	-0.0492*	0	0,0479	0,0117	-0,0187	-0,0199	-0,0485	-0.0582
VOL	0.0569*	0.1883*	-0,028	0,0581	-0,0813	-0.1411*	-0,0119	0,0607	0,0495	-0.0462
GROWTH	-0.2277*	-0.1749*	0.0886*	0,0666	-0,0469	0.1488*	0,0012	-0.0904*	-0,0519	-0.0697*
SIZE	-0.3878*	-0.1898*	-0,0288	-0,0016	-0.1333*	0,0619	0.0696*	-0,0379	0,0341	0,0226
NAZ	0,021	0.0830*	-0.1279*	-0.0797*	-0.1698*	-0,0036	-0,0001	0.0973*	0.0842*	0,0319

Panel B - The Pearson's correlation.

	FUNDAMENTAL _MULTIPLE	MM_FIN	MM_INC	MM_MRATIO	MM_HYB	BOLD	FORAGE	PMAFE	VOL	GROWTH	SIZE	NAZ
FUNDAMENTAL _MULTIPLE	1											
MM_FIN	0.9259*	1										
MM_INC	0,0882	-0,0905	1									
MM_MRATIO	-1	-0.9259*	-0,0882	1								
MM_HYB	0.1541*	-0.1581*	-0,0151	-0.1541*	1							
BOLD	0,0066	0,0058	-0,0429	-0,0074	0,008	1						
FORAGE	-0,0599	-0,0584	-0,046	0,0576	0,0659	-0.0916*	1					
PMAFE	0,0799	0,1059	-0,0783	-0,0799	-0,0489	0,0311	0.1270*	1				
VOL	-0.1253*	-0.1270*	-0,0749	0.1257*	0,043	0.0460*	-0.1249*	0,0109	1			
GROWTH	0,0968	0.1240*	-0,0085	-0,0945	-0,052	-0.2329*	-0.1227*	0.0471*	-0.0992*	1		
SIZE	0,0171	-0,0117	0,0322	-0,0175	0.1627*	-0.1479*	-0.1472*	0.0742*	0,022	0.3878*	1	
NAZ	-0,1027	-0.1670*	0,0427	0,1027	0.1814*	0.1060*	-0,0027	0,0297	0.0898*	-0.0542*	0.0569*	1

Notes. These panels (A and B – Table 6) report the correlation matrix of the different model specification variables. It is based on the Pearson's correlation definition. Some of the correlations are missing because of the variables definition. All the variables have been defined above.
* denotes significance at the 10%

Table 7. The correlation matrix among variables.

Panel A - The Spearman's correlation.

