

# **Corporate Governance and Market Liquidity: The Role of Financial Analysts**

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## **Abstract**

This paper concerns the effect of ownership concentration and analyst following on market liquidity. Using a unique panel of hand-collected data for Italian firms for the period 2002-2008, the results suggest that: (i) ownership concentration is negatively related to market liquidity; (ii) the number of studies carried out by financial analysts are positively related to market liquidity; (iii) ownership concentration have a strong decreasing effect on liquidity when analyst following increase . Thus, when high level of public information is available, liquidity decreases due to the high risk of expropriation.

Key words: liquidity, corporate governance, analyst following, relative spread.

JEL classification: G10, G34

## 1. Introduction

Recently the impact of corporate governance on market liquidity became a very relevant issue in market microstructure. Market liquidity refers to the capability of an asset to be sold without generating a significant impact on transaction costs and subsequently on the related trading price. Recently Amihud and Mendelson (2008) argue that “company’s securities are liquid to the extent they can be traded quickly and at low cost”; in other words an asset is liquid if market participants can quickly negotiate it without relevant transaction costs, which is a fundamental concept within the financial community, given its positive impact on both the micro aspect of the firm value and the macro aspect of the entire economic system. In terms of risk and returns of an asset, when volatility is stationary then the expected return required by investors is a monotonically decreasing function of liquidity (Amihud and Mendelson 1986)<sup>1</sup>. Furthermore a lack of liquidity around initial public offers or Seasoned Equity Offering, could increase transaction costs relevantly (Butler, Grullon and Weston 2002).

Hence it is important to consider how corporate governance influences the liquidity of an asset. “Liquidity is what markets are all about” (Amihud and Mendelson, 1980) which exhibits how relevant is for secondary markets to provide high levels of liquidity at lower cost. Furthermore, the main debate comes from the effects caused by asymmetry information between different market forces exercised by investors and market operators (Kyle, 1985), likewise the trade-off between liquidity and firm control over its assets (Shleifer and Vishny, 1986; Kahn and Winton, 1998; Bolton and Von Tadden, 1998).

Market liquidity is influenced by various factors, like the magnitude of transaction costs, market participants behaviour, assets characteristics, market structure and level of transparency. This is embedded within the corporate governance issues, which opens up the main objective of this study to analyse the relation between market liquidity and corporate governance.

The need of avoiding value loss by firms managers it is essential to discourage possible speculation and arbitrage opportunities and at the same time maximise the firm value; this is why corporate governance plays an interesting role for both academics and professionals. A very well managed firm becomes very competitive with lower cost of capital and more appetible to investors. A good governance becomes the analogous of good reputation, which explains the good capital structure of a firm as well.

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<sup>1</sup> An illiquid stock increases the expected return demanded together with its transaction costs (Brennan and Subrahmanyam, 1996). Likewise a low market liquidity generates an increase in volatility implying a loss in volume traded.

The objective of this study is to shed light on the relationship between corporate governance and liquidity, by examining the direct effect of ownership concentration on market liquidity and how such relation is clouded by problems of transparency and asymmetry information. The information disclosure exercised by financial analysts is also analysed, as an efficient corporate governance mechanism that contribute to improve transparency and reducing asymmetry issues between managers, shareholders and outside investors; broadly this will implicitly decrease the cost arising by agency issues and the real impact on the economic value (Bebchuk, Cohen and Ferrell 2009, Bebchuk and Cohen 2005). The Italian market appears extremely interesting to analyse as many frictions and inefficiencies have been recorded with a low protection for investors, with several agencies problems mainly between who is in control and minority shareholders; the private advantage of firm controlling is quite high in Italy, with a voting premium of 82%, compared to the 10% in USA and the 13% in UK (Zingales 1994).

Although the majority of the literature evidences the impact of corporate governance on firm value, given the reduction of opportunistic behaviours (agency costs) and the minimization of the cost of capital, only few alternative studies have shown how an efficient corporate governance has positive impacts on liquidity (Chung et al 2010, Eleswarapu and Venkataraman 2006, Bacidore and Sofianos 2002, Roulstone 2003). The corporate governance and market liquidity relationship has been looked up mainly through a cross-country analysis (Bacidore and Sofianos 2002, Brockman and Chung 2003, Chung 2010)<sup>2</sup>, generally showing a positive relationship between corporate governance and market liquidity; a lower level of shareholders protection exercised by a low level of governance standards implies a lower liquidity, vice versa been true.

Few other studies focus on the role of internal mechanisms of corporate governance that influences market liquidity. Coffee (1991) well exhibits the role of institutional investors who promote the positive relationship between corporate governance and liquidity. Bhide (1993) finds a less active control by shareholders when market liquidity of the firm is high. Chung et al (2010) examine the direct relationship between corporate governance and market liquidity over a sample of firms quoted on both the NYSE and NASDAQ; by using a synthetic index (GIM-Index), the authors find similar results to the previous literature, with governance positively related to liquidity, given a better transparency and low level of asymmetry information, implying lower agency costs. Becht (1999) shows a negative relationship between ownership and market liquidity in Germany

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<sup>2</sup> Eleswarapu and Venkataraman (2006) show how countries with more efficient appraisal, higher accountability standards, and political stability have higher level of market liquidity. Bacidore and Sofianos (2002) evidence how among firms quoted on the NYSE, these who are located in the USA exhibit higher level of liquidity than these located outside the USA. Brockman and Chung (2003) show similar finding among firms quoted on the Hong Kong Stock Exchange, with lower spreads and higher depth for local firms, compared to others located outside Honk Kong.

and Belgium. Works by Comerton-Forde and Rydge (2006) and Ginglinger and Hamon (2007) show a negative relation in Australia and France respectively.

