

Does information asymmetry affect audit fees? Evidence from Italian listed companies

ABSTRACT

Previous research examines the determining factors of audit fees. It argues that audit fees are affected by the auditor's size, the auditee's characteristics, the provision of management advisory services, specific risks associated with providing audit services, the attributes of clients' corporate governance, growth prospective, debt structure and initial engagements or auditor changes. Using the data from Italian listed companies we extend previous literature examining the effect of one measure of information asymmetry – the bid-ask spread (BAS) – to audit fees. Consistent with previous research, we find that audit fees increase the bigger the auditee's size and auditing complexity. We also find, consistent with our hypothesis, a positive relation between audit fees and BAS, which implies that auditors transfer risks associated with higher information asymmetry on fees.

Keywords

audit fee, information asymmetry, bid-ask spread.

This paper examines the effect of information asymmetry on audit fees. Using the data from Italian listed companies we extend previous work examining the effect of one measure of information asymmetry – bid-ask spread (BAS) – to audit fees. It is important to clarify the distinction between audit and non-audit fee; the first is the amount of money companies pay for auditing services; the second is the amount of money companies pay for other services that auditors can provide (e.g. merger and acquisition or tax consulting) also called management advisory services (MAS). We concentrated our analysis only on audit fees.

In the last ten years mass media has stressed a lot the interest on companies' transparency and fairness; therefore the interest for the whole society has been growing. The number of studies investigating audit quality, audit fees and the relationship between auditors and auditees has followed the same path. In addition, the increasing relevance of financial markets around the world has caused the need for higher and higher transparency standards for company disclosure and corporate governance in order to make the market fairer and let investors trade safer.

A large volume of research has examined the variables that explain the size of audit fees. This research topic is important because finding a model that allow to identify a usual level of fee, given different companies' features, would be useful to detect abnormal fee which could be related with some kind of irregularities.

Hence, previous literature examined the relationship between audit fees and (1) audit effort (Simunic, 1980; Palmrose, 1986a; Simon and Francis, 1988; Haskins and Williams, 1988; Gist, 1992; Craswell, Francis and Taylor, 1995; Firth, 1997), (2) auditing complexity (Simunic, 1980; Id. 1984; Craswell, Francis and Taylor, 1995; Choi, Kim, Liu and Simunic, 2008) (3) auditing risk (Simunic, 1980; Chung and Lindsay, 1988; Francis and Stokes, 1986; Craswell, Francis and Taylor, 1995; Simunic and Stein, 1996; Tsui, Jaggi and Gul, 2001; Houston, Peters and Pratt, 2005; Gul and Goodwin, 2010), (4) auditor prestige and expertise (Simunic, 1980; DeAngelo, 1981; Francis, 1984; Palmrose, 1986; Francis and Stokes, 1986; Craswell, Francis and Taylor, 1995; Ireland and Lennox, 2002; Matthews and Peel, 2003; Peel and Roberts, 2003; Carson, Fargher, Simon and Taylor, 2004; Cameran, 2005; Choi, Kim, Liu and Simunic, 2008) and (5) auditee and auditor relationship path (Simunic, 1984; Palmrose, 1986; Simon and Francis, 1988; Ettredge and Greenberg, 1990; Abdel-Khalik, 1990; Firth, 1997; Craswell and Francis, 1999; Huang,

Raghunandan and Rama, 2009). No studies examined the relationship between the audit fees and information asymmetry linked to the quality of company disclosure.

Information asymmetry refers to differences in information amongst investors in a stock (Daley, Hughes and Rayburn, 1995). It has been demonstrated in previous research that poor disclosure practices increase the level of information asymmetry. Poor disclosure practices are also likely to increase the complexity and risk associated with an audit. Information asymmetry can be estimated using stock market data by calculating the bid-ask spread (Copeland and Galai, 1983).

To gain insight into auditors' expectations regarding the risk linked to information asymmetry, we extend previous work on audit fee estimation models to information asymmetry proxied by adverse selection measures such as BAS.

Given the findings of existing literature, we hypothesize that a positive relation exists between audit fee and BAS.

