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Does portfolio margining make borrowing more attractive?

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ABSTRACT

This paper investigates the effects of a change in the margin rules of the U.S. financial securities markets. These rules determine how much investors can borrow to leverage their investments. Since the 1929 stock market crash, margin loans have been tightly regulated by the Securities and Exchange Act Regulation T. Between 2005 and 2008, the Securities and Exchange Commission modified these margin rules because they were perceived as not adequately reflecting investment risk. The amended rules have made it more attractive for investors to borrow by opening new margin accounts and diversifying their investment positions. This paper tests the hypothesis that the change in the margin rules has increased margin debt across the U.S. securities markets. It provides statistical evidence that this structural change can be dated to the amendments in the rules.

1. Introduction

Investors who purchase securities can borrow part of the purchase price from financial institutions, such as brokerage firms, by opening *margin accounts*. They are required to deposit a portion of the purchase price, the margin, which represents the initial equity in the accounts. The portion that must be deposited is called the *initial margin requirement* and is calculated by following margin rules that are regulated by the U.S. Federal Reserve Board. The *margin debt* held by investors with their financial institutions is secured by the purchased securities. Securities exchanges, such as the New York Stock Exchange (NYSE), the Chicago Board Options Exchange (CBOE) and the National Association of Securities Dealers (NASD), can set higher initial margin requirements at their discretion. Exchanges also establish a *maintenance margin requirement* that determines the amount necessary to be kept as collateral in the margin account for the duration of an investment. Whenever the margin is below the requirement, the broker issues a margin call. Investors typically use margin accounts to leverage their investments and increase their purchasing power.

Since the 1929 stock market crash, the U.S. Federal Reserve Board has been given authority to regulate margin loans with the Securities and Exchange Act Regulation T of 1934. One of the objectives of this act is the "control of monetary aggregates" (Climan, 1978). The U.S. Federal Reserve Board has achieved this by establishing an initial margin requirement for margin loans. This requirement sets a minimum equity position on the date of a credit-financed security transaction. The initial margin requirement for listed stocks has changed 22 times between 1934 and 1974 and has been as high as 100% and as low as 40%. Since 1974, however, the initial margin requirement has been fixed at 50% of the current market value of the stock.

During the 1980s and 1990s, margin requirements were often perceived as too high and not accurately representative of investment risks. To more accurately represent risk, the Option Clearing Corporation (OCC) developed a new *portfolio margining methodology* whereby *portfolio margin requirements* were calculated using the Theoretical Intermarket Margining System (TIMS).[2] TIMS was first implemented in 1997 to calculate the net capital requirements for brokers' proprietary portfolios of listed options (SEC, 1997; GAO, 1998). However, this margining methodology was not used to margin customer accounts prior to 2005. After two proposals from NYSE, the Securities and Exchange Commission (SEC) approved the use of the portfolio margining methodology under a temporary pilot programme that began in 2005 and ended in 2008 (SEC, 2002; SEC, 2004; SEC, 2005b).

This paper hypothesises that the amendments to the margin rules introduced between 2005 and 2008 stimulated investor borrowing due to the lower margin requirements; as a result, there was an increase in margin debt. The lower initial and maintenance margin requirements made it more attractive for new investors to open margin accounts and for existing investors to diversify their investment positions. This change should be particularly apparent during the second phase of the pilot programme, as this phase included a wider range of securities.

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[2] It is now known as the System for Theoretical Analysis and Numerical Simulations (STANS).

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The change in investment behaviour should be observable in the monthly margin debt series for the U.S. securities markets over time, after adjustments for market sentiments. This is a monthly series and constitutes the only data on margin debt publicly available.

Fig. 1 depicts the margin debt series for the U.S. securities markets from January 1997 to February 2014. It is worth noting that prior to the change in margin rules, investors already displayed bullish borrowing behaviour, as margin debt grew by 72% over the three years between September 2002 and July 2005. Between July 2006 and its peak in July 2007, however, the upward trend in margin debt accelerated by 63% in a single year.

The existing literature on margin requirements has mostly been published prior to 2005. The earliest work on the topic is by (Moore, 1966) and studies the influence of margin requirements on investors' equity ratios. Later research conducted on margin requirements has primarily focused on their impact on stock prices (Grube, Joy, & Panton, 1979; Luckett, 1982) and stock price volatility (Hardouvelis, 1990; Hardouvelis & Peristiani, 1992; Salinger, 1990; Hardouvelis & Theodossiou, 2002).

It is apparent from the literature that margin requirements can have a direct influence on the size of margin loans. This theoretical finding is empirically corroborated by Hsieh and Miller (1990), who found a negative relationship between margin requirements and the amount of margin credit outstanding, i.e., margin debt. This leads to the conclusion that initial margin requirements might serve as a mild automatic stabiliser, limiting margin debt more during periods of bull markets than during bear markets (Fortune, 2000).

