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## Negative Overnight Returns: China's security markets

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### Abstract

We find that there exist statistically significant negative overnight returns in China's security markets, which is totally different from the previous research on HS300 Index by He et al. (2013), and the negative overnight returns are comparatively larger in China's GEM (Growth Enterprise Market) board and SME (Small and Medium Enterprise) board than in the mainboards of Shanghai and Shenzhen security markets. We also find some of the SWS Primary Sectors have negative overnight returns after ticking out of market effects, which can be a great guide for investing in hedging portfolios of specific sectors.

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### 1. Introduction

The overnight period is time for information gathering and thus the opening price of a stock tomorrow is usually different from its closing price today. There are many news releases occurring during non-trading hours, Corral et al. (2003) find in the U.S. stock markets, 93% of the profit-related announcements were public after trading hours[1]. And investors can make their decisions by observing executed trades, especially retail investors who are easy to be attracted by attention-grabbing stocks according to Barber et al. (2008)[2]. When trading starts in a new day, the information accumulated will be reflected immediately on the opening prices [3]. Brock et al. (1992) show that the portfolios optimized at the close time will not be the optimum portfolios at the open next day because of the large amount of information accumulated during the non-trading night, which makes the markets more volatile during the trading hours the next day [4].

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The present studies have grown out of many results of the U.S. market. Berkman et al. (2012) found that there are positive returns during the overnight period by examining 3000 largest U.S. stocks in the NYSE market during 1996-2008[5]. Some studies concentrated on the relationship of overnight return and subsequent intraday return, for instance, Branch et al. (2008) find the overnight return is negatively correlated with subsequent trading day return, which is also proved by Berkman et al. (2012)[5-6]. In China, Liu and He (2012) pointed out that the overnight effects are significant since he made regressions of 30-minute SSE Composite Index and SZSE Component Index returns on 8 time period dummy variables [7]. He and Zhao (2013) expand the results to HS300 Index using the same method as Liu and He (2012), and they came to the result of positive overnight returns in China's security markets [8]. However, the lack of insight to individual stock performances and the characteristics of different boards of China's security markets prevent us from making actual trading decisions for excess returns. Moreover, analysis of overnight returns of different sectors is not enough to provide evidence for choosing portfolios. In this paper we make three contributions. First we test the HS300 Index overnight returns during 2005-2014, showing that China's stock markets have statistically significant negative overnight returns over this period, which makes the results of positive overnight returns of HS300 Index in previous research need reconsideration. Next we separate China's security markets into Shanghai mainboard, Shenzhen mainboard, SME (Small and Medium Enterprises) board and GEM (Growth Enterprise Market) board according to the market size. We carry out testing the overnight returns of these four markets every year and over the 10-year period, and find there are stable negative overnight returns in the GEM board and SME board, together with higher returns in these two boards than the other two. This may imply that stocks with small market value and low liquidity perform well near close time, while their prices drop down after one night when trading starts on the next day. Thirdly, we derive a regression of overnight returns of the 28 SWS Primary Sectors on the HS300 Index overnight returns. We treat HS300 Index overnight returns as the market returns, and get the result that in some sectors there are significant excess market returns. As a robustness test we conduct a test on the SWS Primary Sector indexes using the same regression model, and get the consistent result.

## 2. Sample selection and variable construction

The security markets of Shanghai and Shenzhen have experienced great changes since 2005, that is, firms have been forced to start reform of non-tradable shares, so we choose the period from Jan 1st, 2005 to Aug 7th, 2014 for HS300 Index, the mainboards of Shanghai and Shenzhen and SME board, 2572 trading days in total. The GEM board first opened on Oct 30th, 2009, so we use its price data from Oct 30th, 2009 to Aug 7th, 2014 with totally 1159 trading days.

We calculate overnight returns using daily opening price and closing price data from WIND<sup>1</sup>. These opening prices and closing prices have been adjusted for stock splits and dividends before computing daily overnight returns by WIND. The overnight return of day  $t$  ( $CTO_t$ ) is defined as the ratio of opening price of day  $t$  ( $Open_t$ ) on closing price of day  $t-1$  ( $Close_{t-1}$ ) minus one. It can be written as follows:

$$CTO_t = Open_t / Close_{t-1} - 1 \quad (1)$$

As for the effectiveness of t-statistics, we should first calculate the cross-sectional average overnight returns of all the stocks in a specific board or sector each day, and then take the time series average returns of these cross-sectional overnight returns over a specific period just as Berkman et al. (2012). We base our t-statistics

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<sup>1</sup>WIND is one of the most widely used database for China's security markets and we use it for the daily opening, closing and pre-closing prices from Jan 4<sup>th</sup>, 2005 to Aug 7<sup>th</sup>, 2014 to calculate overnight returns.

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