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Reaction to news in the Chinese stock market: A study on Xiong'an New Area Strategy

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ABSTRACT

This study investigates how stock markets react to different news categorized by diverse aspects. We take the Xiong'an New Area Strategy, the most recent breaking event and milestone national plan in China, as the target to study. We collect Xiong'an-related news and classify them by different aspects: sentiment, source and origin of viewpoints. Our results indicate that positive news improves the performance of the stock market and the trading of individual stocks, whereas negative news impedes them. News from government-related media has greater effects on stock market and stocks than news from other sources. News with viewpoints from academia has greater effects than news with viewpoints from governments and industries.

1. Introduction

Numerous studies have confirmed the stock market as news-driven. Recent works begin to study the saturation coverage of one event and its impact on the market, including Pástor and Veronesi (2012, 2013), Beetsma et al. (2013), Brogaard and Detzel (2015), Kilponen et al. (2015), Baker et al. (2016), Conrad and Zumbach (2016) and Sinha (2016). For example, Solomon (2012) categorizes news into good or bad news, and examine how they affect stock prices respectively. Haupenthal and Neuenkirch (2017) study the effects of Grexit news on the stock market by collecting a series of related news statements from different European countries. However, among the saturation coverage of one event, which types of news drive the market with a dominant influence, and how different types of news affect the market, are less well understood. In this article we attempt to characterize the mechanism by which news in different categories impacts aspects of the market.

According to the 2017 annual report by the People's Bank of China, Chinese stock market has become the largest emerging market. Therefore, we select the Chinese market as the target to study. We take the latest breaking news, the Xiong'an New Area Strategy, as the target event. We gather 176 relevant news reports and categorize them in terms of sentiments, news sources and origins of viewpoints. Using the minute-based data, we find that positive news improves the performance of the stock market and the trading of individual stocks, whereas negative news impedes them. News from government-related media has greater effects on stock market and stocks than news from other sources. News with viewpoints from academia has greater effects than news with viewpoints from governments and industries.

This study contributes to the relevant literature in various ways: (1) we gather all the relevant news about Xiong'an Event from various media, which makes a comprehensive study on the influence of this event on stock markets; (2) we investigate impact of news on both the overall market and individual stocks; (3) we use an intra-day dataset such that we can observe the impacts of news in a minute-based level; (4) to our knowledge, this is the first study that investigates the impact of Xiong'an New Area Strategy, the critical political news of China in 2017.

2. Data

We briefly review the Xiong'an New Area Strategy. In February 2017, the TV news program Xinwen Lianbo stated that China's central government was discussing a new area construction around Beijing. On April 1, 2017, initially released from Xinhua Agency, China's central government decided to establish Xiong'an, a state-level new area with 200 square kilometers and 100 kilometers southwest of Beijing. According to the official circular issued by the Communist Party of China and the State Council, Xiong'an is "a

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Table 1
Frequency of news.

Sentiment	Positive	Negative	Neutral	
	78	53	45	
Source	Media Subordinate to Central Government	Media Subordinate to Local Government	Non-official	Overseas
	71	22	73	10
Origin	Government	Academia	Industries	
	74	25	77	

strategy crucial for a millennium to come[1] ", with the status equivalent to the Shenzhen Special Economic Zone and the Shanghai Pudong New Area. The establishment of Xiong'an is to shift some less-capital-related functions from Beijing, and advance the coordinated development of the Beijing–Tianjin–Hebei region. A series of state-owned enterprises, government agencies, and research facilities, are expected to move to Xiong'an soon. The announcement and follow-up progress make Xiong'an be the hottest word with saturation coverage by numerous news media. Therefore, we select Xiong'an as the target news content.

The time range of our study is between February 3 and June 7, 2017. We use the iFinD database to gather all news related to the Xiong'an New Area. The iFinD database subscribes to diverse media and news sources, and synchronizes with newsfeeds revealed to the Chinese stock markets. The revealing date and time for each news are provided by this database. We check for duplicate news and news with similar contents and finally filter out 176 unique pieces of news. For each piece of news, the released date and time can be tracked in our data.

