

# Research on the Relationship of Media Attention, Stock Liquidity and Stock Price Informativeness: Based on the Data of Listed Company on GEM of China

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## Abstract

GEM stocks are more susceptible to the attention of news media because of their liquidity and high risk characteristics. This paper uses Baidu News search and the data of companies listed on GEM from 2009 to 2015 to investigate the impact of media attention and stock liquidity on stock price information content respectively and the impact of stock liquidity on the relationship between media attention and stock liquidity. The results show that with the number of media news coverage increasing and stock liquidity accelerating, stock information content will also be improved; further studies find that with the acceleration of stock liquidity, liquidity weakens the positive relationship between media attention and shares information content.

## Keywords

Media Attention, Stock Liquidity, Stock Price Information Content

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## 1. Introduction

The information content of share price refers to characteristics information of the company, which determines the effectiveness of the stock price signal transmission mechanism, affecting the allocation of resources in stock market, representing the level of market efficiency. The classical theory on market efficiency suggests that the stock price has already contained all available information, so market news have no effect on the stock price fluctuations. Lots of literatures deny this view, and they argue that the media information affects the volatility of stock prices by influencing the trading behavior of investors; the information of corporate enters the stock price with investors' information arbi-

trage behavior, thus affecting the information content of stock price.

The capital market in China has always been regarded as a “policy market” where the implicit endorsement of the government on the stock market makes the stock price rise or fall together more frequently. Compared with the other 40 major economies in the world, the stock price information content of China is only the second from bottom (Morck and Yeung, *et al.* [1]). The low information content of the stock price is closely related to the information efficiency of capital market. In recent years, with the speeding up of the marketization process, the perfection of the system construction and the improvement of investor’s self-protection consciousness, the listed companies in China have also improved the information disclosure and investor relations, and the market information efficiency has obviously improved. However, the information environment of China’s securities market is still relatively poor, compared with the mature capital markets. On the one hand, the small and medium investors, because of a lack of analysis of the target company, especially a lack of the needs of accounting information, are reluctant to disclose accurate and transparent information. On the other hand, with the change of market environment, false statements and the means to conceal the facts are more secretive, and are difficult to be perceived by the regulators, which harm the interests of the majority of investors. As an important information disclosure and market supervision mechanism in the capital market, the news media, to some extent, affects the information environment of the capital market. It is of great practical significance to study the impact of news media on the information content of stock price, which will also further regulate the role of news media in capital market and enhance the information efficiency of China’s capital market.

With the development of information technology and the popularity of mobile Internet, the media information’s timeliness, the communication breadth and the depth of the content are significantly improved. Media news coverage has become an important link between enterprises, markets and investors, and media attention has more and more influence on social and economic life. In the West, media is often seen as a “Fourth Right”, which is independent of legislation, administration and justice. In China, with the development of cultural industry, the news media has also shown an unprecedented active state, what’s more, the function of media in the capital market has also been concerned by regulators. In July 2016, the Shanghai Stock Exchange published “The News Briefing Guidelines of Restructuring of Listed companies” to require restructuring of listed companies to hold a media briefing, and the first trial meeting in GEM should be open to the further media-developing areas where the news media played the role of information disclosure and public supervision. The news media plays a very important role in China’s securities market. The media is not only an important supplement to the information dissemination of listed companies, but also a pioneer in the reform of the information environment in securities market. As the information intermediaries of the capital market, the news media collect, collate and publish information, provide the company cha-

racteristics information for the public, and effectively alleviate the information asymmetry between managers and investors and the uneven information of different investors. More and more investors can make use of the information of the company to make decisions, thus affecting the information content of stock price (Luo J. H. and Cai D. [2]; Lee Y. Z. and Xu Q. F. [3]).

The study of capital market information efficiency can't be separated from the study of stock liquidity. Company-specific information is more frequently incorporated into stock prices as investors' trade more often. Investors trade generally follow the following logic, at first, investors obtain the characteristics information about listed companies, based on which the investors make judgments on the investment value of the company, and compare with the current market price, to buy the underestimated stocks or sell the overvalued ones. Frequent trading makes the company characteristics of information can be timely, fully and accurately reflected in the company's share price, affecting the stock price information content. Under normal circumstances, the transaction cost of high liquidity stock is lower, and more susceptible to arbitrage investors, to achieve information arbitrage, thus affecting its stock price information content. In addition, the media always pay much more attention to those stocks having fast liquidity. Then for stocks are different in liquidity, the relationship between media coverage and the content of information will differ.

After 10 years of brewing, the opening of China's GEM attracted extensive attention. The first trial meeting is to open the media, reflecting the focus of regulators on the dissemination function of the press, while the news media's omnidirectional, multi-level reports on the GEM Companies also play a role in the changes of GEM market. For small and medium investors, media news coverage is the primary way to access investment information (Barber and Odean [4]). Zhang, *et al.* [5] believe that the retail investors' trade mainly based on the press. On October 30, 2014, Shenzhen Stock Exchange Financial Innovation Laboratory released the "GEM Fifth Anniversary's Investor Structure and Behavior Analysis Report", shows that individual investors are still the main investors in the GEM. At the same time, in March 2015, the Shenzhen Stock Exchange released the "Survey of Individual Investors in 2014", the survey shows that compared with non-GEM investors are more dependent on acquaintances to recommend shares, GEM investors pay more attention to their own information to do comprehensive judgment. In addition, the turnover of the GEM record highs, these conditions laid a foundation for the paper to study the relationship between media attention and the GEM stock price information content, and the impact of stock liquidity on this relationship.

At present, the discussion of the role of news media in the capital market is a hot topic, but the relationship between the media attention and the information content of the stock price is still rare. In the existing literature on the relationship between media attention and stock price information content, the research object is usually the A-share market, and there is no special study on the GEM. Further, in empirical analysis, researchers directly use both proxy variables to

conduct regression analysis; no one has researched from the view of stock liquidity. This paper based on that the individual investors are the majorities in the GEM, and individual investors are much more susceptible to the impact of mass media, and the high liquidity characteristics of the GEM, further analysis the relationship between the media attention and stock price information content in the GEM, and the impact of stock liquidity on this relationship.

This paper follows the logic of information economics and behavioral economics, uses the study of Rao Y. L., *et al.* (2010) [6], Luo J. H. and Cai D. (2013) [2], Yang J., *et al.* [7] for reference, measures media attention with the number of news articles whose titles contain the name of the stock of the sample company in Baidu News Advanced Search, measures the information content of the stock price with the stock non-synchronization index, uses the turnover rate to measure the stock liquidity, by studying the relationship between the number of media news reports, liquidity and stock price information content of GEM and the impact of stock liquidity on the relationship between media attention and stock price information content, to further discusses the impact mechanism of information environment on stock price information content in capital market of China.

The main content and the structure of the thesis are as follows: in the part of instruction, it mainly concerns study background, content, method, value of this article. The second part is the literature review. The third part is the theoretical analysis, and put forward the hypothesis of the paper. The fourth part introduces the sample, data, variables and empirical model. The fifth part is the result of empirical study, including descriptive statistical analysis, regression analysis and endogenous test. The last part is the conclusion.

## 2. Theory Analysis and the Research Hypothesis

Although investors have various accesses to investment information, still the press is an important way to expose “non-public information” or even the only channel (Tan S. T., *et al.* [8]). Other channels such as field research, analyst research and so on are transformation of the public information to some extent.