The role of financial analysts, considered as an external mechanism of corporate governance, became very interesting to media, legislator and academics, especially after the bubble burst and then the default linked to the financial scandals, which had a very negative influence on both firms and investors. Financial analysts play a very important role in disseminating sensitive information by releasing financial reports that could amplify or reduce governance factors on market liquidity (Atiase and Bamber 1994; Imhoff and Lobo 1992; Marquardt and Wiedman 1998).

Works like Shleifer and Vishny (1997) suggest that it is important to deepen the complementarity between governance instruments to fetch managerial implications capable of explaining very complex economic, as previous works supported the idea that different governance factors were substitute; only a single instrument, and the best in terms of idiosyncratic characteristic of the firm among the other, could not solve agency problems (Becht et al. 2002).

The paper is organized as follows. Section 2 describes background and hypothesis. Section 3 illustrates context of analysis and data. Section 4 describes methodology and variables used. Section 5 and 6 report descriptive and general results. Section 7 shows further robustness tests. The conclusions follow in Section 8.

## **2. Market Liquidity, *Corporate Governance* and the role of Financial Analysts**

Literature on market microstructure faces *in primis* issues on how to measure market liquidity and its determinants, and generally the empirical research prefers analysing transaction costs as, when they are quite high, they could lead to a lack of liquidity. Amihud and Mendelson (1986) consider liquidity as the cost for transactions to take place and the bid-ask spread represents the most natural way of expressing such a cost. Among most of the empirical works the *bid-ask spread* is used as the best proxy to explain the concept of market liquidity (Demsetz 1968, Stoll 1978, McNish and Wood 1992, Aitken and Frino 1996, Chung 2010). The most relevant outcome shows higher liquidity around lower spreads implying lower transaction costs, determined by several factors; usually the latter is represented by order processing, adverse selection caused by information asymmetry and inventory holding costs based on different market structures.

Adverse selection costs are the most relevant ones to influence Bid-Ask Spread (Kyle 1985, Easley and O'Hara 1987, Bias et al. 2005), given the presence of private informed traders in the market. Given the firm dimension, price sensitive information degree and market transparency, both insider ownership (Glosten and Harris, 1988) and volatility (Copeland and Galai, 1983) are the most common proxies to measure adverse selection.

Looking at the Italian Market, the asymmetry information well amplifies the gravity of value expropriation and opportunism, increasing the agency issues and remarking the role of corporate governance as an important determinant of market liquidity.

In general, the Italian economy is predominantly ruled by banks, and in terms of governance, the most common model is characterized by a high and stable concentration in equities (this is the reason for Italian firms been called “imprese padronali” or master firms). The presence of institutional investors and financial intermediaries is almost nil within the ownership structure, and the market efficiency lacks of high level of liquidity and efficiency compared to the most relevant markets worldwide. It seems that problems of *governance* mainly arise from the relationship between the privileged shareholders and the liquidity traders, rather than managerial greediness that agency theory is based on. Comana (2004) argues that the lower levels of market competitiveness and efficiency shown by the Italian market has been caused by the inefficiency of the institutional policies inherent to the market structure, rather than either firms productivity or inefficiency ran by Italian Stock Exchange (Borsa Italiana). In simple terms, governance problems and market inefficiency stem from a scarce attention of management towards the most relevant governance principles, obfuscating the perception of what quoted firms could actually see in a much more transparent market, hardening the access to the market and increasing transaction costs as a final effect.

Based on the above concerns, this paper shows how better corporate governance standards address issues in liquidity, and channels more market efficiency as a result<sup>3</sup>. The main contribution is explained by the hypotheses reported on table 1.

Table 1 – Hypotheses

Variable	Hypotheses	Expected Sign
Ownership	<b>H.1.</b> - High level of ownership (OWN), associated with a bigger level of asymmetry information could cause opportunism against minor investors, and lower liquidity as a consequence.	Negative effect on market liquidity with a positive Bid-Ask spread parameter.
Analyst following	<b>H.2</b> - While the number of analysts’ reports (REPORT_AF) increases, throughout a reduction in asymmetry information, market liquidity increases significantly.	Positive effect on market liquidity with negative bid-ask spread parameter.
Interaction between ownership and Analyst following	<b>H.3.</b> – Whether REPORT_AF increases, reducing the level of asymmetry information, implies an improvement in governance, slightly diminishing the negative effect of ownership on liquidity.	Positive effect of this interaction between ownership and market liquidity, with negative bid-Ask spread parameter.

<sup>3</sup> It is well known that a positive relationship exists between market efficiency and liquidity, hence if corporate governance positively influences market liquidity, then it will corroborate the market efficiency as well.

The influence exercised by corporate governance on liquidity is direct<sup>4</sup>, as the instruments used to reduce problems of opportunism are correlated to the *market liquidity*; a higher degree of opportunism between stakeholders, leads to low levels of liquidity. These issues are mainly caused by the presence of conflicts of interests between large shareholders and minority shareholders (liquidity traders), and to address it, the percentage of voting rights by large shareholders is considered to measure the loss experienced by minority shareholders. Large shareholder could possess private information that explains *adverse selection problems* (Grossman and Stiglitz, 1980; Glosten and Milgrom, 1985; Kyle, 1985; Easley and O'Hara, 1987)<sup>5</sup>. This opens the debate on whether *insider trading* could be detected and eliminated, as it is detrimental to the firm's reputation and decreases *market liquidity* as the major result. In general, public informed traders, well known as liquidity traders (minority shareholders), are not willing to pay the cost of adverse selection caused by the presence of informed traders, and will demand higher spreads to compensate the risk of trading with large shareholders (Heflin and Shaw 2000). Demsetz (1968) is the first to empirically show that an increase in trading size increases market liquidity, hence the higher the percentage of stocks owned by a single investor, the lower is the number of shares traded among the other market participants, implying a lower level of liquidity (Merton, 1987; Schwartz and Shapiro, 1992).

