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National culture, population age, and other country factors in volume–price volatility relationship[☆]

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ABSTRACT

This research investigates the relationship between market-wide trading activity and price volatility in 36 countries for the sample years of 1996 to 2012. Based on the concept of noise trading, we expect the volume–volatility relation to be stronger in countries with higher degrees of individualism and masculinity, lower degrees of power distance, younger populations, less-developed markets, and lower transparency. Empirical results largely support our expectations concerning national culture and population age. As for the extent of market development and transparency, however, the supporting evidence is fairly weak.

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1. Introduction

Many empirical studies (e.g., Clark, 1973) document a positive relation between trading volume and price volatility. Theoretical models offer two plausible explanations for the positive relation: disagreements among traders (e.g., Harris & Raviv, 1993) and trading noise (e.g., French & Roll, 1986). Neither the extent of trading noise nor the traders' disagreement can be precisely measured, but we take the viewpoint that trading noise can be considerably different across countries and can depend on a country's cultural tendencies, population age, the extent of market development, and market transparency. Specifically, this study compares the strengths of volume–volatility relations across 36 countries over the period of 1996 to 2012 and analyzes

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whether the strength of a country's volume–volatility relation depends on the above-mentioned factors. It should be noted that the stock index volatility and the associated trading volume are analyzed here; trading of individual stocks involves additional complications, such as the influence of private information (French & Roll, 1986), and therefore is not examined. We feel that our study presents an innovative and useful research idea, and we are unable to identify similar studies.

In recent years, a growing body of literature has shown national culture having effects on many financial decisions and strategies. Examples include momentum strategy and trading behavior (Chui, Titman, & Wei, 2010), financial systems (Kwok & Tadesse, 2006), financing methods (Aggarwal & Goodell, 2009), capital structure (Chui, Lloyd, & Kwok, 2002), protection of investor rights (Stulz & Williamson, 2003), mergers (Ahern, Daminelli, & Fracassi, 2012), and dividend policy (Shao, Kwok, & Guedhami, 2010). Of particular interest here is the paper by Chui et al. (2010), who find that the momentum effect in the stock market is stronger in countries with stronger degrees of individualism, as measured by the cultural index developed by Hofstede (1980). Their explanation for the result is that investors in countries with greater degrees of individualism might be relatively more associated with the overconfidence problem. Citing some psychology literature such as Markus and Kitayama (1991) that infers a connection between national culture and behavioral biases, Chui, Titman, and Wei state, “The evidence in the psychology literature suggests that there is likely to be a link between individualistic cultures and overconfidence.” In addition, Lin (2009) presents evidence that foreign investor performances are better in countries with similar culture and legal system to their own. These results imply that cultural factors affect trading behavior. It is hypothesized here that since culture factors affect trading, they might also impact the relation between trading volume and price variability. While we do not offer a rigorous theory on how culture affects the volume–volatility relation, using an argument similar to that of Chui et al. (2010), we expect the following: countries with a greater degree of individualism, a lower degree of power distance,² and a higher degree of masculinity might be more associated with overconfidence that results in greater noise trading and a stronger relation between volume and price volatility. Our inference regarding masculinity is primarily based on the finding in Barber and Odean (2001) that indicates male investors, especially young single males, are more likely to be overconfident compared to female. Consequently, we expect countries with greater masculinity to exhibit such a tendency. We make no prediction concerning the other cultural dimension in Hofstede (1980): uncertainty avoidance. We argue that uncertainty avoidance has ambiguous effects on noise trading: less noise when investors simply avoid trading risky assets, more when they trade out of emotion, fear or panic; the latter is likely during noticeable down markets whereas the former might be expected in normal markets.

We also argue that other country factors, including population age, the extent of market development, and transparency, are potentially important in explaining cross-country variations in volume–volatility relations. Population age might be relevant, as Bakshi and Chen (1994) document a link between market performance and population age.³ We expect a younger population to be associated with greater noise trading due to relatively less experience, hence a more pronounced volume–volatility relation. With regard to market development and transparency, we expect that greater development and transparency to be associated with more sophisticated investors and less noise trading. Therefore, we expect countries with greater market development and transparency to have weaker volume–volatility relations. Our empirical results largely confirm our expectations regarding culture factors and population age but only weakly so for market development and transparency.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Sections 3 describes the data. Section 4 presents our methodology and expected country effects. In Section 5, the empirical results are presented and discussed. Finally, Section 6 offers the concluding remark.

2. Literature review

2.1. Empirical evidence on volume–volatility relation

Extant literature generally finds a positive relation between volume and absolute returns, where absolute return is commonly employed by some studies as a measure of price volatility. For example, using daily and

² Power distance is “the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally” (Hofstede, 1997). Countries with high power distance tend to have lower individualism.

³ Bakshi and Chen (1994) hypothesize and empirically find evidence that risk premium increases with the population age.

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