Previous studies demonstrated that a positive relation exists between information asymmetry and (1) earnings management practices (Trueman and Titman, 1988; Dye, 1988; Richardson, 2000; Lobo and Zhou, 2001) and (2) ownership concentration (Attig, Godhoun and Lang, 2003; Attig, Fong, Gadhoum and Lang, 2006; Ginglinger and Hamon, 2012).

Since Italian audit market is not directly comparable with other countries' ones, as explained in the next section, Italy has a high earnings management score among countries which switched to IFRS (Leuz, Nanda and Wysocki, 2003) and Italian ownership structure is typically concentrated (Faccio and Lang, 2002), the auditing risk associated to asymmetry information should be relevant. Consequently, the Italian market provides an ideal context for studying the relationship between information asymmetry and audit fees.

Consistent with previous research, we find that audit fees increase the bigger the auditee and the higher the auditing complexity. We also find, consistent with our hypothesis, a positive relation between audit fees and bid-ask spread, which implies that auditors transfer risks associated with higher information asymmetry to their fees.

The remainder of this paper is structured as follows. Section 2 reviews prior research and provides the basis for interpreting the relationship between information asymmetry and audit fees, section 3 describes our data and research design, section 4 presents our empirical results and section 5 concludes.

PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT.

The fields of the literature we are concentrating on are basically dedicated to the determinants of audit fees and the relationship between asymmetry information and BAS.

The literature has identified five different constructs that influence audit fees.

The first thing that determines the amount of fee is obviously the audit effort, that means the quantity of work needed in order to provide the service. As argued by Palmrose, 1989 the pricing of audit service is set on the base of the number of working-hours needed. This is obviously related with the dimension of auditees: auditing a big company requires more work than a smaller one. The variable used in literature to consider the dimension of company is the amount of company's total assets. Simunic, 1980, using the results of 397 surveys conducted in 1976, demonstrated that a significant and positive relation exists between audit fee and total assets, this lead to argue that audit fee increases the bigger the auditee. The same kind of relation was demonstrated by Simon and Francis, 1988 using data from 440 questionnaires on US companies in 1984; by Palmrose, 1986a using a sample of 298 US companies in the years 1980-81; by Haskins and Williams, 1988 that exposed a five-countries comparison (UK, US, Australia, Ireland and New Zealand); by Gist, 1992 studying a sample of 107 US companies in 1983-85; by Craswell, Francis and Taylor, 1995 using a sample of 1484 Australian companies listed in 1987; by Firth, 1997 with a sample of 157 Norwegian companies for the period 1991-92.

Another important factor having impact on audit fee is the complexity of auditing. If the company is complex, the auditing activity will be complex as well and therefore it will need more work and attention. The variables used to measure complexity are usually: number of subsidiaries (both national and foreign) because if companies had a larger number of subsidiaries, the auditors would have to check and visit more locations; the number of company activity sectors because each sector could have different auditing practices and risks. Simunic, 1980 demonstrated that there is a positive effect of complexity variables on audit fee; Simunic, 1984 found the same effect using a sample of 397 US companies in 1976-77; the complexity variables used by Craswell, Francis and Taylor, 1995 gave the same results; Choi, Kim, Liu and Simunic, 2008 highlighted the positive effect studying a sample of 17837 firm-years from different countries for the period 1996-2002.