At present, there are few researches on the relationship between media attention and stock price information at home and abroad, and the viewpoints are not consistent. Have summarized the foreign researches, we can find out that the media reports may have a positive or negative impact on the information content of stock price. In particular, firstly, media reports can effectively reduce the cost of information collection of small and medium investors, which will help to expand the spreading scope of existing information, increase the proportion of informed transactions. High informed trading ratio will increase the pricing efficiency of the stock market, thus having a positive impact on the stock price information content (Dyck and Zingales [9]). Secondly, the pressure of public opinion generated by media reports helps to improve investor protection and corporate governance, and reduce the probability of external investors being attacked by insiders (Dyck, *et al.* [10]). Increased investor protection levels give

investors more willingness and motivation to collect and analyze firm-level information, to engage in investment arbitrage activities, and thus contribute to the improvement of stock information content (Ferreira and Laux [11]). Thirdly, in addition to expanding the scope of information dissemination, the press can also encapsulate existing information and create new information by itself, which can improve the transparency and accounting quality of the company (Fang and Peress [12]; Bushee, *et al.* [13]). The improvement of transparency and accounting quality can help to improve the information content of stock price (Jin and Myers [14]). However, investors are not completely rational, as Barber and Odean [4] have argued that the reason why media reports have an impact on investor behavior is that they have attracted the attention of investors rather than providing useful information, that's the media reports may manufacture transactions noise rather than increase the information content of stock prices. In addition, whether media reports can improve the stock price information content depends on the authenticity and reliability of the media itself.

The study of media attention and the stock information has appeared in the past two years, and the conclusions are not consistent. Luo J. H. and Cai D. [2] use annual data from 2003 to 2011 of A-share listed companies to analyze the relationship between media reports and the information content of A-share listed companies in China. The results show that the listed companies received more media attention, the information content which measured by 1-R2 is higher. Media coverage has improved the efficiency of China's stock market by providing information to the investors and limiting the information asymmetry of the capital market. Li Y. Z. and Xu Q. F. [3] used the 115 companies included in "Chinese Listed Companies Public Opinion List" in 2012 as samples, conducted empirical analysis of the amount of negative media reports, network search volume and informativeness of stock. It turned out that during the negative public opinion period, the more network media reports, the larger network search volume and the more frequently transaction of institutional investors, contribute to improve the stock price information content. Yang J., *et al.* [7] used Baidu search engine to analyze the relationship between the number of news reports and the heterogeneous volatility of stock price measured by 1-R2, and the influence of institutional investors on this relationship. The results show that there is a significant "U" effect between the number of media reports and heterogeneous volatility, and with institutional shareholding ratio increasing, the above "U" type relationship will weaken.

Based on the above analysis, we find that most of the literatures about the media attention and the stock price information content in China have selected the A-share market as the research sample, and the conclusions are not the same. GEM, which enjoys high-growth and mainly serves high-tech innovative SMEs, whose trading rules, investor structure, market liquidity and other aspects have much significant difference from the motherboard market. Whether the press can enhance GEM stock price information content still remains to be further empirically tested. On the basis of the above analysis, in view of the individual

investors are the majority in GEM, who are more susceptible to the impact of news media, therefore, this paper puts forward the first hypothesis:

H1: The increase in media attention is conducive to the improvement of stock information content.

Stock liquidity refers to the ability of stock trading quickly at a reasonable price, which is the embodiment of capital market vitality. At present, during the study of stock liquidity and price information content, most of foreign scholars affirmed the positive correlation between the two. The theoretical model of Holmstrom and Tirole [15] suggests that with the rapid flow of stocks, the marginal information value of public information decreases rapidly, the marginal value of private information increases, and private information may get excess Earnings, thus making uninformed investors are willing to pay to the informed trader to obtain the appropriate private information, which encourage investors to collect information, making the company characteristics go into the stock price, result in increasing the price information content. Chung and Hrazdil [16] used high-frequency data, found that when the liquidity of stock is higher, the shocks on the stock price caused by investors are smaller, making it possible to do information arbitrage. Informed traders will buy from non-informed traders at low cost and then sell at high prices to gain the proceeds, promoting informed traders to collect information, making the company information reflected in the stock price. Edman [17] found that when the marginal cost of information collection is less than the marginal value of information, investors have the power to collect information. In the fast-moving securities market, the marginal cost of information collection is very low, and investors have impetus to collect the characteristics information of the subject, leading to the company's stock information content increased.

There are few literatures on the study of stock liquidity and stock price information in China, and the research conclusions are slightly different. Chen M. G. and Mao X. Y. [18] believe that investors have higher enthusiasm for stocks with higher information content, and stocks with higher stock price information content appear higher liquidity. Su D. W. and Xiong J. C. [19] used stock price information as the intermediate variable in the study of the relationship of stock liquidity and CEO compensation stock sensitivity, and their empirical studies show that stock liquidity can help investors to dig the characteristics of company-level information. That's listed companies can improve the stock liquidity to promote the information content of stock prices rise, thereby increasing the sensitivity of the pay of CEO. Kong D. M., *et al.* [20] argue that, in a highly liquid market, the transaction costs of information arbitrage are low, and the arbitrageurs' trading behavior leads to information access to stock prices, improving stock pricing efficiency, which is also called improvement of information content. Gu N. K. and Chen H. [21] have examined the relationship between stock liquidity and stock price information, and found that with the speed of stock liquidity the difficulty of obtaining private information is increasing, and the marginal value of information arbitrage is declining, while the cost is rising. So

in the initial stage, the information content of stock increases with the acceleration of stock liquidity until the marginal benefit of information arbitrage equals the marginal cost, and then decreases with the increase of stock liquidity. And it turns out ultimately inverted U-shaped relationship.

Based on the above analysis, this paper presents the second hypothesis:

H2: The acceleration of stock liquidity is conducive to the improvement of stock information content.

In general, the high-liquidity stocks are more popular to information arbitrage investors, and arbitrageurs affect the stock price information content in the realization of effective information arbitrage process (Du H. T. [22]). The press is more concerned about the stocks with fast liquidity, so the relationship between the amount of media reports and its stock price information content will also be affected by the liquidity of the stock. Use Kong D. M., *et al.* [20] for reference, in whose study of institutional investors, liquidity and stock price information content, using the interaction variables of institutional investors and liquidity, put the media news reporting data, stock liquidity index and the cross of the two items in the model at the same time, to study the relationship between stock liquidity and media news attention and the effect of stock liquidity on this relationship. Since the higher liquidity stocks are more vulnerable to media attention, the logic of the framework in this paper is that stock liquidity accelerating the stock price information content, the number of media news reports is also conducive to the improvement of stock information content. Therefore, this paper speculated that with the acceleration of stock liquidity, the reason why media reports promote the price of information content is likely that the media pays close attention to the stocks with prominent liquidity, that is, stock liquidity is likely to weaken the acceleration the media attention on stock price information. And the third hypothesis of this paper is put forward:

H3: With the acceleration of the liquidity level, the increase of media news attention reduces the increase of stock price information content.