Numerous studies have examined the impact of ownership structure on liquidity around the common law countries where protection versus small investors is quite high (Heflin and Shaw 2000, Chiang and Venkatesh 1988, Naes 2004, Comerton- Forde and Rydge 2006), while very few studies have been conducted among *civil law* countries where opportunism plays the majority role (Ginglinger Hamon, 2007). Although this relationship between ownership structure and market liquidity is extremely complex<sup>6</sup>, in general, the higher is the monopoly exercised by a trader, the lower is the probability that the firm acts on the shareholders interest (Heflin and Shaw 2000), especially when trades take place in a low level of protection environment, generating higher transaction costs. **(H.1.)**.

This hypothesis stems from informational problems that strongly influence the ownership. The ownership effect on market liquidity is directly connected to information, as a high ownership

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<sup>4</sup> Corporate governance meets the need of protecting all the procedures to appraise the firm from activities of expropriation during possible market inefficiency caused by agency costs and asymmetry information.

<sup>5</sup> As suggested by Rubin (2007, p.220), *the adverse selection hypothesis posits that when informed shareholders possess superior information compared to outside shareholders, an information asymmetry arises, which reduces liquidity. The trading hypothesis posits that when investors turn over their portfolio more often, transactions costs are reduced, which increases liquidity.*

<sup>6</sup> On one side large shareholder have both the interest and dealing power to monitorate management, intervening in the event of scarce performance and risks arising from appraisals; on the other side opportunism problems between large and small shareholders could conduct to the expropriation of value and scarce performance (Zattoni 2006).

implies the reduction of public information on one side, and the higher level of private information exercised by the large shareholder on the other side, leading to an increase in asymmetry information.

A further issue that influences market liquidity is known as analyst following, which can be seen as a proxy of asymmetry information. Results show the role of an analyst following has a positive impact on liquidity (Atiase and Bamber, 1994; Imhoff and Lobo 1992; Marquardt and Wiedman, 1998; Roulstone 2003). In particular, market liquidity is influenced by the quality of information disclosed related to firms. The higher is the number of financial reports disclosed to the public the smaller is the asymmetry information; this suggests that the number of financial reports could be used as a proxy for public information. Consequently a positive relation between the role played by financial analysts and market liquidity is expected, especially in the Italian context, given specific and strict policies that rule divulgation of information into the market<sup>7</sup>. This makes possible the access to a large number of relevant public information, and exhibits the uniqueness of the Italian system compared to the United States of America, where reports are not made instantly available to investors<sup>8</sup>.

In general, the presence of these analyst following capable of improving quantity and quality of information available to investors, means higher liquidity as a consequence of lower adverse selection costs. Hence the second hypothesis assumes that a higher number of financial reports reduces adverse selection and increases market liquidity (**H.2**).

Financial analysts go beyond the direct effect on market liquidity, as it seems that they could also ease the relation between corporate governance and liquidity (Roulstone 2003). In other words, ownership issues on liquidity could result from asymmetry information; Attig et al (2006) and Ginglinger and Hamon (2007) found a low market liquidity on these firms with high ownership issues caused by large shareholders damaging small shareholders; in this context the financial reports disclosed to the public by financial analysts play the important role of moderation mentioned. This paper extends these findings as it suggests a possible role of moderation exercised by the analyst following, with the end result showing higher level of market liquidity given the negligible opportunism behaviour by large shareholder.

Rubin (2007) evidences how adverse selection derive from the chances belonging to large shareholders in taking advantage of their privileged information conditional to the level of public information disclosed by financial analysts. Roulstone (2003) argues that the role of these analysts

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<sup>7</sup> In Italy it is mandatory the disclosure of all the report concerning analysis on firm value about listed firms provided by financial institutions (De Vincentiis 2009).

<sup>8</sup> In America financial analysts could be possibly gathering private information too a small number of market participants, then holding an advantage when trading.

as information providers is a determinant of governance and becomes critical in reducing asymmetry information around high levels of disclosure; hence high disclosure has a positive impact on governance, given the role played by analyst following, reducing issues of opportunism and adverse selection, with higher liquidity as the final outcome.

This is why the paper investigates the ownership effect on liquidity, conditioned by the level of public information released by financial analysts. To do so it is necessary to build an interaction variable analyst following versus ownership concentration. A negative relationship between liquidity and the interaction between analyst following and ownership concentration. **(H.3.)**

### **3. Institutional Details and Data Analysis**

This empirical work is based on a database collected manually by aggregating ownership data with the reports created by financial analysts and liquidity variables for the Blue Chip segment of the Mercato Telematico Azionario (MTA) of Borsa Italia for the years range 2002-2008.