Audit risk is another factor studied by existing literature. As happens in all businesses, the higher the risk, the higher the price. The auditing sector confirmed this path. Some proxies used in literature to measure the audit risk are: debt level (both short and long term) given that the more the debt, the riskier the company and therefore the auditing; recent reported losses and profitability ratios because a company with recent losses or low profitability could be riskier than usual; qualified opinion because it certifies that company's accounting practices do not comply with the requested standard; current assets, current liabilities and inventories because they are dimensions that are repeatedly changing and can be used for misleading accounting practices. As demonstrated by Simunic, 1980, risk variables have a positive impact on audit fee. The same relation was found by Chung and Lindsay, 1988 using a sample of 223 Canadian companies in 1980. Francis and Stokes, 1986 instead, found that the relation held only for very small clients. In the middle we find Craswell, Francis and Taylor, 1995 that demonstrated that leverage and qualified opinion increase audit fee but reported losses and decreases it. Simunic and Stein, 1996 tried to understand whether auditors price correctly their services relating to the litigation risk associated. They studied a sample of US companies audited by big auditors because the cost for litigations were supposed to be higher for big auditors because of reputation costs. Tsui, Jaggi and Gul, 2001 used a sample of 650 Hong Kong companies to demonstrate that the presence of an independent corporate board has a negative impact on audit fees because it enhances the reliability of accounting numbers and and, therefore, reduces auditing risk. Houston, Peters and Pratt, 2005 conducted an interesting analysis about what determines higher audit fees in four specific cases: the discovery of an error, the discovery of a GAAP inconsistency, a client buyout where the audited financial statements are used in the determination of the exchange price, and the loss of a major client customer. They sent the cases to 79 partners and managers of big auditing firms and the results showed that: in the error and buyout cases, audit fee increases were explained only by the planned increase in audit investment; in the GAAP inconsistency case, the audit fee increase was explained in part by the planned increase in audit investment, but a greater extend by the residual litigation risk; in the loss of customer case, the audit fees increase was explained by the planned audit investment, residual litigation risk and non-litigation risk. These results suggested that business risk was comprised of at least three factors (acceptable audit risk, residual litigation risk and non-litigation risk), and that auditors were compensated to act as auditors, provide insurance for investor losses, and bear risks associated with factors that extend beyond the conduct of the audit. evidences suggested that they priced correctly their services making them reflect the litigation risk associated with the clients. The results found by Gul and Goodwin, 2010 are different; the sample was formed by 2637 US listed companies in the period 2003-06 and the authors have shown that short term debt and credit rating have a negative impact on audit fee. The explanation provided for this relation has been that the short-term debt brings to a higher level of manager monitoring and therefore it seems to lower auditing risk. It is possible to see that the conclusions got through the analysis of risk could be different depending on the dimensions chosen, but it can be supposed to be normal given that each dimension can have different importance in each country.

Even auditors' prestige can impact on audit fee. This construct is usually considered through a dummy variable that distinguishes companies audited by, so-called, Big auditors and the others.

The results on this dimension vary in different studies. Simunic, 1980 found that there is a price competition between auditors and a premium could be charged by Price Waterhouse. DeAngelo, 1981 studied a sample of US companies and demonstrated the existence of an higher audit quality of the big auditors compared to the others and this gave them the possibility to charge higher fees. Francis, 1984 used a sample of Australian companies to demonstrate that a price premium for big auditor existed in Australia too. But, remaining on Australian companies, Francis and Stokes, 1986 found that the premium can be observed only with small auditees but not with large ones. Palmrose, 1986a instead, confirmed the presence of big auditors' premium studying US companies. Craswell, Francis and Taylor, 1995 found that price premium was detectable for big auditors but, going deeper, they found even a sector specialization premium for Big auditors. Ireland and Lennox, 2002 studied a sample of 1326 UK listed companies in 1997-1998 and demonstrated the existence of premium in UK audit markets. A different and quite interesting study was Matthews and Peel, 2003; the study analyzed a sample of 121 UK listed companies in 1900 and demonstrated that big auditors premium existed even in such year. Peel and Roberts, 2003 studied UK micro-firms operating in manufacturing industry and demonstrated that big auditors could charge higher fees to those companies but they argue that it was possible because of higher audit quality, given that auditing market for small companies was competitive. A more recent paper Choi, Kim, Liu and Simunic, 2008 presented an interesting cross-country analysis that linked the strength of legal regime of the country, audit fees, Big auditors' premium and client size; the results they obtained demonstrated that premium decreases as the countries' legal liability regimes change from weak to strong and this effect is more salient for small and medium-sized companies.

