An Examination of Herding Behaviour: An Empirical Study on Nine Sector Indices of Indonesian Stock Market

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ABSTRACT

This paper examines the existence of herding behaviour in Indonesian stock market. We employ Cross-Sectional Standard Deviation of returns (CSSD) method developed by Christie and Huang (1995) to measure the return dispersions of individual returns from market return. This model assumes that herdng behaviour most likely occur in large market movement. Hence, we use a regression model to detect the existence of herding behaviour during period of market stress. We analyze behaviour of return dispersions using daily data of nine sector indices of Indonesian Stock Market: agriculture, mining, basic industry, consumer goods, property, infrastructure, finance, trade & service, and manufacturing during the years 2007-2009. The data were obtained from IDX statistics 2007-2009. The result indicates that herding behaviour does not exist in Indonesian stock market. This finding implies investors in Indonesian stock market have heterogeneous belief.

Keywords: Herding behaviour, Sector indices, Equity return dispersion, Jakarta Stock Exchanges

1. Introduction

Herding behaviour explained as human activity acting in the same way at the same time, and herding in behavioural finance can describe as investor follow or copy other investor’s behaviour (Bikhchandani and Sharma, 2000). This behaviour can give impact to financial markets since herding may bring prices far from the fundamental value (Hwang and Salmon, 2004). Christie and Huang (1995) suggest that investor tends to ignore their private information and follow the market consensus during period of market stress. Economou, et.al., examined herd behaviour in four Mediterranean stock market and found evidence of herding during the global financial crisis of 2008 in Portuguese stock market.

Some researchers suggest that herding is rational behaviour while others say it is not fully rational. Demirer and Kutan (2006) suggest that herding behaviour is not necessarily irrational; they found that investors are entirely rational if they follow other’s behaviour to avoid returns below an average market. In lines with Bikhchandani and Sharma (2000), suggest that herding behaviour can keep arise when investors face imperfect information, though they act rational. Banerjee (1992), Bikhchandani,
Hirshleifer, and Welch (1992) found that herding is driven by informational cascade. While, Fu and Lin (2010) suggest that herding is irrational behaviour, because when investors lack of information they prefer to follow other’s behaviour, and it can cost strengthens herding.

Previous herding behaviour study in Indonesia has been done by Purba and Faradynawati (2011), they examined herding behaviour in big market capitalization portfolio using stocks in LQ45 used two models Cross-Sectional Standard Deviation (CSSD) and Cross-Sectional Absolute Deviations (CSAD). They only selected that existed in LQ45 during period of July 2007-June 2010, then only 16 firms that remained in the list during observation. The empirical result showed conflicting results between CSSD and CSAD. Using CSSD the research found no evidence herding behaviour in Indonesian stock market during market stress, while using CSAD the research suggests the existence of herding behaviour.

However, Bikhchandani and Sharma (2000) suggest that herd would be more likely occurs at the level of group of stocks. We fill this gap in the literature by providing evidence about herding behaviour, using sector level data. This paper examines the presence of herding behaviour in nine sector indices of Indonesia stock exchanges. The sectors are agriculture, mining, basic industry, consumer goods, property, infrastructure, finance, trade & service, and manufacturing during period of 2007-2009. The Hypothesis zero that to be tested in this study is the Indonesian stock market exhibit herding behaviour, while the hypothesis alternative is the Indonesian stock market show the absence of herding behaviour.

The remainder of this paper is as follows. Section 2, we provide the data and methodology. In section 3, we present the empirical analysis. Finally in section 4, we offer the conclusion of the main results.

2. Data and Methodology

Bikhchandani and Sharma (2000) suggest that herding behaviour would be more likely occurs at the level of group of stocks. Therefore, we assign sector indices of Jakarta Stock Exchange (JKSE) that consists of nine sectors: agriculture, mining, basic industry, consumer goods, property, infrastructure, finance, trade & service, and manufacturing. We analyze the sample data cover of period 2007 to 2009, mainly to capture financial crisis in 2008 and examine whether herding behaviour took place. We use daily data and collect them from Indonesia Stock Exchange (IDX) statistic.

We use Cross-sectional standard deviations (CSSD) by Christie and Huang (1995) to measure the return dispersions of individual returns (in this case sectoral return) from market return (JKSE). CSSD are defined as follows:

\[
CSSD_t = \sqrt{\frac{\sum_{j=1}^{n}(r_{jt} - \bar{r}_t)^2}{n-1}}
\]  

Where \(n\) is number of firn, \(r_{jt}\) the observed stock return of firm \(j\) for day \(t\), and \(\bar{r}_t\) is the cross sectional average of the \(n\) returns in the portfolio for day \(t\). This method suggests that herding behaviour would be more likely occurs in large market movement. Hence, we examine the existence of herding behaviour during period stress market using a regression model:

\[
CSSD_t = \alpha + \beta^L D_t^L + \beta^U D_t^U + e_t
\]  

Where \(\alpha\) represent average dispersion of the sample. \(D\) is dummy variable represent market extreme depression. Where \(D_t^L = 1\), if the returns lies in the lower tail of the return distribution and zero otherwise; \(D_t^U = 1\), if the returns lies in the upper tail of the return distribution and zero otherwise. To
define the extreme market movement we use 1% and 5% of the distributions as suggested by Christie & Huang (1995).