	FE1	FE2	DISCLOSED_ NOTDISCLOSED	PRIMARY _SECONDARY	PRIMARY	M_FIN	M_INC	M_NAV	M_MRATIO	M_HYB
FE1	1									
FE2	0.4955*	1								
DISCLOSED_ NOTDISCLOSED	-0.0569*	-0,0403	1							
PRIMARY _SECONDARY	-0,0014	-0,0298	0.1026*	1						
PRIMARY	-0,0125	-0.1155*	.	.	1					
M_FIN	-0.0721*	-0.1164*	.	0.1665*	-0.3348*	1				
M_INC	0,0001	0,061	.	-0,0237	-0.1313*	-0.0687*	1			
M_NAV	0,0551	0.1770*	.	0,0494	-0.3185*	-0.0923*	0.1230*	1		
M_MRATIO	0,0128	0,0651	.	-0.3165*	-0.4761*	-0.4315*	0,0486	0,035	1	
M_HYB	-0,0572	0,0476	.	-0,0057	-0,0887	-0,0359	-0,0186	0.1526*	-0.0861*	1
FUNDAMENTAL _MULTIPLE	-0,0613	-0,1056	.	.	-0.1634*	0.7701*	0,0877	-0.1940*	-0.6351*	0.1658*
MM_FIN	-0,0611	-0.1505*	.	.	-0.1270*	0.8643*	-0,0905	-0.2098*	-0.6170*	-0.1210*
MM_INC	-0,0321	0,0041	.	.	-0.1313*	-0,1047	1.0000*	-0,0234	0,0625	-0,0163
MM_MRATIO	0,0594	0,108	.	.	0.1634*	-0.7782*	-0,0882	0.1934*	0.6397*	-0.1668*
MM_HYB	-0,0282	0,0896	.	.	-0,0574	-0.1829*	-0,0151	-0,0409	-0,0658	0.9238*
BOLD	0.3102*	0.1991*	-0.1515*	-0,0356	-0,0018	-0,0623	-0,0605	0.0691*	0,0311	0,0577
FORAGE	0.0779*	0,0007	0.0730*	0,057	-0,009	-0,006	0,0264	0,0157	0,044	0,0518
PMAFE	0,0095	0.0926*	-0.0544*	-0,0287	0,0547	-0,0156	-0,0023	-0,0204	-0,0198	-0,0648
VOL	0.0527*	0.1335*	-0,0081	0.0791*	-0.1091*	-0.1276*	-0,0157	0,0243	0,0578	-0,0548
GROWTH	-0.2836*	-0.1905*	0.1166*	0.1231*	-0.1242*	0.2087*	0,0374	-0.0799*	-0.0699*	-0,0456
SIZE	-0.2034*	-0.0690*	-0,0379	0,012	-0.1256*	0,0394	0.0797*	0,0309	0,0349	0,0438
NAZ	0,0274	0.0960*	-0.1279*	-0.0797*	-0.1698*	-0,0036	-0,0001	0.0973*	0.0842*	0,0319

Panel B - The Spearman's correlation.

	FUNDAMENTAL _MULTIPLE	MM_FIN	MM_INC	MM_MRATIO	MM_HYB	BOLD	FORAGE	PMAFE	VOL	GROWTH	SIZE	NAZ
FUNDAMENTAL _MULTIPLE	1											
MM_FIN	0.9259*	1										
MM_INC	0,0882	-0,0905	1									
MM_MRATIO	-1	-0.9259*	-0,0882	1								
MM_HYB	0.1541*	-0.1581*	-0.0151	-0.1541*	1							
BOLD	0,0364	0,0321	-0,0592	-0,0372	0,0163	1						
FORAGE	-0,0429	-0,0528	-0,0554	0,0419	0,0988	-0.0950*	1					
PMAFE	0,0838	0,1013	-0,0694	-0,0839	-0,0411	0.0596*	0.1731*	1				
VOL	-0.1451*	-0.1572*	-0,095	0.1473*	0,0696	-0,0152	-0.0644*	0,0442	1			
GROWTH	0,1052	0.1183*	0,0219	-0,1019	-0,0099	-0.2847*	-0.1018*	0.0954*	0,02	1		
SIZE	-0,0077	-0,0613	0,0275	0,0064	0.2028*	-0.0782*	-0.1435*	0.1324*	0,0377	0.4842*	1	
NAZ	-0,1027	-0.1670*	0,0427	0,1027	0.1814*	0.1249*	0,0002	0,0086	0.0971*	-0.0666*	0.0827*	1

Notes. These panels (A and B – Table 7) report the correlation matrix among of the different model specification variables. It is based on the Spearman's correlation definition. Some of the correlations are missing because of the variables definition. All the variables have been defined above.
* denotes significance at the 10%

Table 8. The effect on the target price accuracy of the valuation methods disclosure