Another part of literature analysed how auditee-auditor relationship path influences audit fee. Initial engagement seems to be important. Using results of 440 questionnaires from 1984 US companies,

Simon and Francis, 1988 showed that a fee cutting of 24% exists for initial engagements compared with ongoing engagements. Similar results (fee cutting of 25%) were shown by Ettredge and Greenberg, 1990, who used a sample taken from 389 firms with auditor switching during the period 1984-87, and, Craswell and Francis, 1999 who used a sample from 1468 Australian listed companies from 1985-86. Huang, Raghunandan and Rama, 2009, instead, studied the difference in the fee cutting before and after the *Sarbanes-Oxley Act (SOX)*. Their results showed that the average post-SOX fee cutting was lower than the pre-SOX one (24% against 16%) and also that the fee cutting was less likely in post-SOX than in the pre-SOX. Other studies investigated the cases of purchasing both audit and non-audit services (or management advisory services – MAS). Simunic, 1984 used a sample of 397 publicly held US companies in the years 1976-77 and demonstrate that the audit fees tend to be higher when companies purchase MAS from the same auditor. Palmrose, 1986 used a sample of US companies and demonstrated that purchasing accounting-related services had the most significant and positive impact on audit fees (compared with the other MASs). Abdel-Khalik, 1990, instead, used the data from 84 surveys to non-financial companies in 1987 and found that the positive effect of MAS purchasing on audit fees was not detected if the services are purchased from a firms that did not provide auditing services. Firth, 1997 concentrated its analysis on a sample of Norwegian listed companies and the results showed a positive link between the non-audit fees and the audit fees as happened in the other countries even if the market condition of the auditing industry were different because it was dominated by two big auditors (Arthur Andersen and KPMG). Despite the finding of a positive association between audit and non-audit fees, all the cited studies are unable to provide a useful explanation for this. It would be expected that the information obtained from the non-auditing services would make the auditing activity easier for the auditors and consequently lead to lower audit effort and fees. But on the other hand, the purchasing of both services from the same auditors could cause a hold up effect that allows auditors to charge higher prices. Given the evidence, it is possible to deduce that the latter overcomes the former.

Most of the literature used samples of US, UK and Australian companies. Few studies focused on other countries. Cameran, 2005 studied a sample of listed and non-listed Italian companies in

order to check whether Big auditors can charge a price premium on their clients. The sample included both listed and non-listed companies because big auditors' market share on listed companies is too large (around 90%) to implement a valid analysis. The results have showed a differentiated price behaviour among Big auditors; more specifically a real price premium could be attributed to KPMG.

As explained by Cameran, 2005, Italian audit market is not directly comparable with other countries. First of all, there are two types of auditors: one called Collegio Sindacale and the audit company. The former is mandatory, mainly, for listed companies and for comparable size companies. It carried out audits limited to particular account balances (e.g. cash and R&D expenses). The Draghi law (1998) limited the auditing activity of Collegio Sindacale; the reform came into effect on 2004 has given to single company the possibility to choose whether or not to engage individual auditor or an audit firm instead of Collegio Sindacale. Another important characteristic of Italian audit market is that there are three different categories of actors that can issue an audit opinion: Audit firms authorized by law 1966/39 (235 on 31 December 2001), Audit firms registered with CONSOB (24 on 31 December 2001) and Revisori Contabili in accordance with the Italian legislative decree 88/92 (71,487 in 1998). Specifically looking on listed companies, big auditors produced more than 90% of revenues (1989-1999) of all CONSOB audit firms and have a market share on listed companies around 90% as showed in the following section.

Examining the literature on the second important factor of this paper, Lev, 1988 argues that observable measures of market liquidity can be used to identify the perceived level of information asymmetry facing participants in equity markets. Bid-ask spreads are one such measure of market liquidity that have been used extensively in previous research as a measure of information asymmetry between management and firm shareholders.

Bid-ask spread is the difference between the bid (buy-side) and ask (sell-side) prices. Being prices of both sides set upon information available for each actor, the spreads reflects the difference in informations available for insider and outsider. Evidence of the ability of bid-ask spreads to capture the information environment of the firm is provided by Welker, 1995 and Healy, Hutton and Palepu, 1999 who report evidence of a negative relationship between bid-ask spreads and firms' disclosure policies. Chung, McNish, Wood and Wyhowski, 1995 and Kim and Verrecchia, 1994 studied a samples of US companies and demonstrated that market makers establish the BAS of a stock according to the asymmetry information associated with that stock; Coller and Yohn, 1997 studied 520 quarterly earnings forecasts of US companies from 1988 through 1992 and showed that the bid-ask spread is lower after management forecast releases, because of reduction of information asymmetry.