After the MTA segmentation based on market capitalisation on the 2<sup>nd</sup> of April 2001, which mainly includes the Blue Chip high cap stocks, the STAR stocks<sup>9</sup> with a capitalisation that ranges from 40 million to 1 billion Euro and Ordinary. While the Blue Chip and Ordinary markets are continuous limit order driven systems, giving price priority and then time priority, the STAR segment is a quote driven market given the presence of a specialist who aims to improve liquidity by matching the best quotes especially when stocks are illiquid.

After several analysis conducted on the Italian market, “anomalous” volatility appears during particular times of the year (Amihud et al, 1990 and Barone, 1990). Pagano and Roell (1990), and Zingales (1994) show how higher liquidity could not influences the difference between ordinary and preferred stocks prices, but once the private benefits of control are introduced then this difference significantly shows the advantage of these private informed traders. Palmucci (2005), Frino et al (2008) and Perotti and Rindi (2010) find that the liquidity of quoted driven stocks on the STAR segment is higher than the other segments used as control.

Information on both ownership structure and corporate governance have been retrieved by the Consob<sup>10</sup> webpage. Information on financial analysts have been retrieved manually by looking at the Firms Study section available on the Borsa Italiana website<sup>11</sup>. Hence it could be possible getting the number of financial analysts and the relative number of firms reports. Reports not

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<sup>9</sup> The STAR stocks respond to very strict rules of corporate governance in terms of liquidity and transparency.

<sup>10</sup> Specifically the “Societa’ Quotate” section of Borsa Italiana website has been consulted to get information on ownership structure.

<sup>11</sup> In the Italian context there are not databases like IBES, largely used in the USA.



containing the firms appraisal by financial analysts have been excluded. Cervellati et al (2007) show that information on financial analysts activities are the most accurate. Share price, bid and ask prices for the relative spread measure used as a proxy of liquidity, number of shares issued have been obtained by datastream. Volume and size have been manually downloaded by the Historical Stats section of the Borsa Italiana webpage. Banks and Insurance companies have been excluded given the difference in governance policies (Volpin, 2002), together with firms who had missing values on liquidity. There is a total of 51 firms with a timeframe that goes from 2002 to 2008.

#### **4. Empirical Model And Variables Used**

The main objective is to check the fundamental relation between ownership, analyst following and liquidity by using the following econometric model:

$$\text{Market liquidity} = f(\text{ownership, analyst following, control variables}) \quad [1]$$

The equation [1] varies according to the hypothesis to be tested. Appendix 1 describes the explanatory variables used in the econometric model and the data source used.

##### **4.1 Dependent Variable**

Given the difficulty in measuring the exogenous variable liquidity (Baker 1996), this paper uses relative spread as proxy for market liquidity as following:

$$\text{Market liquidity} = 2 * (\text{ASK}_{j,t} - \text{BID}_{j,t}) / (\text{ASK}_{j,t} + \text{BID}_{j,t})$$

Where  $\text{ASK}_{j,t}$  is the best selling price for stock  $j$  at time  $t$ , while  $\text{BID}_{j,t}$  is the best purchasing price for the same stock  $j$  at time  $t$  (bid). Studies like Acker, Stalker and Tonks (2002) look at Relative Spreads around earning announcements on a daily basis, but only one value per year that comes out by cross averaging them is needed for what this paper is aiming to find out.

##### **4.2 Independent Variables**

Explanatory variables refer mainly to both the level of ownership and the level of asymmetry information measured throughout the role of analysts following.

The variable OWN represents the percentage of voting rights exercised by large shareholders; the higher this percentage is the higher is the probability that the shareholder trading activities will be detrimental to liquidity traders given the expropriation process exercised by. To examine the role of the analyst following in producing public information, the variable REPORT\_AF has been adopted. It is the ratio between the number of a firm's reports disclosed versus the number of financial analysts who work for the same firm; the higher is the number of reports released the higher will be the public information available to all investors, the lower will be the level of asymmetry information caused by the privilege of large shareholders. Lastly, the interaction variable OWN \* REPORT\_AF is used to assess whether the disclosure of public

information by analysts following moderates the impact of ownership concentration, as best representative of governance, on market liquidity. Hence, the objective is to see whether the relation between liquidity and OWN is influenced by the variable REPORT\_AF.

As relevant determinants of the bid-ask spread, variables like LN\_SIZE, which is measured by taking the natural logarithm of the firms total active, the volatility of returns, and LN\_VOL, which is the natural logarithm of volume traded (Aitken and Frino, 1996; Rubin, 2007; Ginglinger and Hamon; 2007). To control for the internal mechanisms of governance, the variable D\_FAMILY, which is explained by the identity of the ultimate shareholder, has been taken into consideration.

## 5. Descriptive Statistics

Table 2 shows descriptive statistics of the sample analysed. The mean relative spread is 0.33% with a max of value of 3.55%. In average the large shareholder who invests in the Blue Chip sector has a voting rights percentage (OWN) higher than the 40%, with a mode value beyond 90%, showing the high level of ownership concentration in the Italian context, signalling a high risk of expropriation detrimental to liquidity traders.

*Table 2 – Descriptive Statistics*

The mean, median, minimum, maximum, and standard deviation for relative spread, own, report\_af, ln\_vol, ln\_size, volatility, and d\_family are reported for the period 2002 – 2008.