### 3. Research Design

#### 3.1. Sample Selection and Data Sources

The total sample is from 2009 to 2015, and the total sample is screened according to the following principles: 1) In view of the speculation atmosphere of new stock market is serious in China's stock market, and investors are keen to "hit the IPO" resulting in the returns rate of new stock frequently fluctuate. So in the annual sample, we eliminate companies listed less than one year. 2) According to the stock information content calculation method, we exclude companies with less than 30 weekly yielding rates. 3) Eliminate samples with missing data of corporate governance or financial data. 4) Taking into account the measurement of news coverage data, the number of companies with more than 100000 media articles or less than 10 media articles is excluded from the annual data. After the above four-fold screening, we got the final 1310 valid samples. The annual distribution of the samples is as **Table 1**, and industry distribution is presented in

**Table 2.**

The data used in this paper, except that the amount of media news is collected by hand, all the other data is from CSMAR<sup>1</sup> database and WIND<sup>2</sup> database. Stock weekly yield ( $r_i$ ), weekly trading value ( $Valtrd_i$ ) and market circulation value ( $Mvosd_{iid}$ ) are from the CSMAR database. Asset size ( $Size$ ), institutional shareholding ratio ( $Ins$ ), shareholding ratio of the largest shareholder ( $Top1$ ), return on total assets ( $Roa$ ), industry ( $Industry$ ), listed years ( $Age$ ), return on equity ( $Roe$ ) are from the WIND database.

### 3.2. Description and Definitions of Variables

#### 3.2.1. Stock Information Content (Syn)

Morck, Yeung and Yu [1] is the first to decompose the stock return rate into the market-level part and firm-specific part according to the simplified capital asset

**Table 1.** Annual distribution of samples.

Year	2011	2012	2013	2014	2015	Total
Capacity	85	219	312	342	352	1310
Proportion	6.49%	16.72%	23.82%	26.11%	26.87%	100.00%

**Table 2.** Industry distribution of samples.

Industry	Capacity	Proportion
Agriculture Industry	21	1.60%
Mining Industry	17	1.30%
Manufacturing Industry	918	70.08%
Electric, Heating, Gas and Water Production & Supply Industry	4	0.31%
Construction Industry	18	1.37%
Wholesale & Retail Trade	16	1.22%
Transportation, Warehousing & Postal Service	9	0.69%
Information Transmission, Software & Information Technology Services	217	16.56%
Leasing & Commerical Service	19	1.45%
Scientific Research & Technical Services	20	1.53%
Water Resources, Environment & Public Facilities Management	17	1.30%
Health & Social Work	10	0.76%
Culture, Sports & Recreational Services	24	1.83%
Total	1310	100.00%

<sup>1</sup>“CSMAR Financial Database” is developed by Shenzhen Guotai’an Information Technology Co., Ltd., which is developed according to international database standards (CRSP and COMPUSTAT). It is a research-based accurate database for China’s financial and economic fields, including stock market, corporate research, fund market, bond market, derivative market, economic research, industry research, overseas research and special research 11 large series, and it has 75 databases.

<sup>2</sup>Wind database is one of the most complete and accurate financial data warehouse with the core of finance and securities data in china. The data covers stocks, funds, bonds, foreign exchange, insurance, futures, financial derivatives, spot trading, macro economy, finance and economics. Furthermore, it can update in the first time to provide real-time information to meet the needs of users.



pricing model. According to the meaning of the non-synchronous index R2 in capital asset pricing model, we take 1-R2 as the non-synchronous stock price indicators, think that the non-synchronous index of stock price reflects the degree that the stock price contains company's characteristic information, that is, the larger is 1-R2, the more company's characteristic information is, and the higher the stock information content is. The specific approach is:

The yield rate  $r_{it}$  of company  $i$  in period  $t$  is expressed as:

$$r_{it} = \alpha + \beta_{im} r_{mt} + \varepsilon_{it}. \quad (1)$$

$r_{mt}$  refers to the market return rate in period  $t$ , mainly subject to the amount of market public information. The residuals  $\varepsilon_{it}$  reflects the part company-specific return fluctuations that can't be affected by public information, that is, the effect of company characteristics information on stock returns. The goodness of fit R2 means synchronization degree that stock prices fluctuates with the market average price volatility, so 1-R2 can be used to measure the non-synchronous degree of stock price volatility, that is the proportion of corporate identity information stock price fluctuations reflect. On the individual stocks, the greater the impact of company traits on stock returns, the greater the stock price volatility, that is, the greater  $\varepsilon_{it}$  is, the greater is 1-R2, which also means the greater the stock returns that is affected by the firm-specific information, the greater the stock price information content, and vice versa. This approach has been widely used by many scholars at home and abroad (You J. X., *et al.* [23]; Chen X. S. [24]).

On the basis of the studies of Morck, Yeung and Yu [1], Chen, *et al.* [25], Yuan Z. Z. and Ju X. F. [26], Huang J. and Guo Z. R. [27], which show that the fluctuation of stock price in the same industry may be common due to the characteristics of the industry, and the difference of fluctuation between stocks from different industries is larger. In the view of the model information affecting stock fluctuation, the public information may contain the industry information. Separate the industry information from the market public information, which means stock returns, may not only be effected by the market public information and company characteristics information, but also by industry-level information. Then, on the basis of Formula (1), propose:

$$r_{ijt} = \alpha + \beta_{1m} r_{mt} + \beta_{2j} r_{jt} + \varepsilon_{it}. \quad (2)$$

Here,  $r_{ijt}$  indicates return rate of stock  $i$  in  $j$  industry of  $t$  period.  $r_{mt}$  indicates market return rate in  $t$  period.  $r_{jt}$  indicates return rate of  $j$  industry in  $t$  period.  $\varepsilon_{it}$  is the residual items. Similar to Equation (1), the goodness of fit R2 in the above regression equation represents the effect of market and industry information on the change of stock return, while stock non-synchronization index 1-R2 represents the effect of firm characteristic information on stock return.

In order to avoid the lagged effect of market and industry information on stock returns fluctuation. Durnev, *et al.* [28], Wu W. L. and Zhang Z. [29] proposed to add the lagged market return to the right side of the above model. In

this paper, for the sake of robustness, we add the first-order lagged term of the market return rate ( $r_{m,t-1}$ ) and the industry return rate ( $r_{j,t-1}$ ) in the Formula (2). The model used to calculate the stock non-synchronization index is as follows:

$$r_{ijt} = \alpha + \beta_{1m}r_{mt} + \beta_{2j}r_{jt} + \beta_{3m}r_{m,t-1} + \beta_{4j}r_{j,t-1} + \varepsilon_{it}. \quad (3)$$

It should be noted that the stock returns used in this paper is the weekly return rate that have considered the reinvestment of cash dividend, the market rate of return and industry earnings are calculated by the weekly return rate according to the weighted average market capitalization.  $r_{ijt}$  is the weekly return rate of stock  $i$  in  $j$  industry  $t$  week,  $r_{mt}$  is the market return rate in  $t$  week,  $r_{m,t-1}$  is the market return rate in  $t-1$  week,  $r_{jt}$  is the industry return in  $t$  week,  $r_{j,t-1}$  is the industry return rate in the  $t-1$  week,  $\varepsilon_{it}$  is the residual term.