	(1)	(2)	(3)	(4)
VARIABLES	FE1	FE1	FE1	FE1
BOLD		0.364***	0.394***	0.386***
		(0)	(0)	(0)
FORAGE		0.000255	0.000280*	
		(0.109)	(0.0907)	
PMAFE		0.0267	0.0155	
		(0.125)	(0.440)	
VOL		0.00294	0.00376	
		(0.238)	(0.152)	
GROWTH		0.0917***	0.0996***	0.0898***
		(9.43e-08)	(1.26e-08)	(2.31e-10)
SIZE		-0.346***	-0.348***	-0.311***
		(0)	(0)	(0)
D_2008		-0.109***	-0.0973**	
		(0.00358)	(0.0118)	
D_2009		-0.103**	-0.0823*	
		(0.0250)	(0.0816)	
NAZ		-0.00682	0.00402	
		(0.736)	(0.849)	
DISCLOSED_NOTDISCLOSED	-0.0109		0.0277	0.0270
	(0.599)		(0.165)	(0.129)
Constant	0.321***	3.623***	3.578***	3.209***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	1,424	1,275	1,213	1,424
R-squared	0.000	0.287	0.298	0.281
Number of sector	20	20	20	20

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes. This table reports the main results of equation (5), testing the effect on the target price accuracy of the valuation methods disclosure. Table 2 defines all the variables used.

Table 9. The effect on the target price accuracy of the valuation method hierarchy disclosure

	(1)	(2)	(3)	(4)
VARIABLES	FE1	FE1	FE1	FE1
BOLD		0.364***	0.384***	0.371***
		(0)	(5.15e-10)	(2.02e-10)
FORAGE		0.000255	0.000294	
		(0.109)	(0.265)	
PMAFE		0.0267	-0.00885	
		(0.125)	(0.794)	
VOL		0.00294	0.0107**	
		(0.238)	(0.0231)	
GROWTH		0.0917***	0.129***	0.117***
		(9.43e-08)	(1.71e-05)	(2.50e-06)
SIZE		-0.346***	-0.464***	-0.427***
		(0.0000)	(0.0000)	(0.0000)
D_2008		-0.109***	-0.109*	
		(0.00358)	(0.0702)	
D_2009		-0.103**	-0.110	
		(0.0250)	(0.141)	
NAZ		-0.00682	-0.00534	
		(0.736)	(0.888)	
PRIMARY_SECONDARY	0.110***		0.104***	0.116***
	(0.00635)		(0.00300)	(0.000514)
Constant	0.266***	3.623***	4.656***	4.305***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	592	1,275	541	592
R-squared	0.013	0.287	0.360	0.334
Number of sector	20	20	20	20

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes. This table reports the main results of equation (6), testing the effect on the target price accuracy of the valuation methods hierarchy disclosure. Table 2 defines all the variables used.

Table 10. The effect on the target price accuracy of the main and unique valuation method disclosure

	(1)	(2)	(3)	(4)
VARIABLES	FE1	FE1	FE1	FE1
BOLD		0.364***	0.805***	0.821***
		(0)	(0)	(0)
FORAGE		0.000255	6.51e-06	
		(0.109)	(0.988)	
PMAFE		0.0267	0.0133	
		(0.125)	(0.815)	
VOL		0.00294	0.00405	
		(0.238)	(0.655)	
GROWTH		0.0917***	0.235***	0.178***
		(9.43e-08)	(1.90e-05)	(2.38e-05)
SIZE		-0.346***	-0.747***	-0.684***
		(0)	(0)	(0)
D_2008		-0.109***	-0.193*	
		(0.00358)	(0.0622)	
D_2009		-0.103**	-0.0654	
		(0.0250)	(0.580)	
NAZ		-0.00682	0.184***	
		(0.736)	(0.00839)	
PRIMARY	0.101		-0.0723	-0.0543
	(0.289)		(0.237)	(0.343)
Constant	0.277***	3.623***	7.400***	6.805***
	(0.000285)	(0)	(0)	(0)
Observations	232	1,275	210	232
R-squared	0.005	0.287	0.694	0.650
Number of sector	20	20	20	20

pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes. This table reports the main results of equation (7), testing the effect on the target price accuracy of the main and unique valuation method disclosure. Table 2 defines all the variables used.

