Investor Sentiment and Business Cycle

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Abstract. We compare the causal relationship between investor sentiment and the business cycle by both foreign and local investor sentiments. Then we compare the difference in a bear or bull market, and the difference in industries.

Keywords: Investment Sentiment · Business Cycle · Foreign Investor · Local Investor

1 Introduction

The business cycle refers to a period that includes a boom and a contraction, which undergoes recovery, prosperity, depression, and recession, and then begins the process of recovery. Investor sentiment is a topic that has recently attracted more attention from scholars. The efficient market hypothesis says that the current prices of securities are close to their fundamental values because of the rational investor. Stock prices are influenced by investor sentiment. Some studies use expected stock returns to predict the business cycle. The relationship between investor sentiment and the business cycle needs to be studied. This paper presents some new features that are not discussed by existing studies. First, we compare the causal relationship between investor sentiment and the business cycle by both foreign and local investor sentiments. Second, we show the impact of investor sentiment on the business cycle when the stock market is in a bear or a bull market. Third, we confirm the relationships between investor sentiments of industries and the business cycle.

2 Literature Review

2.1 Investor Sentiment

The efficient market hypothesis states that investors are rational. But this view has gradually been overturned, and instead more research focused on investor sentiment. A stock market is a place where people interact and influence each other. When the investors involved are more emotional, they tend to react with everyone at the same time and tend to imitate the behavior of others. In Taiwan's stock market, individual investors account for more than half of the transactions [1]. When the behavior of investors in the securities market exceeds a certain scale of the above behavior, a herding behavior occurs.

E. H. Saragih et al. (Eds.): APMRC 2022, AEBMR 221, pp. 205–209, 2023.
https://doi.org/10.2991/978-94-6463-076-3_14

Behavioral finance is a recent research topic that has attracted much attention from scholars. Some of them explored behavioral finance, which includes research reviews of investor sentiment [2]. From the perspective of behavioral finance, due to cultural and social differences, the markets of different countries have different characteristics [3].

Baker and Wurgler [4] believe that a wide range of mood swings will have different effects on different types of stocks. The more difficult it is to evaluate or arbitrage stocks, the more likely it is to be affected by investor sentiment, and such influence cannot be unclassified. Circumstances were discovered. Brown and Cliff classified investor sentiment variables into direct sentiment and indirect sentiment [5]. The Taiwanese literature mostly uses indirect sentiment indicators to measure investor sentiment.

2.2 Business Cycle

The business cycle reflects the fluctuations of the macroeconomy. The empirical results of Hsiao found that the relationship between the actual customs export value, the value of manufacturing production and sales and the current business cycle is the most stable, while the manufacturing inventory and manufacturing unit output labor cost helps to predict the state of the economy in the next 2–3 months [6]. In the past, a lot of literature explored whether stock market volatility has significant in predicting the macro economy. Levine and Zervos found that after controlling for economic and political factors, there is a significant positive correlation between stock market liquidity and current and future economic growth rates [7].

Beber, Brandt, and Kavajecz studied information on the change in the buy and sell order flow for stocks in various industries from 1993 to 2005 [8]. They found that a combination of buying and selling order flows that varied across industries could predict economic conditions for the next three months. The other study found that stock market liquidity contains useful information for estimating current and future economic conditions [9]. They used the samples of companies listed in the New York Stock Exchange (NYSE). And they found that stock market liquidity can effectively predict future economic trends, but the business cycle cannot show the future direction of stock market liquidity.

Kaul and Kayacetin studied two indicators of the total stock market order flow from 1988 to 2004 [10]. And they found that both indicators predict the future growth rate of industrial production and real GDP. Shih and Su use Amihud's illiquidity index to measure stock market liquidity's Granger causality test [11]. The results show that Taiwan's stock market liquidity could predict the future business cycle, but the business cycle cannot capture the stock market liquidity dynamics. Based on the above literature, we believe that the relationship between investor sentiment and the business cycle deserves further study, so we establish the following hypothesis:

H1: Investor sentiment has a positive relationship with the business cycle.
H2: Foreign investor sentiment has a positive impact on the business cycle.
H3: The business cycle has a positive impact on foreign investor sentiment.
H4: Investor sentiment toward the electronics industry has a positive impact on the business cycle.

3 Research Methods

The samples selected in this research are listed companies on Taiwan Stock Exchange (TWSE) since 2008. Because the authoritative data bank covering extensive institutional investors' trading data sets on Taiwan Stock Exchange (TWSE) since 2008. Our research period is from January 2008 to December 2020. In this study, macroeconomics variables, stock prices, and trading volumes are obtained from the Taiwan Economic Journal (TEJ) database.

We measure the business cycle with the monitoring indicators announced by Taiwan's National Development Council. And we measure investor sentiment by dividing the average of investors buying and selling by the shares outstanding. Formula 1 represents the relationship between the business cycle (*Business_cyc*) and investor sentiment (*Iindustry_SENT*) of industries.

$$Business\_cyc = \alpha + \Sigma\beta_i Iindustry\_SENT_i \tag{1}$$

4 Results and Discussion

To observe the impact of investor sentiment in various industries on the business cycle, we will conduct a regression analysis. We also compute regressions on the money supply MIB, so that we can compare the results of the two regressions (Table 1).

The regression results show that investor sentiment in the cement, food, plastic, textile, chemical biomedical, shipping and transportation, tourism, financial and insurance, trading and consumers' goods, oil, gas and electricity et al. industries have a negative

Table 1. Regression Analysis Results

Industry	M1B	Business_Cyc
Cement	−0.55***	−0.38
Food	−0.02	0.71***
Plastic	−0.12	−0.11
Textile	−0.10	0.01
Electric Machinery	0.06	0.17
Electrical and Cable	0.07	0.39***
Chemical Biomedical	−0.28*	0.27
Biotechnology and Medical Care	0.11**	−0.09
Glass and Ceramic	0.30***	0.17
Paper and Pulp	0.02	0.16
Iron and Steel	0.30**	−0.29
Rubber	0.57***	0.24

(*continued*)

Table 1. (*continued*)

Industry	M1B	Business_Cyc
Automobile	0.29***	−0.22**
Electronic	0.20*	−0.07
Information Service	0.11***	0.14***
Building Material and Construction	0.07	0.03
Shipping and Transportation	−0.18**	0.10
Tourism	−0.02	−0.28
Financial and Insurance	−0.41**	−0.37
Trading and Consumers' Goods	−0.50***	0.07
Oil, Gas and Electricity	−1.25**	−1.52
Other	0.14	−0.81***
R-squared	0.76	0.60

Note: Superscripts *, **, and *** denote significance of the t-test for the difference in means between the two subsamples at 10%, 5%, and 1% levels, respectively.

impact on MIB. And investor sentiment of the biotechnology and medical care, glass, and ceramic, iron and steel, rubber, automobile, electronic, information service, et al. industries have a positive impact on MIB.

By comparison, investor sentiment of the Automobile and other industries have a negative impact on the business cycle. And investor sentiment of the food, electrical and cable, information service et al. industries have a positive impact on the business cycle.

Acknowledgments. Constructive comments of editors and anonymous referees are gratefully acknowledged. This research is partly supported by the National Science Council of Taiwan (NSC 109-2813-C-468-099-H and NSC 110-2813-C-468-086-H).

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