VARIABLES	(2) Mean	(3) Stand.Dev.	(4) Min	(15) Median	(5) Max
RELATIVE SPREAD	.003	.003	.0004	.0023	.035
OWN	.430	.172	.0302	.499	.911
REPORT_AF	3.231	1.281	1	3.166	8.769
LN_VOL	7.135	1.048	4.738	7.031	9.825
LN_SIZE	15.301	1.29046	12.56447	15.172	18.66226
VOLATILITY (%)	26.25	13.53	.587	22.84	158.51
D_FAMILY	.465	.499	0	0	1

This explains the major issue brought by potential opportunism effects caused by conflict of interests between large shareholders and liquidity traders (minority shareholders). Data relative to the REPORT\_AF show an average of 3.23 reports disclosed by analysts following, with a max of about 9 disclosures per analyst. Furthermore, table 2 shows a symmetric distribution of both LN\_VOL and LN\_SIZE, while volatility shows abnormal observations pushing the mean to higher levels than normality.

Table 3 shows the correlation matrix between all the variables here analysed, where multicollinearity is quite negligible. Tests of Variance Inflation Factor (VIF), not reported, exhibit the marginality of all the correlation parameters, which does not bias the statistical significance of results produced by using this sample.

*Table 3 – Correlation Matrix*

Correlation between relative spread, own, report\_af, ln\_vol, ln\_size, volatility, and d\_family are reported. (\*) indicates a level of significance lower than 5%.

	1	2	3	4	5	6	7
1 RELATIVE SPREAD	1.00						
2 OWN	0.06	1.00					
3 REPORT_AF	-0.19*	-0.13*	1.00				
4 LN_VOL	-0.18*	-0.33*	0.38*	1.00			
5 LN_SIZE	0.0038	-0.29*	0.25*	0.40*	1.00		
6 VOLATILITY	0.24*	-0.03	-0.10	0.01	-0.31*	1.00	
7 D_FAMILY	0.01	0.22*	0.07	-0.16*	-0.23*	0.02	1.00

## 6. Regressions Results

The econometric model uses panel regressions with fixed effects only as supported by the Hausman test. Table 4 exhibits parameters estimations for 5 models used to test the three hypotheses above mentioned. The first model evidences a significantly positive relationship between ownership concentration and relative spread, which is coherent with the related literature, and confirms that an increase of shares owned by large shareholder implies an increase in spreads with lower levels of liquidity. The second model responds to the second hypothesis by showing a negative relationship between REPORT\_AF and spread, which explains that the correspondent to an increase in numbers of reports disclosed by the financial analyst is a better level of public information that improves market liquidity.

It is possible to argue that to an increasing number of reports corresponds a decrease in spread which implies an increase in liquidity; this is also confirmed by the third model which involves the synergy between OWN and REPORT\_AF.

*Table 4 – Regressions Results*

Fixed-effect panel regression results with relative spread as dependent variable. Own, report\_af, ln\_vol, ln\_size, volatility, and d\_family are the explanatory variables, also described in appendix 1. Standard error cluster robust are reported in brackets.

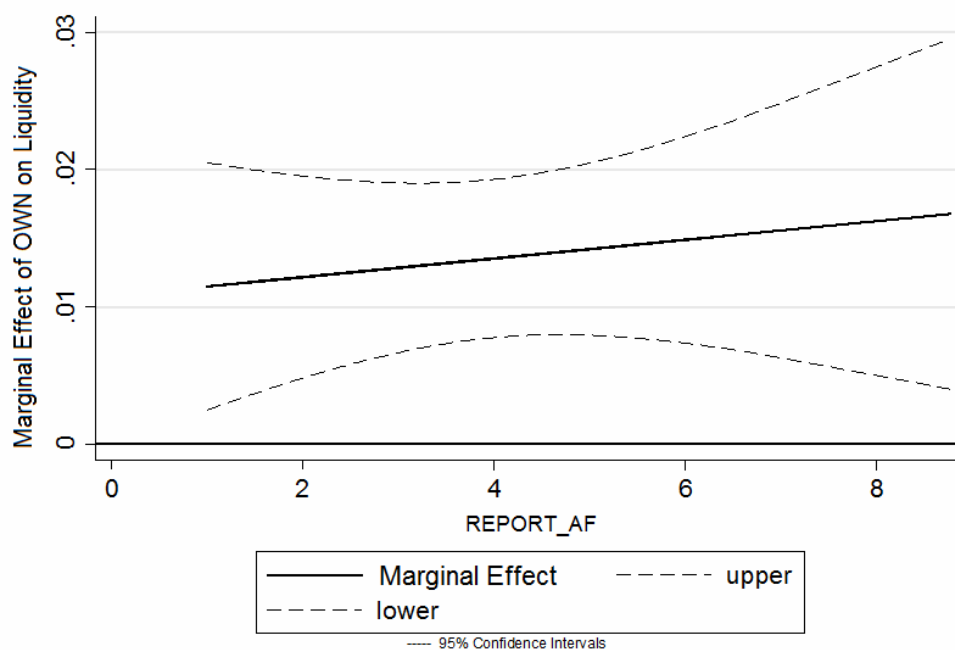
VARIABLES	Model 1	Model 2	Model 3	Model 4 Sub-group 1 – High REPORT_AF (>50%)	Model 4 Sub-group 2 – Low REPORT_AF (<50%)	Model 5 (interactions)
OWN	0.0132*** (0.003)		0.0135*** (0.003)	0.0157*** (0.004)	-0.0003 (0.004)	0.0108* (0.006)
REPORT_AF		-0.0011*** (0.000)	-0.0011*** (0.000)	-0.0016*** (0.001)	-0.0002 (0.000)	-0.0014** (0.001)
OWN * REPORT_AF						0.0035* (0.002)
LN_VOL	-0.0025*** (0.000)	-0.0026*** (0.000)	-0.0024*** (0.000)	-0.0016* (0.001)	-0.0035*** (0.000)	-0.0024*** (0.000)
LN_SIZE	-0.0016 (0.001)	-0.0011 (0.001)	-0.0012 (0.001)	-0.0044** (0.002)	0.0014* (0.001)	-0.0013 (0.001)
VOLATILITA'	0.0002*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)
D_FAMILY	0.0018 (0.002)	0.0001 (0.002)	0.0017 (0.002)	0.0033 (0.003)	-0.0008 (0.002)	0.0018 (0.002)
COSTANTE	0.0351** (0.014)	0.0390*** (0.015)	0.0325** (0.014)	0.0787** (0.031)	0.0044 (0.011)	0.0350** (0.015)
# Observations	254	251	251	120	131	251
F-statistic	22.46***	22.46***	16.06***	7.615***	23.37***	21.18***
Hausman Test: Fixed vs Random	52.90***	52.74***	69.77***			64.84***
R <sup>2</sup>	0.348	0.352	0.412	0.364	0.612	0.470