Section 2 discusses history and practice of margin requirements. Section 3 describes the empirical model and the data. Section 4 empirically investigates whether this change in margin rules can be detected and dated in the margin debt series. A common way to test for such a change is to use structural change tests. Lastly, Section 5 provides concluding remarks.

2. History and practice of margin requirement

After the 1929 stock market crash, the U.S. Federal Reserve Board established initial margin requirements under Regulations T, U and X. Regulation T applies to broker-dealers, Regulation U applies to banks and other lenders, and Regulation X applies to margin loans not explicitly covered by the other regulations. These requirements set a minimum equity position on the date of a loan-based transaction (Fortune, 2000). In 1933 NYSE established its own requirement that member firms' customers could borrow no more than 50% of the value of securities held. These requirements apply to the existing holdings of securities and therefore are *maintenance* margin requirements. At the moment, minimal equity standards exist at all registered exchanges: for example, they are set under Rule 431 at NYSE, Rule 12 at CBOE, and Rule 2520 at NASD. Until 2005, these rules stated that broker–dealers must require customers to have a maintenance margin equal to at least 25% of a long position in stocks and 30% of a short position. Brokers typically required a higher ratio, on the order of 30 to 35% for long positions (Fortune, 2000). The rules also set requirements for more complex transactions, such as options, option spreads, straddles, and boxes. For a good summary of margin requirements under Regulation T and NYSE Rule 431 the reader is referred to Table 1 in Fortune (2000).

On May 13, 2002, NYSE proposed to amend its rules to allow member organisations to use a portfolio margin methodology for certain customer accounts. In 2005, SEC approved the proposal as a pilot programme available to member organisations on a voluntary basis (SEC, 2005a). The pilot programme was implemented in three phases. Phase I began on July 14, 2005 and permitted the use of the portfolio margining methodology only for a limited number of portfolios of listed broad-based securities index options, warrants, futures, futures options and related exchange-traded funds. Phase II began on July 11, 2006 and included listed stock options and securities futures (SEC, 2006a). Phase III began on April 2, 2007 and included equities, equity options, unlisted derivatives and narrow-based index futures. Unlike Phase I, the changes in margin requirements in Phases II and III were more significant because they targeted a much wider array of securities. Furthermore, Phase III was widely advertised in the media after its approval on December 12, 2006 (SEC, 2006b), more than 3 months before it would become effective. By July 2008, SEC ended the pilot programme, thus making portfolio margining permanent and leading to the amendment of the margin rules of the Financial Industry Regulatory Authority (FINRA), CBOE and NYSE.

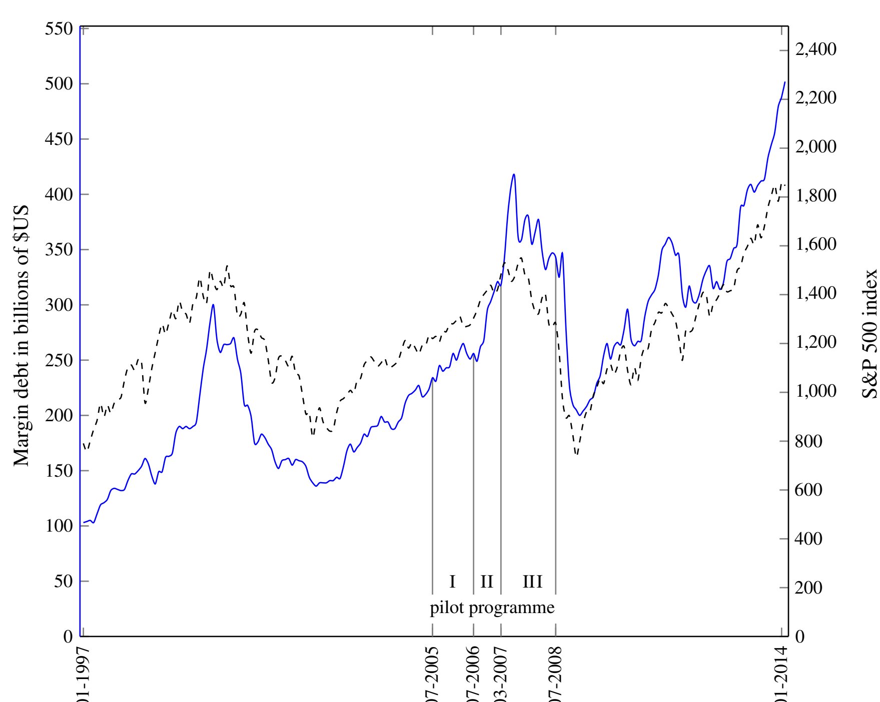

Fig. 1. Aggregate margin debt in billions of dollars (—) and S&P 500 index (— —) in the period from January 1997 through February 2014. Data from www.finra.org and finance.yahoo.com.