Physical commodity markets, notably including precious metals and energy products, have advanced sharply in recent months only to have experienced a sharp correction in early May. Some have linked that correction to exchange administered performance bond (or “margin”) policies, noting that performance bonds had been increased in recognition of heightened market volatility.

This begs the question: does margin policy exert a significant impact upon market price performance?

Actually, the question has been posed many times in the past albeit in a somewhat different context. Specifically, some observers have suggested that margin policy be considered as a tool for curbing market volatility. Some observers have gone even further by suggesting that stringent margin or performance bond policies might be implemented in the context of commodity futures as a means artificially to control price volatility or extreme market movements.

But do margins represent an effective policy tool in this regard? There is abundant academic study of the relationship between margins and price volatility. Most of this work has been done in the context of the equity markets. Invoking the caveat that futures and equity margins are not strictly comparable, we nonetheless suggest that the literature in this regard is instructive.

In particular, if we cannot conclude that margins represent an effective policy tool for impacting price movement or volatility, then perforce we cannot conclude that margins exert significant impact upon market price performance. Let’s consider the evidence.

Stock Margins – Per a Congressional mandate, the Federal Reserve has controlled margin requirements in the domestic equity markets since 1934. The objectives of such regulation include curbing excessive leverage and reducing the stock price volatility. But have Reg T margin requirements been effective in achieving this latter objective?

In one of the earliest commentaries on the efficacy of stock margins, Moore (1966) suggested that margins “add to paper work and to the costs of stock market transaction ... [and further] fail to fulfill their stated objectives. However, they do give the Federal Reserve a way of expressing its concern with movements in the stock market.”

Hardouvelis (1988), however, linked monthly stock market volatilities with margin requirements. In particular, he found a significant negative correlation between volatility and margin levels, concluding that margin administration may be an effective policy tool in curbing destabilizing speculation and resultant volatility. Subsequent work by Hardouvelis in 1990 and 2002 generally echoed this theme.

But other investigations studying the apparent inverse relationship between margins and volatility came to opposite conclusions. Kupiec (1989) utilized a GARCH in Mean methodology to investigate the relationship between initial margin requirements and stock market volatility. However, “no evidence of an empirical relationship between margin requirements and the volatility of the S&P 500 index portfolio’s excess returns” could be found.

A study by Hsieh and Miller (1990) found “no convincing evidence that Federal Reserve margin requirements have served to dampen stock market volatility.” They further discredited the Hardouvelis findings, exposing methodological flaws in the test design.

A theoretical explanation for why leverage in the form of stock margin loans might exacerbate volatility was proposed by Bogen and Krooss (1960). In particular, they described “pyramiding and depyramiding” where access to leverage increases demand for equities, leading to higher prices and further borrowing to...
support further purchases. They further describe a subsequent depyramiding effect where declining prices compel margin calls, stock sales and excessive price declines.

But empirical evidence by Seguin and Jarrell (1993) debunks this description. In particular, they studied the pyramiding/depyramiding thesis in the context of marginable vs. non-marginalable equities in the period surrounding the October 1987 stock market crash. However, they found that the price declines associated with marginable securities were less exaggerated than the price declines associated with non-marginable securities.

Fortune (2001) explains some of Hardouvelis's conclusions by pointing out that "stock return volatility tends to be low in bull periods and high in bear periods. Thus, the well-known negative correlation between Fed margins and volatility might be due to a causal connection in which high margin requirements lead to lower volatility, or it might be the result of factors unrelated to margin requirements creating a spurious negative correlation between margin requirements and volatility."

Studying the relationship between margin debt and stock market returns from 1975 to 2001, Fortune concluded that while there is a linkage between "margin loans to both mean stock returns and their volatility, the economic significance is so low that this study is not able to support a return to the active margin policy of the 1934-74 period."

Kofman and Moser (2001) applied regression analysis to study the relationship between Reg T margin requirements and price reversals. They find no evidence to indicate that reduced margin requirements lead to higher volatility. They did find that margin levels were positively related to price reversals but conceded that "this is inadequate support for a change in margin policy."

Even studies of margins and volatility in foreign venues yield similar results. Studying the relationship between margins and volatility in the Japanese stock market, Kim and Oppenheimer (2002) find that "no particular support for conclusion that higher margins deter individual traders."