From the regression Equation (3), we can get the goodness of fit R2. In view of the value of R2 lies between 0 and 1, so the non-synchronous stock price index 1-R2 also lays between 0 and 1, which does not meet the normal distribution requirements in ordinary least squares regression, so we conduct the logarithmic conversion and the definition of non-synchronous stock price index is:

$$Syn = Ln \left[ \frac{(1 - R^2)}{R^2} \right]. \quad (4)$$

### 3.2.2. Media Attention (*LnMedia*)

There is no uniform approach to the measurement of media attention in the current literature. In this paper, we take the methods of Rao Y. L. and Wang P. [30], Luo J. H. and Cai D. [2], Huang J. and Guo Z. R. [27] and Yang J., *et al.* [7] for reference. Specifically, use Baidu news advanced search, to search the articles with titles contain the company's stock abbreviation in each sample year. After entering the abbreviation of the sample company and selecting the query period, the Baidu news search will automatically output the number of news coverage of the range. After access to the company's annual number of media news reports, take natural logarithmic of the sum of *Media* plus 1 to measure the level of the company's annual news media coverage, that's  $LnMedia = Ln (Media + 1)$ . As to the companies with ambiguous stock abbreviation, or the stock abbreviation repeats with daily term, we use the stock abbreviation and the stock code to conduct the search. As to the stocks whose abbreviation is changed, we search using the old name before the name changed year, and after the name changed year, search using the old name. As to the renamed year, according to the dividing point of announcement the company changed the name, use the old name before the date of the announcement, and use the new name after the announcement date. And then sum them up as the index of media attention.

### 3.2.3. Stock Liquidity (*Tover*)

On the selection of stock liquidity index, this paper learns from the previous studies, and uses the average daily turnover rate within the year to measure stock liquidity:

$$Tover_{it} = \frac{1}{D_{it}} \sum_{D=1}^{D_{it}} \left( \frac{Valtrd_{idt}}{Mvosd_{idt}} \right). \quad (5)$$

$Valtr_{itd}$  is the transaction amount of stock  $i$  in  $d$  week  $t$  year.  $Mvosd_{itd}$  is the circulation market value of stock  $i$  in  $d$  week  $t$  year.  $D_{it}$  is the total number of trading weeks.

### 3.2.4. Control Variables

According to the related literatures, this paper select the following control variables: the size of the company ( $Size$ ), the proportion of institutional ownership ( $Ins$ ), the proportion of the largest shareholder ( $Top1$ ), financial leverage ( $Lev$ ), asset-liability ratio (ROA),  $Industry$  and  $Year$ .

#### 1) Enterprise size ( $Size$ )

This paper selects the total assets at the end of the year as the proxy variable of firm size. In general, the larger the company, the more famous the brand, and the company will be more susceptible to the extensive concern of investors. Investors have greater motivation to do information arbitrage, and the stock price information is the more.

#### 2) Institutional shareholding ratio ( $Ins$ )

The institutional shareholding ratio used in the paper refers to the proportion of the number of shares held by institutional investors, including funds, brokerage firms, brokerage products, QFII, insurance companies, social security funds, trust companies, finance companies, banks, the sun private, general corporate and non-financial listed companies. The institutional shareholding index used in the paper is directly from the WIND database.

A large number research shows that institutional investors because of its advantages in the information collection and information processing, the number of shares and trading activities are closely linked with individual stocks excess returns and price efficiency. Generally speaking, the institutional shareholding promotes the market information efficiency.

#### 3) The largest shareholder ratio ( $Top1$ )

The proportion of the largest shareholder ( $Top1$ ) reflects the concentration of ownership. Generally speaking, the motivation for investors to collect information depends on the amount of their holdings, and shareholders with large holdings are more likely to collect information for arbitrage.

#### 4) Financial Leverage ( $Lev$ )

Select the asset-liability ratio ( $Lev$ ) that is the ratio of total debt to total assets at the end of year to measure financial leverage.

#### 5) Return on Total Assets (ROA)

Return on total assets (ROA) measures the overall profitability of an enterprise.

#### 6) Industry ( $Industry$ ), year ( $Year$ ) and dummy variable

The industry variable is classified according to the Guidelines for Industry Classification of Listed Companies (2012 Revision) issued by China Securities Regulatory Commission. This paper controls two types of dummy variables: industry classification variable ( $Industry$ ) and annual variable ( $Year$ ). The variables used in the paper are shown in **Table 3**.

### 3.3. Model Design

For the three sets of assumptions proposed above, the following three models were designed:

$$Syn_{it} = \beta_0 + \beta_1 LnMedia_{it} + \sum \beta_j Control_{it} + Industry + Year + \varepsilon_{it}. \quad (6)$$

$$Syn_{it} = \beta_0 + \beta_1 LnMedia_{it} + \beta_2 Tover_{it} + \sum \beta_j Control_{it} + Industry + Year + \varepsilon_{it}. \quad (7)$$

$$Syn_{it} = \beta_0 + \beta_1 LnMedia_{it} + \beta_2 Tover_{it} + \beta_3 Tover_{it} Media_{it} + \sum \beta_j Control_{it} + Industry + Year + \varepsilon_{it}. \quad (8)$$

Equation (6) examines the relationship between media attention (*LnMedia*) and stock price information (*Syn*) to verify hypothesis H1. Equation (7) validates the relationship between stock liquidity (*Tover*) and stock price information (*Syn*). Equation (8) is used to investigate the modulation effect of stock liquidity (*Tover*) on the relationship between media attention (*LnMedia*) and stock price information (*Syn*). We get Equation (8) on the basis of the Equation (6) added the cross term of media attention and stock liquidity to verify hypothesis H3.

## 4. Empirical Analysis

### 4.1. Descriptive Statistics

**Table 4** shows the descriptive statistical analysis of the main variables in this study. Among them, the mean of R2 is 0.483, the median is 0.490, the standard deviation is 0.176, which is slightly higher than the statistical result from the studies of Luo J. H. and Cai D. [2], Yang J., *et al.* [7] on China’s main market. This difference shows that stock price synchronization in China’s GEM is slightly higher than the overall level of China’s capital market. Since there is no special research on the GEM so far, this paper does not do comparison about GEM. The mean value of the stock non-synchronization index *Syn* is 0.227,

**Table 3.** Variable definitions and descriptions.

Types of variables	Variable symbol	Variable declaration
Explained Variable	<i>Syn</i>	The value of the stock non-synchronization, equals to the transformation of value of the goodness-of-fit obtained from the regression model (3)
	<i>LnMedia</i>	Media attention, equals to the natural logarithm of the number of news articles plus 1
Explanatory Variable	<i>Tover</i>	Turnover rate, equals to the average daily turnover rate within the year
	<i>Size</i>	Company size, equals to the total assets at the end of year
	<i>Ins</i>	Shareholding Ratio of Institutional
Control Variable	<i>Top1</i>	Shareholding ratio of the largest shareholder
	<i>Lev</i>	Debt-to-assets ratio
	<i>Roa</i>	Return On Assets
	<i>Industry</i>	Industry Dummy
	<i>Year</i>	Year Dummy

**Table 4.** Descriptive statistics.

stats	N	min	mean	max	p50	p25	sd
R2	1310	0.001	0.483	0.980	0.490	0.360	0.176
Syn	1310	-2.372	0.227	5.249	0.153	-0.306	0.781
Media	1310	24.000	2058.196	284000.000	1140.000	866.000	10359.577
LnMedia	1310	3.219	7.124	12.557	7.040	6.765	0.713
Tover	1310	0.026	0.193	0.700	0.168	0.107	0.111
Size	1310	266.121	1880.408	23733.477	1333.923	915.664	1792.556
Ins	1310	0.001	27.586	151.474	22.779	9.889	21.194
Top1	1310	4.380	31.922	69.360	29.990	22.460	12.641
Lev	1310	1.105	26.233	88.643	23.300	13.739	16.040
Roa	1310	-45.381	6.182	31.763	5.966	3.131	5.684

the median is 0.153, and the standard deviation is 0.781. There is a certain gap between the companies. The statistical results of media attention show that the average annual number of news report about GEM listed companies is 2058, an average of 5.6 every day, and this results were significantly higher than similar studies on the A-share market statistics, which reflects media's preference for the GEM Market from the side point. The average of annual average stock turnover is 19.3% in GEM, and the average shareholding ratio of institutional investors is 27.59%.