We study the news by three aspects: sentiment, source and origin of viewpoints. The sentiment refers to the attitude to the Xiong'an New Area's construction, and we classify the collected news into three sentiment groups: (1) positive, (2) negative, and (3) neutral statements. The source refers to the media agency that firstly reveals the news, and we classify our news into four source groups: (1) media subordinate to the Chinese central government, (2) media subordinate to the Chinese local government, (3) Chinese non-official (commercial) media, and (4) media overseas. The origin of viewpoints refers to the contributor of viewpoints in the news article, and we classify the news and contributors into three origin groups: (1) government (central or local), (2) academia, and (3) industries.

The frequency of news reports in the three aspects are presented in Table 1. Among the total 176 news reports, 78 are positive statements, 53 are negative, and 45 neutral remain. Classified by news sources, 71 are released by media subordinate to the central government, 22 by media subordinate to the local governments, 73 by non-official media, and 10 by overseas. Classified by origins of viewpoints, 74 news reports convey viewpoints or statements from the government, 25 convey viewpoints from academia, and 77 convey viewpoints from industries.

These news reports are publicly available to all traders as the pop-up messages at the trading platform. We define the dominant time as the lasting time of the news when it (including duplicates or similar content news) stays at the top of the Xiong'an-related latest news list. When the later news pops up, it becomes the new dominant news and replaces the previous one. For each news, we count its dominant time in minutes.

We investigate whether the Xiong'an Strategy affects the stock market from a micro-structure perspective. More precisely, our empirical analyses aim at testing the following three hypotheses.
H1: Positive Xiong'an-related news improves the performance of the stock market, whereas negative news impedes the performance of the stock market.

[1] China to create Xiong'an New Area in Hebei, Xinhua, 2017-04-01 (http://news.xinhuanet.com/english/2017-04/01/c_136177270.htm)

H2: The effects of news released from government-related media are greater than the effects of news from media.
H3: The effects of news that conveys viewpoints from the government are greater than those of news that conveys viewpoints from other contributors.

Following methods in Li (2017) and Li et al. (2017), in order to better observe the market performance from a micro-structure perspective, we use the iFinD high-frequency database to attain the trading messages, including the market index, trading price and quantity of selected individual stocks. All the trading messages are updated by minute. We choose the China Securities Index (CSI300) as the target to measure the overall stock market performance. We also choose 77 "Xiong'an concept stocks" listed in the database to observe the trading of individual stocks.

3. Empirical methodology and results

We create the following ordinary least squares (OLS) model in (1) to estimate the effect of Xiong'an-related news on the stock market in China.

$$CSI300_t = \alpha + \beta' \boldsymbol{Dummy_t} + \epsilon_t \quad (1)$$

$CSI300_t$ refers to the CSI300 index value at minute t and measures the movement of the overall stock market. The vector ($\boldsymbol{Dummy_t}$) refers to dummy variables to classify the news by the three aspects. Similarly, we estimate the effect of news on stock i at minute t by OLS model in (2).

$$DV_{i,t} = \alpha_i + \beta' \boldsymbol{Dummy_t} + \gamma CSI300_t + \epsilon_{i,t} \quad (2)$$

The dependent variables ($DV_{i,t}$) include the price ($Price_{i,t}$) and volume ($Volume_{i,t}$) of stock i at minute t. They are explained by the news aspect dummy vector ($\boldsymbol{Dummy_t}$), the concurrent value of market index ($CSI300_t$), and stock i's fixed effect (α_i).

First, we estimate how Xiong'an-related news with different sentiments influences the stock market and individual stocks. We classify the news into three types of sentiments: positive, negative and neutral. The three dummy variables ($Positive_t$, $Negative_t$ and $Neutral_t$) take the value 1 respectively if the latest Xiong'an-related news is positive, negative or neutral respectively at minute t, and 0 otherwise. Table 2 presents the results of the OLS estimations (and standard errors in parentheses) in three regressions. In order to compare the importance across the independent variables, we use standardized β coefficients. Coefficients of three dummy variables are statistically significant in the three regressions, suggesting that Xiong'an-related news indeed influences both the overall stock market and individual stocks.