(\*), (\*\*) and (\*\*\*) indicates statistic significance at the level of 10%, 5% and 1% respectively.

Results from the first 3 columns help to see the presence of a moderation effect by REPORT\_AF on the relation between ownership concentration and market liquidity. Indeed, two methods have been used to test the third hypothesis, The first based on a sub-groups analysis, while the second involves the interaction OWN \*R EPORT\_AF. Model 4 in table 4 shows the first method, where two sub-groups have been created conditional to the median of REPORT\_AF; the sub-groups with values above the median of REPORT\_AF characterise high level of public information disclosure, while sub-groups with values lower than REPORT\_AF characterise low levels of public information disclosure. It is interesting to note that the variable OWN is significant only for the sub-groups with a REPORT\_AF higher than the median. This means that whenever the financial analysts provide public information into the market, the ownership concentration positively influences liquidity by reducing the relative spread.

The sub-group analysis has the only issue of loosing quality of the results produced on the moderation effect explained above, given it is based on transforming continuous variables in dummy variables, which appears to discriminate clusters of data within the sample used. This led to take the decision of using the interaction between two continuous variables (OWN \* REPORT\_AF) in model 5, to verify whether the positive impact of analysts following on liquidity eases problems of expropriations. Figure 1 gives an immediate interpretation of the interaction effect, by showing the relation between relative spread and OWN at different levels of REPORT\_AF.

Figure 1 – Marginal Effect of OWN on RELATIVE SPREAD at different levels of REPORT\_AF.



Firstly, model 5 results exhibit a significantly positive value of the variable OWN \* REPORT\_AF, which suggests that an increase number of reports disclosed by analysts amplifies the positive effect of ownership on relative spread, worsening the market liquidity. This role done by analysts following on liquidity is not only unable to decrease liquidity given the high risk of expropriation for liquidity traders, but also shows the role of large shareholders is predominant in influencing liquidity, given they possess high quotes of participation in the decision making process and they react to an increase of public information by decreasing the management transparency to preserve their privilege, threatening liquidity.

Hence the increase of public information done by the analysts following attempting to reduce asymmetry information implies an increase in ownership concentration, as an attempt to protect the power of large investors to influence management, ending on a lower market liquidity. Among all the regressions, parameters for LN\_VOL, LN\_SIZE and VOLATILITY have signs consistent with the related literature (i.e. Rubin,2007; Ginglinger and Hamon, 2007).

## **7. Robustness Tests**

The general results show that liquidity is negatively related to the risk of expropriation by ownership concentration, and positively related to the number of reports disclosed by analysts following. This section aims to deepen the consistency of these regressions results, to further understand the impact of corporate governance on liquidity and market efficiency, as reported in table 5.

*Table 5 – Robustness Tests*

Fixed-effect panel regression results with relative spread as dependent variable. Own, report\_af, ln\_vol, ln\_size, volatility, and d\_family are the explanatory variables, also described in appendix 1. Standard error cluster robust are reported in brackets.

VARIABLES	(1) OWN. replaced with DIFF from model 3 – table 4.	(2) OWN. replaced with D_CONT SHAR from model 3 – table 4.	(3) REPORT_AF replaced with REPORT_AF2 from model 3 – table 4.	(4) model 3 in table 4 with time lagged (at t-1).	(5) Exclusion of the 1° and 99° percentile of all the variables from model 3 – table 4.	(6) LEVERAGE; FIXED_ASSET_RATIO; ROA included in the model 3 – table 4.	(7) REPORT_AF replaced with AF in model 3 – table 4.	(8) REPORT_AF together with AF in model 3 – table 4.
OWN			0.0136*** (0.003)	0.0019** (0.001)	0.0040* (0.003)	0.0124*** (0.003)	0.0139*** (0.003)	0.0135*** (0.003)
DIFF	0.0090*** (0.002)							
D_CONT.SHAR		0.0053*** (0.0012)						
REPORT_AF	-0.0011*** (0.000)	-0.0011*** (0.002)		-0.0003*** (0.000)	-0.0010*** (0.000)	-0.0010*** (0.000)		-0.0013*** (0.000)
REPORT_AF2			-0.0154*** (0.004)					
AF							0.0002*** (0.000)	0.0003*** (0.000)
# Observations	250	251	251	215	222	236	254	251
F-statistic	16.45***	23.35***	23.33***	24.96***	27.61***	18.48***	23.12***	27.79***
Hausman test: Fixed vs Random	69.16***	66.47***	37.39***	35.98***	57.15***	75.52***	36.55***	50.82***
R <sup>2</sup> within	0.423	0.287	0.405	0.537	0.483	0.475	0.399	0.482

(\*), (\*\*) and (\*\*\*) indicates statistic significance at the level of 10%, 5% and 1% respectively.

