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Transparency and liquidity uncertainty in crisis periods ☆

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ABSTRACT

We document, for a global sample, that firms with greater transparency (based on accounting standards, auditor choice, earnings management, analyst following and forecast accuracy) experience less liquidity volatility, fewer extreme illiquidity events and lower correlations between firm-level liquidity and both market liquidity and market returns. Results are robust to numerous sensitivity analyses, including controls for endogeneity and propensity matching. Results are particularly pronounced during crises, when liquidity variances, covariances and extreme illiquidity events increase substantially, but less so for transparent firms. Finally, liquidity variance, covariance and the frequency of extreme illiquidity events are all negatively correlated with Tobin's *Q*.

1. Introduction

A substantial body of research demonstrates that, all else equal, investors prefer stocks that are liquid and that transparency has the potential to improve liquidity (for a summary see, Amihud et al., 2005). However, the concern for investors is broader than simply the average level of liquidity because what matters is the liquidity at the time they choose to transact. Investors prefer firms with relatively predictable liquidity because they are able to better anticipate the likely trading costs associated with transacting.[1] To the extent a stock's liquidity is variable, it increases the uncertainty attached to a position and limits a potential investor's flexibility. In extreme cases, stocks may be subject to periods where liquidity suddenly evaporates, effectively eliminating the opportunity for a trader to enter or exit a position at all. For example,

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[1] Persaud (2003) notes, "there is a broad belief among users of financial liquidity – traders, investors and central bankers – that the principal challenge is not the average level of financial liquidity, but its variability and uncertainty." Similarly, McCoy (2003) states that, "As important as the level of liquidity is its *uncertainty*. In an age where there is intolerance for risks that cannot be quantified, investors may avoid markets altogether where liquidity is uncertain."

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Moorthy (2003) discusses the possibility of "liquidity black holes" in which liquidity freezes in the absence of investors willing to take the other side of positions, and fund managers faced with redemptions are forced to either offload positions at fire-sale prices or unbalance their portfolios by selling their most liquid securities.

Not only does the variability of liquidity matter, but also its timing matters. Illiquidity is of special concern if it tends to occur at inopportune times. If illiquidity in a given stock is highly correlated with illiquidity in other stocks or with market returns, it is likely to be expensive to sell at exactly the time the investor wants to liquidate the position. Research such as Brunnermeier and Pedersen (2009) [hereafter referred to as "BP (2009)"] suggests that firm-level liquidity will naturally be positively correlated with overall market liquidity and with market returns because traders' ability to provide liquidity is a function of the availability of funds, which can induce co-movement in liquidity across stocks as well as co-movement between firm-specific liquidity and market returns. Acharya and Pedersen (2005) decompose the CAPM beta to show that cost of capital is a function of the covariance between firm liquidity and both market returns and market liquidity. They provide empirical evidence that U.S. stocks that maintain a relatively constant level of liquidity when overall markets become illiquid, or when stock returns are negative, enjoy a lower cost of capital because investors are willing to pay more for shares if they expect to be able to exit positions at a relatively low cost during these periods.

While liquidity variance and covariance are important in general, they can be particularly important during crisis periods as illustrated in the recent financial market turmoil. For example, research such as BP (2009) suggests that funding constraints, and hence firm-specific liquidity co-movement with market liquidity and market returns, will be particularly pronounced when market returns are negative and, consequently, available capital to provide liquidity is limited. Empirically, Hameed et al. (2010) provide evidence that liquidity decreases and co-movement increases during market downturns, consistent with a reduction in liquidity supply when the market drops.

As discussed in more detail in Section 3, by reducing uncertainty about intrinsic value, transparency has the potential to affect liquidity variability and co-movement. Models in papers such as BP (2009) and Vayanos (2004) show liquidity can dry up because of a "flight to quality," where liquidity providers flee from assets with high levels of uncertainty about fundamental value. To the extent that transparency provides information about, for example, future cash flows, it reduces uncertainty about intrinsic value, potentially reducing the sensitivity of liquidity to market shocks. Further, transparency effects are likely to be particularly pronounced during crisis periods. During large market downturns, liquidity tends to be particularly fragile because capital is scarce and overall uncertainty is high. As a result, opaque stocks will be particularly sensitive to the effects of exogenous shocks to liquidity. In the recent financial crisis, for example, liquidity variability was more pronounced for asset classes with greater uncertainty. In addition, for transparent stocks, firm-level liquidity is less likely to be subject to market-wide liquidity shocks because more firm-specific information permits investors to differentiate between stocks (Persaud, 2003). Similarly, Vayanos (2004) suggests that liquidity providers become more risk averse in the face of uncertainty about fundamental asset values. To the extent that transparency reduces uncertainty it has the potential to reduce the tendency to withdraw liquidity during market downturns.

While there are conceptual reasons to believe liquidity variance and covariance could be affected by transparency, and theoretical and empirical evidence showing that liquidity covariance is an important component of cost of capital, we are unaware of any empirical research that explicitly examines the link between firm-level transparency and liquidity variance and covariance. That is the focus of our study.

We consider five firm-level measures of transparency—auditor choice, accounting standard choice, earnings management, analyst following and analyst forecast accuracy. These measures have been used in prior research to capture aspects of firms' information environments (e.g., Lang et al., 2011), and tend to vary substantially across firms. To ensure that our results do not simply reflect omitted correlated variables, we control for fixed country- and year-level effects in our primary analyses along with a range of factors from the prior literature. We also report results using firm fixed effects to control for other firm-level differences.

Our study uses a broad sample of international firms from 37 countries. We focus on a global sample for three main reasons. First, international firms are more likely to vary widely in terms of transparency as reflected in differences in accounting standards, auditor quality, earnings management, analyst following, investor protection, institutional holdings and country-level transparency, as well as in liquidity. Second, we are interested in crisis periods and a cross-country sample provides a much wider set of economic environments. Third, the international setting seems inherently interesting because the effects of the recent financial crisis varied markedly across economic settings, and the precipitating factors are not well understood.

We use the Amihud (2002) price impact of trade measure to capture liquidity. Price impact is a major consideration to investors contemplating an investment in a stock because it reduces the potential return by increasing roundtrip transactions costs. Further, this measure is consistent with theoretical research such as Grossman and Miller (1988) and BP (2009), which defines liquidity based on price deviations from fundamental value as a result of buying and selling pressure.

We begin by examining the relation between transparency and the volatility of liquidity. As predicted, we find that liquidity volatility is significantly negatively correlated with each of our transparency variables. For parsimony, and because the individual transparency measures are unlikely to be independent, in subsequent analyses we combine the five variables into an aggregate transparency measure. Next, we examine the relation between this aggregate measure of transparency and the incidence of extreme illiquidity, measured by the skewness of liquidity as well as by a measure of "liquidity black holes" (defined as cases in which transactions costs are at least 50 times their normal levels for a given