## 4.2. Regression Analysis

### 4.2.1. Number of Media News Reports and the Information Content of Stock Price

The Model (6) column in **Table 5** reports the regression results for the relationship between the number of media news stories (*LnMedia*) and the stock price information (*Syn*).

According to the result of regression, when uses stock price non-synchronization index *Syn* as the proxy variable of stock information content, the media attention variable *LnMedia* is positively correlated with stock price information content at the 1% significance level, that is, the more news media reports, the higher the stock price information content. This result is consistent with the results of Huang J. and Guo Z. R. [27], Luo J. H. and Cai D. [2]. This result confirms the hypothesis H1, and affirms the effectiveness of the news media in promoting market information efficiency to a certain extent. That is the increased number of news reports about GEM listed companies, which effectively promotes the company's quality information into the stock price, thereby, enhancing the listed company's stock price information content.

The regression analysis of control variables show that institutional ownership (*Ins*) is positively correlated with stock price information (*Syn*), but this result is not statistically significant, suggesting that institutional investors of GEM do not play their professional advantage in information mining and information processing. The proportion of shareholding of the largest shareholder *Top1* is

**Table 5.** Regression analysis results of Model (9).

Variables	Model (9)	
	<i>Syn</i>	<i>LnMedia</i>
<i>LnMedia</i>	0.324** (-2.29)	
<i>Syn</i>		0.952*** (-5.67)
<i>Tover</i>	0.584*** (-3.29)	
<i>Size</i>	0.0000252*** (-2.72)	
<i>Ins</i>	0.00262*** (-3.14)	
<i>Top1</i>	0.001 (-1.31)	
<i>Lev</i>	0.003*** (-3.03)	
<i>Roa</i>	0.009*** (-3)	
<i>Age</i>		0.084*** (-3.78)
$ Roe $		0.008*** (-3.34)
<i>R - var</i>		12.730*** (-2.67)
<i>Develop</i>		0.002* (-1.69)
Constant Term	-2.480*** (-2.89)	6.127*** (-26.21)
<i>Industry</i>	Controlled	Controlled
<i>Year</i>	Controlled	Controlled
Sample Capacity	1310	1310

*t* statistics in parentheses \*p < 0.1, \*\*p < 0.05, \*\*\*p < 0.01.

positively correlated with the information content of stock price at the significance level of 5%, which indicates that the ownership concentration is beneficial to the improvement of the information content of stock price. Company size (*Size*) is positively correlated with stock price information, which is consistent with the conclusion of Wu W. L. and Zheng Z. [29]. The asset-liability ratio (ROA) and return on assets (ROI) are both positively correlated with the information content of the stock price and have a certain significance level, which are consistent with the conclusions of Huang J. and Guo Z. R. [27].

#### 4.2.2. Stock Liquidity and Price Information Content

The Model (7) column in **Table 5** reports the regression result for the relationship between stock liquidity ( $T_{over}$ ) and stock price information ( $Syn$ ). According to the result, when the stock price non-synchronous index  $Syn$  is taken as the proxy variable of stock price information, the stock exchange rate ( $T_{over}$ ) is positively correlated with the price information content at the 1% significance level, that is, the stock turnover rate is faster, the higher the information content. This result is consistent with the views of Chen M. G. and Mao X. Y. [18], Kong D. M., *et al.* [20], Su D. W. and Xiong J. C. [19], which confirms the hypothesis H2.

#### 4.2.3. The Regulating Effect of Stock Liquidity on the Relationship between the Number of Media News Reports and the Price of Information

The Model (8) column in **Table 5** reports the result of the regression of stock liquidity ( $T_{over}$ ) on the relationship between the number of media news stories ( $LnMedia$ ) and stock price information ( $Syn$ ). According to the result, the coefficient of average annual turnover ( $T_{over}$ ) is significantly positive at 1% significance level after adding the annual turnover rate ( $T_{over}$ ) and interaction term ( $LnMedia * T_{over}$ ) on the basis of Model (6), which once again proves the hypothesis that the stock liquidity is conducive to promoting the stock price information content. It is worth noting that the coefficient of the cross term of average annual turnover rate and the media concern ( $LnMedia * T_{over}$ ) is significant negative at the 5% significance level, indicating that the acceleration of stock liquidity will reduce the positive impact of media attention on the stock price to a certain extent. This may be due to the fact that, when the stock trading is accelerated, the investor is active, and the acceptance of media news about analysis of the company's characteristics is weakened. This may also be because when the market liquidity accelerates, the media's press release is active, and there may appear contradictory information, or even differences in news coverage will also give ordinary investors obstacles to identify information and make an investment decision. Either way, there needs further research to explain why the acceleration of stock liquidity reduces the positive impact of media attention on stock price information.

#### 4.3. Robustness Test

In view of Luo J. H. and Cai D. [2] mentioned that, there may exist endogenous problems in the study of the number of media news reports and stock price information content. That is the positive relationship between the media attention and price information content does not necessarily mean that the number of media news reports has contributed to the improvement of the information content of stock price. It may also be because the stock with high stock price information can arouse more media suspicion. This paper draw lessons from Luo J. H. and Cai D. [2], propose the following simultaneous equation model for robustness testing:

$$Syn_{it} = \beta_0 + \beta_1 LnMedia_{it} + \beta_2 Tover_{it} + \sum \beta_j Control_{it} + Industry + Year + \varepsilon_{it}. \quad (9)$$

$$LnMedia_{it} = \beta_0 + \beta_1 Syn_{it} + \beta_2 Age_{it} + \beta_3 |Roe_{it}| + \beta_4 R-var_{it} + \beta_5 Develop_{it} + Industry + Year + \varepsilon_{it}. \quad (10)$$

In the simultaneous equation model (9), the variables that affect the stock price information ( $Syn$ ) are consistent with the regression model above, and the variables that affect the number of media news reports ( $LnMedia$ ) except for the stock price information ( $Syn$ ), taking into account the usual situations. The companies with longer the time to go public, the better or worse the operating results, the more obvious stock price fluctuates, the higher the development of regional media, will be more vulnerable to the media's favor. So we add the company listing time ( $Age$ ), the absolute value of return net assets ( $|Roe|$ ), the variance of the weekly return on stocks ( $R-var$ ), and the media development index ( $Develop$ ) of the province in which the company is located. In addition, the dummy variables of company's industry ( $Industry$ ) and annual ( $Year$ ) are controlled. It is worth noting that the media development index ( $Develop$ ) is used as an instrumental variable of the number of media reports ( $LnMedia$ ) derived from Media Development Indices by Province by Yu G M [31]. The other variables are defined in **Table 1** above.

Regression analysis of the model (9) was performed in **Table 5**.