Table 11. The effect on the target price accuracy of different valuation methods

VARIABLES	(1) FE1	(2) FE1	(3) FE1	(4) FE1
BOLD		0.364***	0.396***	0.382***
		(0)	(4.66e-10)	(1.55e-10)
FORAGE		0.000255	0.000292	
		(0.109)	(0.282)	
PMAFE		0.0267	-0.0114	
		(0.125)	(0.745)	
VOL		0.00294	0.0111**	
		(0.238)	(0.0227)	
GROWTH		0.0917***	0.127***	0.108***
		(9.43e-08)	(3.35e-05)	(1.87e-05)
SIZE		-0.346***	-0.459***	-0.418***
		(0)	(0)	(0)
D_2008		-0.109***	-0.119*	
		(0.00358)	(0.0561)	
D_2009		-0.103**	-0.104	
		(0.0250)	(0.185)	
NAZ		-0.00682	-0.0132	
		(0.736)	(0.737)	
M_FIN	-0.0198		-0.00885	-0.0163
	(0.678)		(0.839)	(0.681)
M_INC	-0.157		0.0214	0.00813
	(0.363)		(0.892)	(0.955)
M_NAV	0.174*		0.112	0.190**
	(0.0961)		(0.249)	(0.0290)
M_MRATIO	-0.0657		-0.0534	-0.0503
	(0.257)		(0.301)	(0.295)
M_HYB	-0.311**		-0.0594	-0.106
	(0.0161)		(0.636)	(0.328)
Constant	0.375***	3.623***	4.690***	4.319***
	(4.62e-09)	(0)	(0)	(0)
Observations	584	1,275	531	584
R-squared	0.016	0.287	0.353	0.329
Number of sector	20	20	20	20

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes. This table reports the main results of equation (8), testing the effect on the target price accuracy of different valuation methods used. Table 2 defines all the variables used.

Table 12. The effect on the target price accuracy of the “absolute” and “relative” valuation methods

	(1)	(2)	(3)	(4)
VARIABLES	FE1	FE1	FE1	FE1
BOLD		0.364***	0.807***	0.826***
		(0)	(0)	(0)
FORAGE		0.000255	-3.09e-05	
		(0.109)	(0.944)	
PMAFE		0.0267	0.0220	
		(0.125)	(0.704)	
VOL		0.00294	0.00452	
		(0.238)	(0.618)	
GROWTH		0.0917***	0.228***	0.175***
		(9.43e-08)	(2.96e-05)	(2.52e-05)
SIZE		-0.346***	-0.739***	-0.678***
		(0)	(0)	(0)
D_2008		-0.109***	-0.203**	
		(0.00358)	(0.0488)	
D_2009		-0.103**	-0.0641	
		(0.0250)	(0.589)	
NAZ		-0.00682	0.185***	
		(0.736)	(0.00812)	
FUNDAMENTAL _MULTIPLE	-0.0607		-0.0631	-0.0954
	(0.549)		(0.360)	(0.115)
Constant	0.375***	3.623***	7.328***	6.756***
	(7.45e-08)	(0)	(0)	(0)
Observations	233	1,275	210	233
R-squared	0.002	0.287	0.693	0.653
Number of sector	20	20	20	20

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes. This table reports the main results of equation (9), testing the effect on the target price accuracy of “absolute” and “relative” valuation methods. Table 2 defines all the variables used.

Table 13. The effect on the target price accuracy of different kinds of main valuation methods