The first column of table 5 shows a replacement of OWN with the variable DIFF, calculated as the difference between the voting rights of the main shareholder (blockholder) with the secondary one. Bennedsen and Wolfenzon (2000), and Bloch and Hege (2001) show that an increase in shares owned by blockholders leads to higher chances of formation of particular control coalitions who represents only a small percentage of the ownership structure, implying higher chances of expropriation by large shareholders against minority shareholders. Furthermore, the second column of table 5 exhibits the dummy controlling shareholders variable (D\_CONT.SHAR) replaces the variable OWN, which takes value if 1 when the shareholder owns more than 30% of shares, signalling the presence of a blockholder able of exercising a huge influence on the firm's management (Zattoni and Minichilli, 2009). Similar to OWN, both DIFF and D\_CONT.SHAR show a significantly positive coefficient, which indicates that an increase of the distance between blockholders and second shareholders, or in the presence of a "strong" shareholder, the bid-ask spread increases significantly reducing market liquidity. In other terms, the presence of discretionary traders, who are in control on the firm and having market power, reduces the liquidity.

The third column shows the role of financial analysts through REPORT\_AF2, a variable alternative to REPORT\_AF, as it is calculated as the ratio between the number of reports produced versus the firm total assets. In this way it is possible to check whether the number of reports is a function of the firms size. Results are confirming what has been evidenced by the general model shown in table 4.

To address possible problems of endogeneity, the fourth column shows results by lagging all the independent variables, and the coefficients for OWN and REPORT\_AF are positive and negative respectively, consistent with the previous results. To absorb the impact of possible outliers, the fifth column shows winsoring results by excluding both the 1% and 99% percentile of all the variables in consideration, showing similar results to the previous ones. Finally, in the sixth column appear variables that measure the firm specific factors like leverage, fixed asset ratio and returns on assets (ROA); and they do not influence the sign and significance of the variables REPORT\_AF and OWN.

Rather than using the number of reports, the last two columns of table 5 show results by using the number of analysts following (AF); when the latter increases so does the relative bid-ask spread, implying a decrease in market liquidity. This is showing an opposite trend to the one obtained by using REPORT\_AF.

The majority of literature assigns a positive role to the public information release by financial analysts on market liquidity (Atiase and Bamber 1994; Imhoff and Lobo 1992; Marquardt and Wiedman 1998; Roulstone 2003). In the Italian context the variable REPORT\_AF explains that



high levels of public information available induce to better market liquidity given less asymmetry information and consequently lower spreads. At the contrary, some previous studies argue that financial analysts actually provide private information (Easley, O'Hara and Paperman 1998; Chung, et al 1995), leading to an augmentation of adverse selection costs, hence damaging market liquidity; under this point of view then the number of financial analysts (AF) has a negative impact on liquidity and market efficiency. Chung et al (1995) argues that financial analysts could prefer to chase up firms with high level of asymmetry information, and gaining commission fees paid by private investors to receive privileged information that will not be publicly disclosed<sup>12</sup>.

As a conclusion, the simplicity of the variable AF as a proxy for the existence of private information gathering into the market shows a different scenario versus the one that adopts the variable REPORT\_AF which states the importance of the number of reports released by the analysts following; this offers two distinct outcomes as a contribution to the related literature. In the last columns of table 5, the inclusion of both AF and REPORT\_AF does not show any significant changes among the two coefficients as previously tested.

## 8. Conclusions

Liquidity seen as the capability of realising trades at lower costs of transaction with positive impact on prices, is an extremely important attribute for secondary markets, not just for what has been mentioned in the related literature (Amihud and Mendelson 1980 and 2008 ) but also based on the recent global financial crisis. Market liquidity has been the under the attention of managers not only because of its power of influencing the cost of capital and investments decisions, but also for the implications on portfolio allocations choices by investors who are more interested to liquid assets.

Compared to most US studies, this paper offers interesting keys by empirically investigating the relation between governance and liquidity. Specifically, the relationship between risk of expropriation and market liquidity has been investigated, in a context characterised by a high level of ownership concentration. The percentage of shares owned by large investors has been used as a *proxy* for the risk of expropriation, given that the power of influencing the investment choices depends essentially by the equity structure; the more the shareholder possesses the more the firm ends up being influenced in taking decisions on their behalf, damaging the interests of small investors. Preliminary results show that an increase on shares proportion held by large shareholders

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<sup>12</sup> Chung et al (1995) affirm that the financial analysts choose to follow firms with high asymmetry information issues; hence the market maker sees the presence of these analyst following as detrimental for the market and tend to post higher spreads consequently.

leads to an increase in spreads, reducing the level of liquidity associated. Based on the level of ownership concentration, the role of blockholders is very interesting, as it is shown that the lower the distance between shares owned by large investors (main blockholders) and shares owned by secondary investors (minor blockholders), has a negative impact on spreads, leading to higher levels of market liquidity. In other terms, the presence of a second blockholder has a positive influence given it tends to decrease the opportunism practiced by large shareholders.

The second aspect of tests conducted relates to the role of information provided by analysts following, and its impact on liquidity by looking at the relationship between ownership concentration and liquidity. The number of reports (REPORT\_AF) produced by financial analysts is the most significant proxy for asymmetry information. In general, the higher this number is the more public information is available, the lower is the level asymmetry information associated, presenting lower spreads and better levels liquidity.