It can be seen that, after controlling for the endogeneity between the number of news media reports ( $LnMedia_{it}$ ) and the price information content ( $Syn$ ), the coefficient of is still significantly positive at the 5% significance level, demonstrating that the news media report significantly increases stock price information once again, which proves the conclusion obtained in this paper is robust.

## 5. Conclusions and Implication

With the popularity of mobile internet, the development of information age, the so-called "information explosion" is more and more obvious. The press contacts more closely with people's production and living. In this case, the importance of the news media is self-evident. The GEM is favored by many news media because of its high liquidity and high risk. In addition, the investors of GEM are mainly small and medium investors who have obstacles in information gathering and information processing, and they tend to get investment information from the news media. Obviously, if the news media reports can provide useful information about the listed companies, it will help investors make more reasonable investment decisions so as to enhance the market information efficiency and promote the information content of the stock price. Based on this, this article uses "Baidu News" advanced search to search articles with titles containing the name of the sample, and uses the number of articles to measure media attention, uses non-synchronous stock price index to measure the information content of stock prices and empirically analyzes the effect of media attention on stock price information. It turns out that the quantity of media news reports and the stock liquidity are positively correlated with the information content of stock price,



that is, the information content of stock price increases with the increase of the number of media news reports and the acceleration of stock liquidity. This conclusion is still significant after eliminating endogenous. Further study found that stock liquidity weakened the promotion role of the media attention on the stock information content. This interesting conclusion may be due to that, when stock liquidity accelerates, since the market is active, investors' analytical judgment about the characteristic information is vulnerable to the impact of market liquidity, whose acceptability of media news reports will be weakened to a certain extent, which may reduce the positive effect of media attention on the information content of stock price. It may be because when the market liquidity increases, the press is also active, various news contents may appear and different news reports will make it difficult for ordinary investors to identify information and make investment decision. They need further analysis to identify the specific reason.

The conclusions of this paper have the following theoretical and policy significance: Academically, the result that there exists positive relationship between media attention and the price information content in GEM, perfects information environmental governance theory in China's GEM, and provides theoretical support for exploring the effectiveness of China's capital market. Practically, there are three aspects. First, the promoting role of media news reporting in the information content of stock prices, clarifies the role of external supervision in China's capital market, and provides empirical evidence for regulators to give full play to the role of information disclosure. Second, for the investors, the result of this paper is helpful to guide investors to make better use of the media reports to make investment decisions and alleviate the information asymmetry in the capital market. Third, the listed companies can make full use of the media's information dissemination function so as to make more company characteristics information into the company's stock price, which can make the stock price close to the company's intrinsic value and can improve the financing efficiency of listed companies.

However, due to the availability of data and other related technical reasons, this paper has some limitations. For example, the media attention is measured by the number of manually searched news articles, and there is no breakdown of the types of news media and news content; the accuracy of the data may be a problem. In addition, because of the simple operation and the availability of data, this paper uses stock price non-synchronization index as a proxy variable of the information content of stock price; the accuracy of this index is questioned. For these limitations, further research needs to be further improved.

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## Annex

The list of the sample companies

year	stkcd	year	stkcd	year	stkcd	year	stkcd	year	stkcd
2011	300001	2012	300001	2013	300001	2014	300001	2015	300001
2011	300002	2012	300002	2013	300002	2014	300002	2015	300002
2011	300003	2012	300003	2013	300003	2014	300003	2015	300003
2011	300004	2012	300004	2013	300004	2014	300004	2015	300004
2011	300005	2012	300005	2013	300005	2014	300005	2015	300005
2011	300006	2012	300006	2013	300006	2014	300006	2015	300006
2011	300007	2012	300007	2013	300007	2014	300007	2015	300007
2011	300008	2012	300008	2013	300008	2014	300008	2015	300009
2011	300009	2012	300009	2013	300009	2014	300009	2015	300010
2011	300010	2012	300010	2013	300010	2014	300010	2015	300011
2011	300011	2012	300011	2013	300011	2014	300011	2015	300012
2011	300012	2012	300012	2013	300012	2014	300012	2015	300013
2011	300013	2012	300013	2013	300013	2014	300013	2015	300014
2011	300014	2012	300014	2013	300014	2014	300014	2015	300015
2011	300015	2012	300015	2013	300015	2014	300015	2015	300016
2011	300016	2012	300016	2013	300016	2014	300016	2015	300017
2011	300017	2012	300017	2013	300017	2014	300017	2015	300018
2011	300018	2012	300018	2013	300018	2014	300018	2015	300019
2011	300019	2012	300019	2013	300019	2014	300019	2015	300020
2011	300020	2012	300020	2013	300020	2014	300020	2015	300021
2011	300021	2012	300021	2013	300021	2014	300021	2015	300022
2011	300022	2012	300022	2013	300022	2014	300022	2015	300023
2011	300023	2012	300023	2013	300023	2014	300024	2015	300024
2011	300024	2012	300024	2013	300024	2014	300025	2015	300026
2011	300025	2012	300025	2013	300025	2014	300026	2015	300027
2011	300026	2012	300026	2013	300026	2014	300027	2015	300029
2011	300027	2012	300027	2013	300027	2014	300028	2015	300031
2011	300028	2012	300028	2013	300028	2014	300029	2015	300032
2011	300029	2012	300029	2013	300029	2014	300030	2015	300034
2011	300030	2012	300030	2013	300030	2014	300031	2015	300035
2011	300031	2012	300031	2013	300031	2014	300032	2015	300036
2011	300032	2012	300032	2013	300032	2014	300034	2015	300037
2011	300034	2012	300034	2013	300034	2014	300035	2015	300038
2011	300035	2012	300035	2013	300035	2014	300036	2015	300039
2011	300036	2012	300036	2013	300036	2014	300037	2015	300040
2011	300037	2012	300037	2013	300037	2014	300038	2015	300041
2011	300038	2012	300038	2013	300038	2014	300039	2015	300042
2011	300039	2012	300039	2013	300039	2014	300040	2015	300043
2011	300040	2012	300040	2013	300040	2014	300041	2015	300044
2011	300041	2012	300041	2013	300041	2014	300042	2015	300045
2011	300042	2012	300042	2013	300042	2014	300043	2015	300046
2011	300043	2012	300043	2013	300043	2014	300044	2015	300047
2011	300044	2012	300044	2013	300044	2014	300045	2015	300048