	(1)	(2)	(3)	(4)	(5)
VARIABLES	FE1	FE1	FE1	FE1	FE1
MM_FIN	-0.923**	0.0709		0.228	-0.104
	(0.0364)	(0.738)		(0.407)	(0.102)
MM_INC	-1.152**	-0.157	-0.228		-0.332
	(0.0249)	(0.639)	(0.407)		(0.220)
MM_MRATIO	-0.820*	0.175	0.104	0.332	
	(0.0601)	(0.407)	(0.102)	(0.220)	
MM_HYB	-0.994**		-0.0709	0.157	-0.175
	(0.0441)		(0.738)	(0.639)	(0.407)
MM_NAV		0.994**	0.923**	1.152**	0.820*
		(0.0441)	(0.0364)	(0.0249)	(0.0601)
BOLD	0.836***	0.836***	0.836***	0.836***	0.836***
	(0)	(0)	(0)	(0)	(0)
GROWTH	0.175***	0.175***	0.175***	0.175***	0.175***
	(2.99e-05)	(2.99e-05)	(2.99e-05)	(2.99e-05)	(2.99e-05)
SIZE	-0.658***	-0.658***	-0.658***	-0.658***	-0.658***
	(0)	(0)	(0)	(0)	(0)
Constant	7.380***	6.386***	6.457***	6.229***	6.560***
	(0)	(0)	(0)	(0)	(0)
Observations	232	232	232	232	232
R-squared	0.662	0.662	0.662	0.662	0.662
Number of sector	20	20	20	20	20

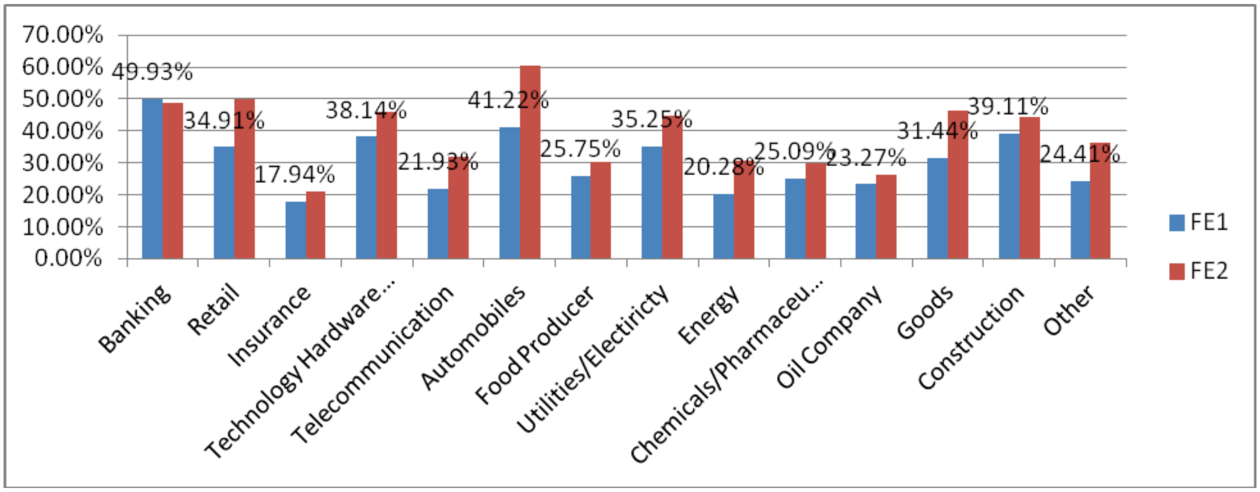
pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