Moreover, previous studies linked asymmetry information to each of audit fee determinants identified above: (1)audit effort (Niemi, 2005), (2)number of subsidiaries (auditee complexity) (Huson and MacKinnon, 2003), (3)auditors' risk (Abbott, Parker and Peters, 2006), (4) auditor prestige (big auditors are supposed to provide higher audit quality) (Niemi, 2005) and (5) auditor-auditor relationship (Geiger and Raghunandan, 2002; Solomon, Shields and Whittington, 1999).

Consequently, we hypothesize that information asymmetry is positively related to the size of the audit fee, *ceteris paribus*.

RESEARCH DESIGN

Institutional Detail and Sample Selection

The Italian auditing services market is very concentrated; 10 auditors audit companies listed in Blue Chip and STAR segments while the Big 4 auditors audit almost 90% of listed companies.

In Italy, trading in equities is conducted on one national exchange, the Borsa Italiana. Borsa Italiana S.p.A. is responsible for the organisation and management of the Italian stock exchange. The Company, founded in 1997 following the privatisation of the exchange, has been operational since January 1998 and it is now part of London Stock Exchange Group, following the merger effective October 2007¹.

During the period of the analysis, all trading was carried out on an open electronic limit order book called MTA. There were three different stocks' segment:

- Blue Chip: it was dedicated to companies that were part of FTSE MIB and Midex indices, with a solid financial structure and with a capitalization beyond 1 billion of euros. The capitalization of this segment at the end of 2008 was 364.6 billions of euros (90.70% of total capitalization of Borsa Italiana). The normal trading for this segment occurred between 9:10am and 5:25pm.
- Star: it was dedicated to companies with a capitalization between 40 millions of euros and 1 billion of euros that respected high standard of transparency, liquidity and corporate governance. The segment capitalization at the end of 2008 was 13 billions of euros. The normal trading for this segment occurred between 9:10am and 5:25pm.
- Standard: it was dedicated to companies with a capitalization between 40 millions of euros and 1 billion of euros that do not respected the same standard of Star companies. The normal trading for this segment occurred between 11:00am and 4:25pm.

In addition, Borsa Italiana had other markets: *Expandi*, dedicated to small and competitive firms (it has been replaced by the Alternative Investment Market - AIM in 2009) and MTA International, that allows to trade on some of most liquid stocks of Euro-zone.

Moreover, through Borsa Italiana is possible to trade on securities, funds, futures, companies and government bonds etc.

Sample and Data

Our initial sample included all companies with ordinary shares listed in Blue Chip and STAR segments of Borsa Italiana at 31 December 2008 (152). These segments include companies with high market capitalisation, which are supposed to have large dimension, high level of internal control and managerial practices, and companies that respect high standard of transparency, governance and liquidity. Then we excluded companies from the banking and insurance sectors because of peculiarities in financial disclosure (30) and companies with too much missing data regarding trades and quotes or audit fees (14).

This left a final sample of 108 firms corresponding to 413 firm-year observations during the period 2008-2011.

The justification for choosing these years is that Italian listed companies have to disclose the amount of audit and non-audit fees paid since the fiscal year started after 30th June 2006 (as established by Art. 149 duodeces of Issuers' Regulation (CONSOB)). But the regulation was not quickly adopted by all companies and therefore 2007 showed too much missing data; for this reason we chose 2008 as the starting year. The financial statements of 2011 were the last available while we were building the sample.

Market microstructure data available for this study was supplied by SIRCA and describes trading in all Borsa Italiana listed stocks. The data includes trade and quote records. The quote records contain fields which document the best bid and ask prices and the volumes on offer at the best bid and ask (*i.e.* depth), whenever either price or depth changes. The trade records contain fields, which

¹ <http://www.borsaitaliana.it/borsaitaliana/chi-siamo/chi-siamo.en.htm>

describe the price and volume associated with each transaction. All records are time stamped to the nearest hundredth of a second.