**Continued**

2011	300045	2012	300045	2013	300045	2014	300046	2015	300049
2011	300046	2012	300046	2013	300046	2014	300047	2015	300050
2011	300047	2012	300047	2013	300047	2014	300048	2015	300051
2011	300048	2012	300048	2013	300048	2014	300049	2015	300052
2011	300049	2012	300049	2013	300049	2014	300050	2015	300053
2011	300050	2012	300050	2013	300050	2014	300051	2015	300054
2011	300051	2012	300051	2013	300051	2014	300052	2015	300055
2011	300052	2012	300052	2013	300052	2014	300053	2015	300056
2011	300053	2012	300053	2013	300053	2014	300054	2015	300057
2011	300054	2012	300054	2013	300054	2014	300055	2015	300058
2011	300055	2012	300055	2013	300055	2014	300056	2015	300059
2011	300056	2012	300056	2013	300056	2014	300057	2015	300061
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2011	300058	2012	300058	2013	300058	2014	300059	2015	300063
2011	300059	2012	300059	2013	300059	2014	300061	2015	300064
2011	300061	2012	300061	2013	300061	2014	300062	2015	300065
2011	300062	2012	300062	2013	300062	2014	300063	2015	300066
2011	300063	2012	300063	2013	300063	2014	300064	2015	300067
2011	300064	2012	300064	2013	300064	2014	300065	2015	300068
2011	300065	2012	300065	2013	300065	2014	300066	2015	300069
2011	300066	2012	300066	2013	300066	2014	300067	2015	300070
2011	300067	2012	300067	2013	300067	2014	300068	2015	300072
2011	300068	2012	300068	2013	300068	2014	300069	2015	300073
2011	300069	2012	300069	2013	300069	2014	300070	2015	300074
2011	300070	2012	300070	2013	300070	2014	300072	2015	300075
2011	300071	2012	300071	2013	300071	2014	300073	2015	300076
2011	300072	2012	300072	2013	300072	2014	300074	2015	300077
2011	300073	2012	300073	2013	300073	2014	300075	2015	300078
2011	300074	2012	300074	2013	300074	2014	300076	2015	300079
2011	300075	2012	300075	2013	300075	2014	300077	2015	300080
2011	300076	2012	300076	2013	300076	2014	300078	2015	300081
2011	300077	2012	300077	2013	300077	2014	300079	2015	300082
2011	300078	2012	300078	2013	300078	2014	300080	2015	300083
2011	300079	2012	300079	2013	300079	2014	300081	2015	300084
2011	300081	2012	300080	2013	300080	2014	300082	2015	300085
2011	300082	2012	300081	2013	300081	2014	300083	2015	300086
2011	300083	2012	300082	2013	300082	2014	300084	2015	300088
2011	300084	2012	300083	2013	300083	2014	300085	2015	300089
2011	300085	2012	300084	2013	300084	2014	300086	2015	300090
2011	300086	2012	300085	2013	300085	2014	300087	2015	300091
2011	300087	2012	300086	2013	300086	2014	300088	2015	300092
2011	300088	2012	300087	2013	300087	2014	300089	2015	300094
		2012	300088	2013	300088	2014	300090	2015	300095
		2012	300089	2013	300089	2014	300091	2015	300096
		2012	300090	2013	300090	2014	300092	2015	300097

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2012	300091	2013	300091	2014	300093	2015	300098
2012	300092	2013	300093	2014	300094	2015	300099
2012	300093	2013	300094	2014	300095	2015	300100
2012	300094	2013	300095	2014	300096	2015	300101
2012	300095	2013	300096	2014	300097	2015	300102
2012	300096	2013	300097	2014	300098	2015	300103
2012	300097	2013	300098	2014	300099	2015	300104
2012	300098	2013	300099	2014	300100	2015	300105
2012	300099	2013	300100	2014	300101	2015	300106
2012	300100	2013	300101	2014	300102	2015	300107
2012	300101	2013	300102	2014	300103	2015	300108
2012	300102	2013	300103	2014	300104	2015	300109
2012	300103	2013	300104	2014	300105	2015	300110
2012	300104	2013	300105	2014	300106	2015	300111
2012	300105	2013	300106	2014	300107	2015	300112
2012	300106	2013	300107	2014	300108	2015	300113
2012	300107	2013	300108	2014	300109	2015	300114
2012	300108	2013	300109	2014	300110	2015	300115
2012	300109	2013	300110	2014	300111	2015	300116
2012	300110	2013	300111	2014	300112	2015	300117
2012	300111	2013	300112	2014	300113	2015	300118
2012	300113	2013	300113	2014	300114	2015	300119
2012	300114	2013	300114	2014	300115	2015	300120
2012	300115	2013	300115	2014	300116	2015	300121
2012	300116	2013	300116	2014	300117	2015	300122
2012	300117	2013	300117	2014	300118	2015	300124
2012	300118	2013	300118	2014	300119	2015	300125
2012	300119	2013	300119	2014	300120	2015	300126
2012	300120	2013	300120	2014	300121	2015	300127
2012	300121	2013	300121	2014	300122	2015	300128
2012	300122	2013	300122	2014	300123	2015	300129
2012	300123	2013	300123	2014	300124	2015	300130
2012	300124	2013	300124	2014	300125	2015	300132
2012	300125	2013	300125	2014	300126	2015	300133
2012	300126	2013	300126	2014	300127	2015	300135
2012	300127	2013	300127	2014	300128	2015	300136
2012	300128	2013	300128	2014	300129	2015	300137
2012	300129	2013	300129	2014	300130	2015	300138
2012	300130	2013	300130	2014	300131	2015	300139
2012	300131	2013	300131	2014	300132	2015	300140
2012	300132	2013	300132	2014	300133	2015	300141
2012	300133	2013	300133	2014	300134	2015	300142
2012	300134	2013	300134	2014	300135	2015	300143
2012	300135	2013	300135	2014	300136	2015	300144
2012	300136	2013	300136	2014	300137	2015	300145

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2012	300137	2013	300137	2014	300138	2015	300146
2012	300138	2013	300138	2014	300139	2015	300147
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2012	300140	2013	300140	2014	300141	2015	300151
2012	300141	2013	300141	2014	300142	2015	300152
2012	300142	2013	300142	2014	300144	2015	300153
2012	300143	2013	300143	2014	300145	2015	300154
2012	300144	2013	300144	2014	300146	2015	300155
2012	300145	2013	300145	2014	300147	2015	300156
2012	300146	2013	300146	2014	300148	2015	300157
2012	300147	2013	300147	2014	300149	2015	300159
2012	300148	2013	300148	2014	300150	2015	300160
2012	300149	2013	300149	2014	300151	2015	300161
2012	300150	2013	300150	2014	300152	2015	300163
2012	300151	2013	300151	2014	300153	2015	300164
2012	300152	2013	300152	2014	300154	2015	300165
2012	300153	2013	300153	2014	300155	2015	300166
2012	300154	2013	300154	2014	300156	2015	300167
2012	300155	2013	300155	2014	300157	2015	300168
2012	300156	2013	300156	2014	300158	2015	300170
2012	300157	2013	300157	2014	300159	2015	300171
2012	300158	2013	300158	2014	300160	2015	300172
2012	300159	2013	300159	2014	300161	2015	300173
2012	300160	2013	300160	2014	300162	2015	300174
2012	300161	2013	300161	2014	300163	2015	300175
2012	300162	2013	300162	2014	300164	2015	300176
2012	300163	2013	300163	2014	300165	2015	300177
2012	300164	2013	300164	2014	300166	2015	300178
2012	300165	2013	300166	2014	300167	2015	300179
2012	300166	2013	300167	2014	300168	2015	300180
2012	300167	2013	300168	2014	300169	2015	300181
2012	300168	2013	300169	2014	300170	2015	300182
2012	300169	2013	300170	2014	300171	2015	300183
2012	300170	2013	300171	2014	300172	2015	300185
2012	300171	2013	300172	2014	300173	2015	300187
2012	300172	2013	300173	2014	300174	2015	300188
2012	300173	2013	300174	2014	300175	2015	300190
2012	300174	2013	300175	2014	300176	2015	300191
2012	300175	2013	300176	2014	300177	2015	300192
2012	300176	2013	300177	2014	300178	2015	300193
2012	300177	2013	300178	2014	300179	2015	300194
2012	300178	2013	300179	2014	300180	2015	300195
2012	300179	2013	300181	2014	300181	2015	300196
2012	300180	2013	300182	2014	300182	2015	300197
2012	300181	2013	300183	2014	300183	2015	300198