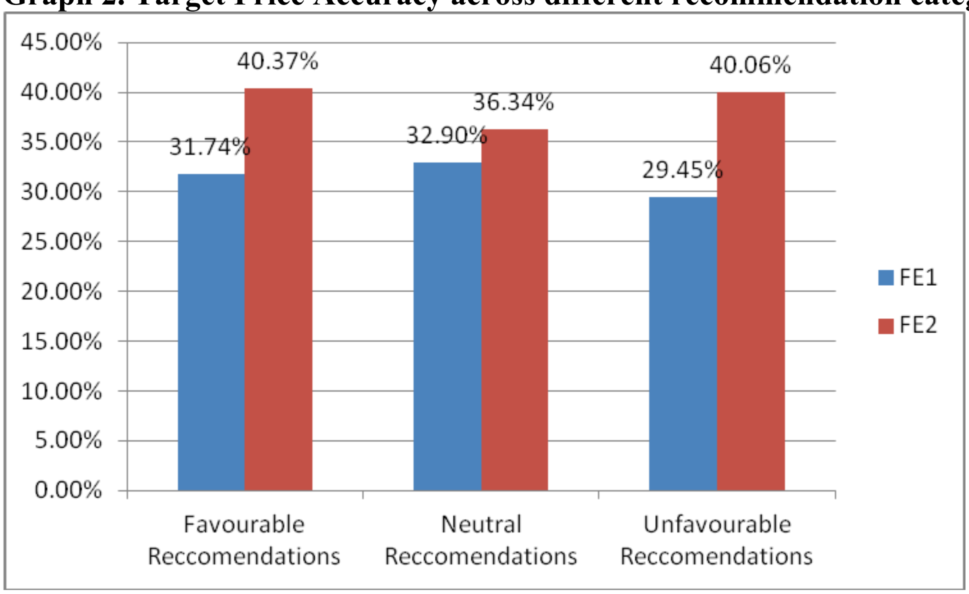
Notes. This table reports the main results of equation (10), testing the effect on the target price accuracy of different types of main valuation methods used. Table 2 defines all the variables used.

Graphs

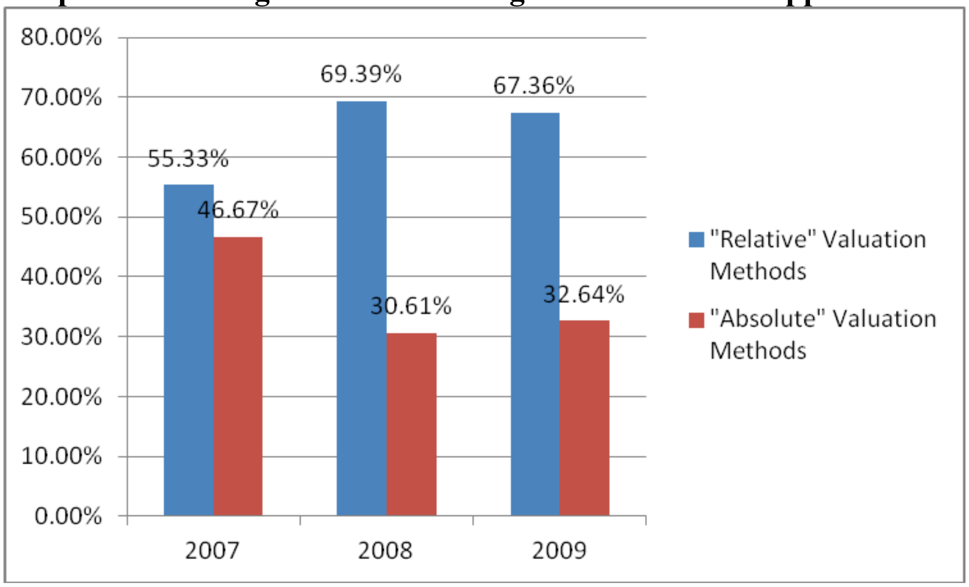
Graph 1. Target Price Accuracy across sectors