For our study we collected hourly data for bid and ask prices of closed transactions. The database allow to have intraday data with intervals of one, five or sixty second but with such details the dataset would have been too large to be managed. We cleaned the data obtained from the database deleting observations outside the normal trading hours and observations during the day of closed market; then we calculated the average through the whole year of observation. From SIRCA we got data on share outstanding as well; we used data at the end of the day because it does not change very often; then we calculated the average through year.

Some accounting, such as total assets, current assets and short-term debt, data was supplied by DATASTREAM; other accounting data was collected manually through companies' financial statements available on their websites or on Borsa Italiana. It was necessary because DATASTREAM did not provide them directly (e.g. audit fees provided by database were the sum of both audit and non-audit fees; receivables in database were the sum of all credits and not just the commercial ones).

MODEL

In order to examine the effect of the bid-ask spread on audit fees we integrate previous model used on Italian companies (Cameran, 2005) with bid-ask spread and we adapt it. Given that the bid-ask spread is measured in euros per share, we scale variables to number of shares:

$$\frac{AF}{S} = b_0 + b_1 \frac{TA}{S} + b_2 \frac{REC}{S} + b_3 \frac{INV}{S} + b_4 \frac{LIQ}{S} + b_5 BAS + b_6 BIG4 + b_7 TEN_{2-3} + b_8 YEAR_{09-11} + \varepsilon$$

where:

- S = number of shares;
- AF = audit fees;
- TA = total assets at year end;
- REC = receivables at year end;
- INV = inventories at year end;
- LIQ = current assets minus inventories to short term debt;
- BAS = stock's average bid-ask spread of the year;
- BIG4 = dummy variable equal to 1 if the auditor is a Big 4, 0 otherwise;
- TEN₂₋₃ = dummy variables for the length of auditor-auditee relation; TEN₂ is a dummy variable equal to 1 if the tenure is between 4 and 6 years, 0 otherwise; TEN₃ is a dummy variable equal to 1 if the tenure is between 7 and 9 years, 0 otherwise;²
- YEAR₀₉₋₁₁ = dummy variables for the years 2009, 2010 and 2011.

According with previous literature, we expect a positive relation between audit fees and auditee's size (TA), auditing complexity (REC and INV), auditor's size (BIG4) and auditing tenure (TEN₂₋₃). We also expect a negative relation between audit fees and liquidity index (LIQ/S) for the considerations regarding the risk of bankruptcies.

² The Art. 2049-quarter of Italian Civil Code established that an auditor can be appointed for a max of three years; the legislative decree 303/2006 established that the assignment can be renewed no more than two times.

In accordance with our hypothesis we finally expect a positive relationship between audit fees and bid-ask spread.

The dummy variables YEAR₀₉₋₁₁ are designed as 1 if the observation was drawn from the year indicated and otherwise as 0. These variables are included to check for time-specific factors occurring across the sample period as done by Cameran, 2005, Hogan and Wilkins, 2008 and Gul and Goodwin, 2010.

RESULTS

Table 1 shows the descriptive statistics of the variables involved in the model. Looking at it, it is possible to notice that almost 90% of the companies in our sample are audited by a Big4; it confirms the high level of concentration of Italian audit market highlighted by Cameran, 2005. Other important factors are that the tenure variables are almost equally distributed in our sample with a range that varies between 30% and 37%. Looking at variables YEAR we can argue that the observations are equally distributed across time (24% of observations were drawn from 2008, 26% from 2009, 26% from 2010 and 24% from 2011). The average of variable BAS is around 6 €/cents with a minimum tick that was in a range between 0,0001€ and 0,05€ based on the price of the stock. The NYSE Research (2001) provided a study that indicated an average bid-ask spread on common stocks in NYSE and NASDAQ of 4 \$/cents with a minimum tick of 0.0625 \$ (\$1/16); this value is even expected to be lower nowadays because of the effort regulators have been hiring to improve companies' and markets' transparency. This confirms our hypothesis that asymmetry information problem is still evident on Italian stock market.