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2012	300182	2013	300184	2014	300184	2015	300199
2012	300183	2013	300185	2014	300185	2015	300200
2012	300184	2013	300187	2014	300187	2015	300201
2012	300185	2013	300188	2014	300188	2015	300202
2012	300187	2013	300189	2014	300189	2015	300203
2012	300188	2013	300190	2014	300190	2015	300204
2012	300189	2013	300191	2014	300191	2015	300205
2012	300190	2013	300192	2014	300192	2015	300206
2012	300191	2013	300193	2014	300193	2015	300207
2012	300192	2013	300194	2014	300194	2015	300208
2012	300193	2013	300195	2014	300195	2015	300209
2012	300194	2013	300196	2014	300196	2015	300210
2012	300195	2013	300197	2014	300197	2015	300211
2012	300196	2013	300198	2014	300198	2015	300212
2012	300197	2013	300199	2014	300200	2015	300213
2012	300198	2013	300200	2014	300201	2015	300214
2012	300199	2013	300201	2014	300202	2015	300215
2012	300200	2013	300202	2014	300203	2015	300216
2012	300201	2013	300203	2014	300204	2015	300217
2012	300202	2013	300204	2014	300205	2015	300218
2012	300203	2013	300205	2014	300206	2015	300219
2012	300204	2013	300206	2014	300207	2015	300220
2012	300205	2013	300207	2014	300208	2015	300221
2012	300206	2013	300208	2014	300209	2015	300223
2012	300207	2013	300209	2014	300210	2015	300224
2012	300208	2013	300210	2014	300211	2015	300225
2012	300209	2013	300211	2014	300212	2015	300226
2012	300211	2013	300212	2014	300213	2015	300227
2012	300213	2013	300213	2014	300214	2015	300228
2012	300214	2013	300214	2014	300215	2015	300229
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2012	300222	2013	300222	2014	300223	2015	300238
2012	300223	2013	300223	2014	300224	2015	300239
2012	300224	2013	300224	2014	300225	2015	300240
2012	300225	2013	300225	2014	300226	2015	300241
		2013	300226	2014	300227	2015	300242
		2013	300227	2014	300228	2015	300243
		2013	300228	2014	300229	2015	300244
		2013	300229	2014	300230	2015	300245

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2013	300230	2014	300231	2015	300246
2013	300231	2014	300232	2015	300247
2013	300232	2014	300233	2015	300248
2013	300233	2014	300234	2015	300249
2013	300234	2014	300235	2015	300250
2013	300235	2014	300236	2015	300251
2013	300236	2014	300237	2015	300252
2013	300237	2014	300238	2015	300253
2013	300238	2014	300239	2015	300254
2013	300239	2014	300240	2015	300255
2013	300240	2014	300241	2015	300256
2013	300241	2014	300242	2015	300257
2013	300243	2014	300243	2015	300258
2013	300244	2014	300244	2015	300259
2013	300245	2014	300245	2015	300260
2013	300246	2014	300246	2015	300261
2013	300247	2014	300247	2015	300262
2013	300248	2014	300248	2015	300263
2013	300249	2014	300249	2015	300264
2013	300250	2014	300250	2015	300265
2013	300251	2014	300251	2015	300267
2013	300252	2014	300252	2015	300268
2013	300253	2014	300253	2015	300270
2013	300254	2014	300254	2015	300271
2013	300255	2014	300255	2015	300272
2013	300256	2014	300256	2015	300273
2013	300257	2014	300257	2015	300274
2013	300258	2014	300258	2015	300275
2013	300259	2014	300259	2015	300276
2013	300261	2014	300260	2015	300277
2013	300262	2014	300261	2015	300281
2013	300263	2014	300262	2015	300282
2013	300264	2014	300263	2015	300283
2013	300265	2014	300264	2015	300284
2013	300266	2014	300265	2015	300285
2013	300267	2014	300266	2015	300286
2013	300269	2014	300267	2015	300287
2013	300270	2014	300269	2015	300288
2013	300271	2014	300270	2015	300289
2013	300272	2014	300271	2015	300290
2013	300273	2014	300272	2015	300291
2013	300274	2014	300273	2015	300292
2013	300275	2014	300274	2015	300293
2013	300276	2014	300275	2015	300294
2013	300277	2014	300276	2015	300295

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2013	300278	2014	300277	2015	300296
2013	300279	2014	300279	2015	300297
2013	300280	2014	300280	2015	300298
2013	300281	2014	300281	2015	300299
2013	300282	2014	300282	2015	300300
2013	300283	2014	300283	2015	300301
2013	300284	2014	300284	2015	300302
2013	300285	2014	300285	2015	300303
2013	300287	2014	300287	2015	300304
2013	300288	2014	300288	2015	300305
2013	300289	2014	300289	2015	300306
2013	300290	2014	300290	2015	300307
2013	300291	2014	300291	2015	300308
2013	300292	2014	300292	2015	300309
2013	300293	2014	300293	2015	300310
2013	300294	2014	300294	2015	300311
2013	300295	2014	300295	2015	300312
2013	300296	2014	300296	2015	300313
2013	300297	2014	300297	2015	300314
2013	300298	2014	300298	2015	300315
2013	300299	2014	300299	2015	300316
2013	300300	2014	300300	2015	300317
2013	300301	2014	300301	2015	300318
2013	300302	2014	300302	2015	300319
2013	300303	2014	300303	2015	300320
2013	300304	2014	300304	2015	300321
2013	300305	2014	300305	2015	300323
2013	300306	2014	300306	2015	300324
2013	300307	2014	300307	2015	300325
2013	300308	2014	300308	2015	300326
2013	300309	2014	300309	2015	300327
2013	300310	2014	300310	2015	300328
2013	300311	2014	300311	2015	300329
2013	300312	2014	300312	2015	300330
2013	300313	2014	300313	2015	300331
2013	300314	2014	300314	2015	300332
2013	300316	2014	300316	2015	300333
2013	300317	2014	300317	2015	300334
2013	300318	2014	300318	2015	300335
2013	300319	2014	300320	2015	300336
2013	300320	2014	300321	2015	300337
2013	300322	2014	300322	2015	300338
2013	300323	2014	300323	2015	300339
2013	300325	2014	300324	2015	300340
		2014	300325	2015	300341

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2014	300326	2015	300342
2014	300327	2015	300344
2014	300328	2015	300345
2014	300329	2015	300346
2014	300330	2015	300347
2014	300331	2015	300348
2014	300332	2015	300349
2014	300333	2015	300350
2014	300334	2015	300351
2014	300335	2015	300352
2014	300336	2015	300353
2014	300337	2015	300354
2014	300338	2015	300355
2014	300339	2015	300356
2014	300340	2015	300357
2014	300341	2015	300358
2014	300342	2015	300359
2014	300344	2015	300360
2014	300345	2015	300362
2014	300346	2015	300363
2014	300347	2015	300365
2014	300348	2015	300366
2014	300349	2015	300367
2014	300351	2015	300368
2014	300352	2015	300369
2014	300353	2015	300370
2014	300354	2015	300371
2014	300355	2015	300372
2014	300356	2015	300373
		2015	300374
		2015	300375
		2015	300376
		2015	300377
		2015	300378
		2015	300379
		2015	300380
		2015	300381
		2015	300382
		2015	300383

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