If \( \beta^L \) and \( \beta^U \) have significant negative values that indicate the existence of herding behaviour. The coefficient of \( \beta \) shows the relationship between return dispersion and herding behaviour. When investors herd around the market consensus, dispersions are predicted to be relatively low. On the contrary, when investors have heterogeneous belief to the market return, dispersions are predicted to be relatively increase (Economou, et.al., 2010).

3. Empirical Analysis

3.1 Descriptive statistic

Table 1 provides the descriptive statistics for daily sector indices returns for the sectors in each stock exchange. The range of mean return start from a low of 0.013% for the Infrastructure sector to a high of 0.167% for the Mining sector. Standard deviation range from a low of 1.719% for the consumer goods sector to a high of 3.204% for the Mining sector. Note that the higher mean return for the mining sector has the higher standard deviation as well. Table 2 provides the descriptive statistics for Cross-sectional deviations of daily sector indices of Jakarta Stock Exchange.

Table 1: Average daily returns of sector indices of Jakarta Stock Exchanges during period of 2007 to 2009

<table>
<thead>
<tr>
<th>Sector</th>
<th>#Observations</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>727</td>
<td>0.095%</td>
<td>3.065%</td>
<td>-19.420%</td>
<td>20.740%</td>
</tr>
<tr>
<td>Mining</td>
<td>724</td>
<td>0.167%</td>
<td>3.204%</td>
<td>-22.255%</td>
<td>12.143%</td>
</tr>
<tr>
<td>Basic industry</td>
<td>727</td>
<td>0.106%</td>
<td>2.103%</td>
<td>-11.758%</td>
<td>15.375%</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>727</td>
<td>0.087%</td>
<td>1.719%</td>
<td>-7.823%</td>
<td>8.749%</td>
</tr>
<tr>
<td>Property</td>
<td>723</td>
<td>0.041%</td>
<td>1.845%</td>
<td>-12.174%</td>
<td>13.824%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>724</td>
<td>0.013%</td>
<td>2.156%</td>
<td>-12.908%</td>
<td>9.254%</td>
</tr>
<tr>
<td>Finance</td>
<td>722</td>
<td>0.075%</td>
<td>2.224%</td>
<td>-9.793%</td>
<td>13.547%</td>
</tr>
<tr>
<td>Trade and Service</td>
<td>725</td>
<td>0.017%</td>
<td>1.943%</td>
<td>-16.719%</td>
<td>7.509%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>723</td>
<td>0.101%</td>
<td>1.885%</td>
<td>-11.380%</td>
<td>12.576%</td>
</tr>
</tbody>
</table>
Table 2: Cross-sectional standard deviations of daily sector indices returns of Jakarta Stock Exchange

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>JKSE</td>
<td>0.062%</td>
<td>1.892%</td>
<td>-10.375%</td>
<td>7.921%</td>
</tr>
<tr>
<td>CSSD</td>
<td>0.145%</td>
<td>0.084%</td>
<td>0.029%</td>
<td>0.771%</td>
</tr>
</tbody>
</table>

3.2 Regression Analysis on Cross-Sectional Standard Deviations of Returns

After we have return dispersion, we run the dummy regression to see how return dispersions behave during period stress market. Table 3 show the value of $\beta^L$ and $\beta^U$ coefficients are significant positive. Hence, the result suggests no evidence of herding behaviour take place in Indonesian stock market.

Table 3: Regression coefficients for $CSSD_t = \alpha + \beta^L D_t^L + \beta^U D_t^U + \epsilon_t$

<table>
<thead>
<tr>
<th>Return dispersions</th>
<th>Market return in the extreme upper/lower tail 1% of the return distribution</th>
<th>Market return in the extreme upper/lower tail 5% of the return distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSSD_t</td>
<td>$\alpha$</td>
<td>$\beta^L$</td>
</tr>
<tr>
<td></td>
<td>0.001</td>
<td>0.154</td>
</tr>
<tr>
<td></td>
<td>(4.235)***</td>
<td>(5.833)***</td>
</tr>
</tbody>
</table>

(*) significance at 10%; (**) significance at 5%; (***) significance at 1%.

4. Conclusions

This paper examines herding behaviour in nine sectoral indices of Indonesian stock market using Cross-Sectional Standard Deviations method developed by Christie and Huang (1995). This method assumed that herding will be more likely occur during period of market stress. People tend to ignore their private information and follow the market consensus during period of market stress. The result suggests no evidence of herding behaviour during market stress in Indonesian stock market. This finding implies investors in Indonesian stock market have heterogeneous belief in market return.

For future research we suggest to examine herding behaviour with comparing big and small market capitalization stocks, to examine whether there is conflicting result between them.
References