[Table 1 about here]

The analysis for correlation was made using Pearson coefficients (Soper, Young, Cave, Lee and Pearson, 1917) (Table 2). The results show that strong correlations ($\rho > 0.7$) are present among the variables TA/S, REC/S, INV/S and LIQ/S; a justification for this could be their origins – they are accounting measures presumably growing together. From the analysis made on the data there is no evidence of co-linearity.

[Table 2 about here]

Table 3 shows the results of the regression. The dummy variables for TEN₁ and YEAR₀₈ were not included in the regression to avoid the dummy variables trap.

[Table 3 about here]

Results are consistent with our expectation and literature's results, with the exception of liquidity index.

Specifically, our proxy variable for audit effort (TA/S) has positive and significant coefficient (p-value=0.020); this means that the bigger the auditee, the higher auditor's effort and the higher the audit fees.

The proxies for auditee complexity were INV/S and REC/S. The former has a positive and significant coefficient (p-value=0.003) as expected; this means that the higher auditee's complexity and the higher audit fees. The latter instead has a negative and non-significant coefficient (p-value=0.257); this sign of the relation is counter intuitive and the non-significance was not expected but it is likely to suppose that high correlation between accounting variables (see table 2) affect this result.

The proxy variable for auditing risk (LIQ/S) has positive and significant coefficient (p-value=0.000); it means that the higher the company's liquidity, and therefore the lower the risk, the higher audit fees. It was not as expected.

The variable BIG4 that indicates the auditor prestige has a negative but non-significant coefficient (p-value=0.103). The non-significance could be presumably caused by the high concentration of big auditors in auditing listed companies (as show the descriptive statistics in table 1).

The variable used to measure information asymmetry (BAS) has a positive and significant coefficient (p-value=0.000); as hypothesized, the higher the bid-ask spread, therefore the higher information asymmetry, and the higher audit fees. More specifically,, an increase of 1 €/cent in BAS is followed by an increase in audit fees per share of about 75 €/cent.

Among variables that give a measure of the length of auditee-auditor relationship (TEN₂₋₃), only TEN₂ has a positive and significant coefficient (p-value=0.039); this means that audit fess tend to be higher when company is audited by the same auditor since four to six years. This means that, according to our results, auditors charge higher fees in their second mandate.

The varables YEAR₀₉₋₁₁ confirm that the results have not been drawn by observations of one year.

The R-squared of the regression is 0.6 which means that the model explain more than 60% of the variability of the audit fees. The value of the R-squared is similar to those of previous studies which are typically in the range 0.6 to 0.7 as shown by Cobbin, 2002.

CONCLUSIONS AND LIMITATIONS

This paper examines the effects of information asymmetry on audit fees by integrating previous models of audit fee estimation with the bid-ask spread and by testing it on a sample of companies listed on the Borsa Italiana.

Our results are consistent with previous literature that show a correlation between the amount of audit fees and the auditee's size, complexity of auditing and length of auditee-auditor relationship. Moreover our findings confirm the hypothesis that information asymmetry, measured through bid-ask spread, affects audit fees in a positive way.

A number of avenues for further research remain. Importantly, this analysis is based upon the Italian market and therefore could be affected by national circumstances. The main suggestions to evolve this research would be (1) to test the model on a wider international sample to search for eventual cross-sectional differences; it would not sound strange if our model worked with other countries' data because, while, existing models in literature use number of subsidiaries and number of activity sector to measure complexity, we use two specific accounting item as receivables and inventories to adapt model to he characteristics of Italian companies, that are usually not so large as international public company. (2) Consider only the adverse selection component of the spread but this decomposition is hard to be implemented and, given that the adverse selection component represents most of the total spread, it might not add so much to results obtained.

Table 1.**DESCRIPTIVE STATISTICS**

This table reports descriptive statistics for a number of variables in the period of analyses (1 January, 2008 to 31 December 2011) for the 108 firms that comprise the sample. The variables are measures of audit fees size (AF/S), audit effort (TA/S), auditing complexity (INV/S and REC/S), audit risk (LIQ/S and BAS), auditor prestige (BIG4), auditor-auditee relationship (TEN1-3). Given that the bid-ask spread is measured in euros per share, we scale variables to number of shares.