Stemming from the notion of analyst following, it is interesting to highlight the different outcomes when just the number of analysts following (AF) is taken into account; a negative impact on market liquidity is reported when AF increases. This is a demonstration that REPORT\_AF and AF are not showing contrasting results, but they are showing two different aspects, as the first variable represent the best proxy for public information gathering, while the second variable measures a different phenomena, where large shareholders acquire privileged information from financial analysts (Chung et al 1995), negatively impacting on the market. Furthermore, it is possible that a high number of AF concerning a firm are not capable of providing sufficient information to reduce asymmetry information between insider and outsider, given the well know issuer caused by the free riding process exercised by other informed traders. Hence it is the number of financial reports (REPORT\_AF) provided that produces public information, increasing market transparency and liquidity by reducing levels of asymmetry information.

The last test deepens the knowledge about the impact of the number of reports disclosed on the relation between ownership concentration and liquidity. The level of asymmetry information conditions the relation between firm control and liquidity; in particular it is found that more public information disclosed amplifies problems of illiquidity given the high risk of expropriation. Hence the attempt of analysts following in providing information about the quality of managerial choices to improve market liquidity, leads to an increase of the ownership concentration by large shareholders who attempt to protect their own power to control management, with a negative impact on liquidity.

On one hand, an increase of public information available evidences the opportunistic behaviour of large shareholders, causing all investors to get away from the market, resulting in a

penalty for liquidity; on the other hand, the lower level of asymmetry information reduces the private benefits of large shareholders, who in return, attempt of maintaining both their power to influence the management, and their own discretionality to increase the management opaqueness to the public.

This paper shows a positive relationship between corporate governance and market liquidity. More attention paid toward the main procedures of governance guaranties a higher level of market liquidity, with positive repercussions on the entire financial system. Although there are forces exercised by these parties who detain firms control and unwilling to loosen their position, it seems emerging the need of institutional organs to intervent in reducing adverse selection costs, by imposing instruments of corporate governance that minimise potential expropriation damaging small investors and the market in general. This suggests an improvement of corporate governance standards in the Italian context could lead to a development of a more efficient, transparent and competitive market globally recognised.

These findings stimulate the need to further investigate issues on the number of reports and the number of financial analysts who produce them. In particular, it seems that the public information coming out from reports disclosure could reduce asymmetry information and market frictions. On the contrary, the only attention being paid to just the number of financial analysts shows the gathering of private information upon commissions payments made to the financial analysts by potentially large shareholders who will have a privilege damaging liquidity. Hence more analysis should be pursued about the quality of information offered by financial analysts, their reputation and degree of consensus within various reports disclosed (Cervellati et al, 2007; De Vincentiis, 2009; Bonini et al 2010). In reality financial analysts are often accused of providing both misleading information on forecasts and recommendations on purchasing/selling hot shares. More should be investigated on the role of large shareholders within the Italian context, with a low level of protection for liquidity traders and a high ownership concentration that are harmful to liquidity; this is arguable by looking at the response to asymmetry reduction with more opportunism behaviour, amplifying the negative effect to market liquidity.

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## Appendix 1 – Description of all the Variables Used

Variables	Description	Data Source
RELATIVE SPREAD	Ratio between bid-ask spread and the quoted midpoint.	Datastream
OWN.	% of voting rights by large shareholders (direct)	Section “emittenti /società quotate” Consob website: <a href="http://www.consob.it">http://www.consob.it</a> .
DIFF	% of voting rights by large shareholders (direct) – % of voting rights by second blockholders (direct)	Section “emittenti /società quotate” Consob website: <a href="http://www.consob.it">http://www.consob.it</a> .
REPORT_AF	# of reports by financial analysts on a firm / # financial analysts following that firm	Section “documenti/studi e ricerche/studio societario”. Borsa Italiana website: <a href="http://www.borsaitaliana.it">http://www.borsaitaliana.it</a> .
D_CONT.SHAR	dummy variable equals to 1 when the shareholder owns more than 30% of shares	Section “emittenti /società quotate” Consob website: <a href="http://www.consob.it">http://www.consob.it</a> .
REPORT_AF2	# reports over a firm / total assets	Section “documenti/studi e ricerche/studio societario”. Borsa Italiana website: <a href="http://www.borsaitaliana.it">http://www.borsaitaliana.it</a> . and Datastream
AF	# analysts following a specific firm	Section “documenti/studi e ricerche/studio societario”. Borsa Italiana website: <a href="http://www.borsaitaliana.it">http://www.borsaitaliana.it</a> .
LN_VOL	Natural logarithm of daily averaged trades	Section “analisi e statistiche”; documents BITSTAT by Borsa Italiana website: <a href="http://www.borsaitaliana.it">http://www.borsaitaliana.it</a> .
LN_SIZE	Natural logarithm of total assets	Datastream
VOLATILITY	Annual Standard Deviation of prices	Section “analisi e statistiche”; documents BITSTAT by Borsa Italiana website: <a href="http://www.borsaitaliana.it">http://www.borsaitaliana.it</a> .
FIXED_ASSET_RATIO	Ratio between materials assets and total assets	Datastream
D_FAMILY	Dummy variable equals to 1 if the ultimate shareholder is a single investor.	Section “emittenti /società quotate” Consob website: <a href="http://www.consob.it">http://www.consob.it</a> .
LEVERAGE	Ratio between debt and equity	Datastream
ROA	Return on asset	Datastream