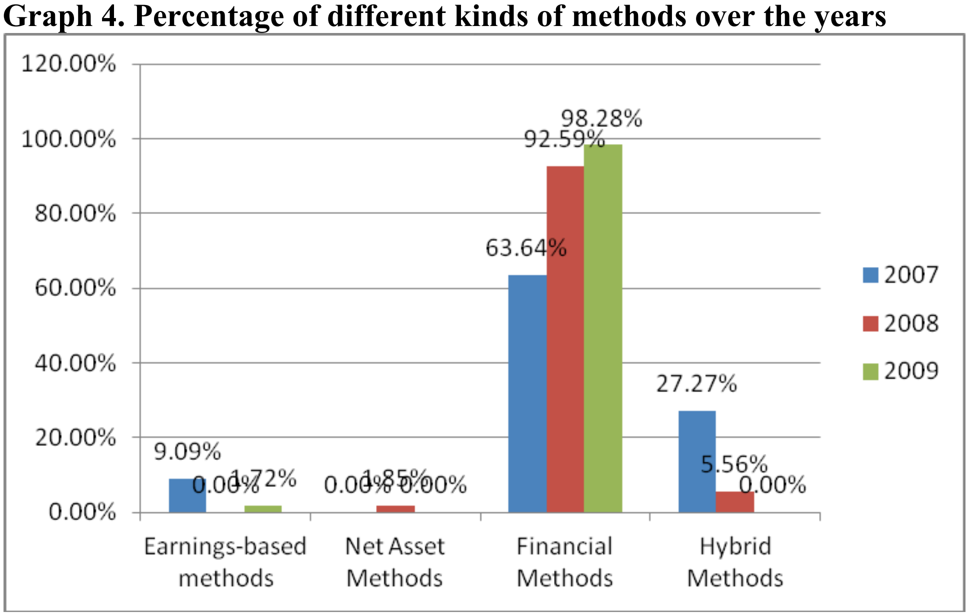
Graph 2. Target Price Accuracy across different recommendation categories



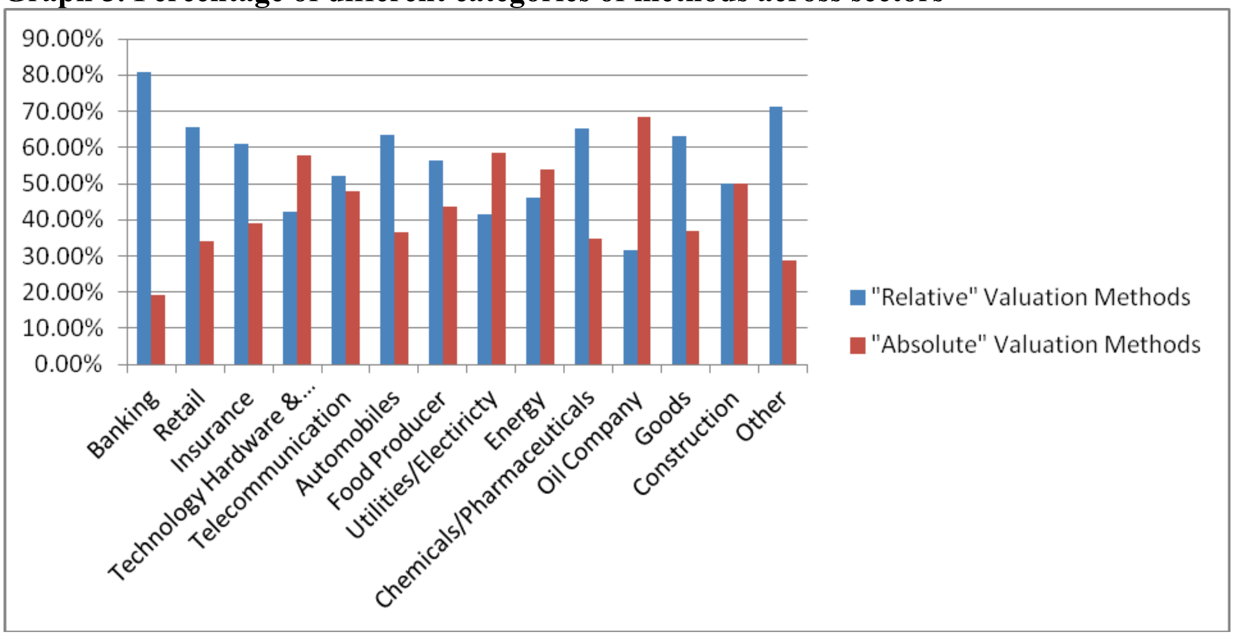
Graph 3. Percentage of different categories of valuation approaches over the years



Graph 4. Percentage of different kinds of methods over the years



Graph 5. Percentage of different categories of methods across sectors



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