Variable	Mean	Std. Dev.
AF/S	12.40	22.15
TA/S	19,127.22	52,984.63
INV/S	2,074.78	4,591.51
REC/S	3,265.07	5,890.30
LIQ/S	4,273.61	9,581.81
BIG4	0.88	0.31
BAS	0.06	0.08
TEN1	0.30	0.46
TEN2	0.34	0.47
TEN3	0.37	0.48
YEAR ₀₈	0.24	0.43
YEAR ₀₉	0.26	0.44
YEAR ₁₀	0.26	0.44
YEAR ₁₁	0.24	0.43
N° Obs	413	

Table 2.**CORRELATION MATRIX**

This table reports descriptive statistics for a number of variables in the period of analyses (1 January, 2008 to 31 December 2011) for the 108 firms that comprise the sample. The variables are measures of audit fees size (AF/S), audit effort (TA/S), auditing complexity (INV/S and REC/S), audit risk (LIQ/S and BAS), auditor prestige (BIG4), auditor-auditee relationship (TEN1-3). Given that the bid-ask spread is measured in euros per share, we scale variables to number of shares. * (**; ***) denotes significance at the 1% (5%; 10%) level.

Variables	AF/S	TA/S	REC/S	INV/S	LIQ/S	BIG4	BAS	TEN2	TEN3	YEAR ₀₉	YEAR ₁₀
TA/S	0.6708 *	1.0000									
REC/S	0.7040 *	0.7850 *	1.0000								
INV/S	0.6773 *	0.8222 *	0.7644 *	1.0000							
LIQ/S	0.7298 *	0.8662 *	0.9194 *	0.7799 *	1.0000						
BIG4	-0.0529	0.0663	-0.0006	0.0680	0.0313	1.0000					
BAS	0.5349 *	0.3099 *	0.6002 *	0.4484 *	0.4892 *	-0.1187 **	1.0000				
TEN2	-0.0195	-0.0999 **	-0.0964 ***	-0.1009 **	-0.1107	-0.0716	-0.0498	1.0000			
TEN3	0.0563	0.0506	0.0717	0.1197 **	0.0986 ***	0.0131	0.0192	-0.5437 *	1.0000		
YEAR ₀₉	0.0070	-0.0097	-0.0099	-0.0307	0.0051	0.0180	-0.0359	0.1179 **	-0.0893 ***	1.0000	
YEAR ₁₀	-0.0214	0.0022	-0.0204	-0.0135	-	-0.0148	-0.0172	-0.0499	0.0445	-0.3463 *	1.0000
YEAR ₁₁	-0.0030	0.0056	0.0051	0.0111	0.0083	0.0400	0.1333 *	-0.0307	0.0448	-0.3289 *	-0.3310 *

Table 3.**REGRESSION RESULTS**

This table reports the results of the following regression:

$$\frac{AF}{S} = b_0 + b_1 \frac{TA}{S} + b_2 \frac{REC}{S} + b_3 \frac{INV}{S} + b_4 \frac{LIQ}{S} + b_5 BAS + b_6 BIG4 + b_7 TEN_{2-3} + b_8 YEAR_{09-11} + \varepsilon$$

Dep. Var. AF/S				
Independent Variables	Coefficient	Std Error	t-value	Significance
TA/S	.000075	.00003	2.33	0.020
REC/S	-.000384	.00034	-1.13	0.257
INV/S	.000860	.00029	2.95	0.003
LIQ/S	.000942	.00023	4.10	0.000
BIG4	-3.660024	2.23989	-1.63	0.103
BAS	75.169680	12.35828	6.08	0.000
TEN2	3.639830	1.75582	2.07	0.039
TEN3	1.558047	1.74052	0.90	0.371
YEAR09	-1.043336	1.97117	-0.53	0.597
YEAR10	-2.198252	1.96010	-1.12	0.263
YEAR11	-3.246464	2.02934	-1.60	0.110
Cons.	4.849285	2.75773	1.76	0.079
Adj. R2 / F-value / Sig.		0.602 / 57.55 / 0.000		

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