In the regression of $CSI300_t$, news with positive statements on Xiong'an raises the overall performance of the stock market (0.1255). By contrast, news with negative statements decreases $CSI300_t$ by 0.2023. These results indicate that the stock market is sensitive to the evaluation of Xiong'an and reacts along with the updates of information. The effects of news also appear in the individual stock trading. In the regressions of $Price_{i,t}$ and $Volume_{i,t}$, positive news also displays larger effects than negative news. In summary, our results confirm H1.

Second, we estimate the effect of Xiong'an-related news in terms of the news sources. We use four dummy variables to classify

Table 2
OLS estimates for news with different sentiments.

	$CSI300_t$	$Price_{i,t}$	$Volume_{i,t}$
$Positive_t$	0.1255***	0.0940***	0.1005***
	(0.0869)	(338)	(1710)
$Negative_t$	−0.2023***	0.0720***	0.0755***
	(0.0911)	(257)	(1815)
$Neutral_t$	0.2350***	0.0645***	0.0791***
	(0.0960)	(229)	(1929)
$CSI300_t$		0.0326***	0.0123***
		(117)	(16)

Table 3
OLS estimates for news with different media sources.

	$CSI300_t$	$Price_{i,t}$	$Volume_{i,t}$
Central Government	0.2160***	0.0810***	0.0853***
	(0.0938)	(0.0087)	(1871)
Local Government	0.1533***	0.0896***	0.1006***
	(0.1260)	(0.0076)	(1628)
Non-official	−0.1730***	0.0354***	0.0424***
	(0.0820)	(0.0116)	(2484)
Overseas	0.1096***	0.0498***	0.0532***
	(0.1533)	(0.0140)	(2996)
$CSI300_t$		0.0353***	0.0190***
		(128)	(16)

news from different types of media sources: central government, local government, non-official and overseas. Table 3 presents the results of the OLS estimations. In all the three regressions, news released by media subordinate to governments (central or local) has large coefficients. By contrast, coefficients of news from non-official media or overseas are smaller. These results confirm H2, and imply that both the stock market and individual stocks are influenced by information from government-related media with a larger extent.

Third, we estimate the effect of Xiong'an-related news in terms of the origins of viewpoints. As described in Table 1, we categorize three groups: news with viewpoints from governments, from academia, and from industries. Three dummy variables ($Government_t$, $Academia_t$ and $Industries_t$) take the value 1 respectively if the latest Xiong'an-related news at minute t reports viewpoints from the corresponding groups, and 0 otherwise. Table 4 describes the results of the OLS estimations. In the regression of $CSI300_t$, news with viewpoints from governments displays a very small effect (0.0329), whereas viewpoints from academia have the largest effect (0.2260). The dominant effects of academia-related viewpoints also appear in the regressions of $Price_{i,t}$ and $Volume_{i,t}$ for individual stocks (0.0934 and 0.0984 respectively), although viewpoints from government also display comparable effects (0.0888 and 0.0916 respectively). This finding is interesting. One potential reason is that the academia usually provides diverse illustrations such as figures and charts, which strengthens their viewpoints to be more convincing. Our results do not support H3.

In summary, we find strong evidence to show the impact of Xiong'an related news on both the overall market and individual stocks. Our empirical results support H1 and H2, but do not support H3.

Table 4
OLS estimates for news with different origins of viewpoints.

	$CSI300_t$	$Price_{i,t}$	$Volume_{i,t}$
$Government_t$	0.0329***	0.0888***	0.0916***
	(0.8785)	(0.0260)	(1831)
$Academia_t$	0.2260***	0.0934***	0.0984***
	(1.0157)	(0.0224)	(1575)
$Industries_t$	−0.1426***	0.0641***	0.0561***
	(0.6825)	(0.0332)	(2338)
$CSI300_t$		0.0366***	0.0195***
		(0.0002)	(15)

4. Conclusions

This study investigates how Chinese stock markets react to news about the most recent milestone policy in China, Xiong'an New Area Strategy. We collect Xiong'an-related news and classify them by different aspects: sentiment, source and origin of viewpoints. Using an intra-day dataset, we examine the effect of Xiong'an related news on the overall stock market and individual stocks. Our results indicate that positive news improves the performance of the stock market and the trading of individual stocks, whereas negative news impedes them. News from government-related media has greater effects on stock market and stocks than news from other sources. News with viewpoints from academia has greater effects than news with viewpoints from governments and industries.

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