### Futures Margins

Much of the debate regarding the efficacy of margins as a policy tool to achieve stabilizing market effects shifted to the futures markets by the late 1970s with the emergence of financial futures markets and even more so in the wake of the October 1987 stock market crash.

Salinger (1989) found "margin debt is not primarily associated with downside volatility and margin requirements are not primarily associated with upside volatility, as would be expected if margin buying were the cause of the volatility. Thus, the experience with stock market margin requirements provides no support for regulating futures markets margins in order to curb volatility."

Schwert (1989) studied monthly returns in stock index futures, suggesting that "there is no evidence that increasing margin limits for financial futures contracts will have any effect on the behavior of stock prices." Further, he concludes that increasing margin levels "would increase transaction costs for traders in futures markets, and could cause trading to move outside the United States."

Kupiec (1997) summarized the entire body of academic work on this subject, concluding that while "high Reg T margin requirements may reduce the volume of securities credit lending, and high futures margins do appear to reduce the open interest in futures contract, neither of these measurable effects appears to be systematically associated with lower stock return volatility ... [thus] ... there is no scientific evidence to support the hypothesis that tightening leverage constraints in either the cash or equity derivative markets will reduce stock return volatility."

Studies regarding the impact of margins on commodity, as opposed to financial, futures are relatively scarce. However, the impact of margins on trading activity and volatility in soybean and corn futures was investigated by Adrangi and Chatrath (1999). While they found "some evidence to suggest that margin changes will bring about changes in the makeup of the traders in the market, there is no evidence that speculators or small traders cause or exacerbate market volatility. Thus margins may be an inappropriate device to reduce volatility in futures markets."

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How Margins are Established – We contend that margins should be utilized strictly as a tool for administering the financial risks attendant to market positions. Accordingly, the CME Clearing House (CH) administers margin levels using well-established and carefully implemented policies that have stood the test of time.

Performance bond requirements represent good faith deposits to guarantee performance on open positions. CME CH establishes minimum initial and maintenance performance bond levels for all products cleared through its facilities.

CME CH bases these requirements on historical and implied price volatilities, market composition, current and anticipated market conditions, and other relevant information. Performance bond levels vary by product and are adjusted periodically to reflect changes in price volatility and other factors.

Maintenance performance bond levels represent the minimum amount of protection against potential losses at which the exchange will allow a clearing member to carry a position or portfolio. Initial performance bond reflects the minimum deposit a clearing member must obtain from a customer opening a new position.

Should performance bonds on deposit at the customer level fall below the maintenance level, Exchange rules require that the account be re-margined at the required higher initial performance bond level. Initial performance bond enables a customer to absorb some losses before issuance of another performance bond call.

Clearing members may impose more stringent performance bond requirements than the minimums set by the exchanges. At the CME CH level, clearing members must post at least the maintenance performance bonds for all positions carried. This requirement applies to positions of individual members, non-member customers, and the clearing member itself.

In setting performance bond levels, CME CH monitors both current and historical price and volatility movements covering short-, intermediate- and longer-term data. CME CH uses several different methods of statistical parametric and nonparametric analyses that typically establish futures maintenance performance bond levels covering expected one-day price moves of at least 95%-99% of the days during these time periods. Actual performance bond requirements may exceed this level for some products.

Performance bond requirements for options reflect movements in the underlying futures price, volatility, time to expiration, and other risk factors and adjust automatically each day to reflect the unique and changing risk characteristics of each option series. In addition, long options must be paid for in full. CME CH also mandates stringent minimum performance bonds for short option positions. Option sellers are assessed risk requirements as determined by CME CH’s Standard Portfolio Analysis of Risk™ (SPAN) system, in addition to the value of the option.

Conclusion – The establishment of performance bonds or margins at levels reflective of market volatility is central to ensuring the financial integrity and orderly operation of futures markets.

Fundamental market conditions dictate market movements and volatility, not margin levels. The evidence suggests that margins are inappropriate and ineffective tools for the management of market movements or volatility.

Accordingly, it is inappropriate and misleading to trace specific market movements to the responsible and ongoing administration of margin policies designed to ensure financial integrity of the marketplace.

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14 Kupiec, Paul H. “Initial Margin Requirements, Volatility, and Market Integrity: What Have We Learned Since the Crash?” (April 1997).