A systematic review of the monetary policy and herd behavior

Nhung Thuy Tran[1]

[1]*Ho Chi Minh City University of Law, Vietnam*

JOMEINO
ISSN:
2522-381X (Print)
2521-7054 (Online)
DOI: 10.31039/jomeino

Received 08 January 2024

Revised 05 February 2024

Accepted 14 February 2024

Citation: Tran. N. T. (2024). A systematic review of the monetary policy and herd behavior. *Journal of Management, Economics, and Industrial Organization, 8*(1), 39-78.
http://doi.org/10.31039/jomeino.2024.8.1.3

Copyright: © 2024 by the authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

corresponding authors:

ttnhung@hcmulaw.edu.vn

Abstract

The article focuses on analyzing developments in the academic literature regarding the relationship between monetary policy and herd behavior in the stock market. The main research method used in this article is a systematic review of the literature, including methods of synthesis and bibliographic analysis. Accordingly, the bibliographic method is employed to organise and analyze the standard deviation associated with behavioral economics research. The research offers scholarly publications that include the term “monetary policy and herd behavior” from Dimensions database between the middle of 2014 to the beginning of 2023. The results show that there are two main research trends on the relationship between monetary policy and herd behavior, which are based on theory and market effects. Accordingly, the theoretical background to explain this interaction includes the micro-foundation of economics, behavioral macroeconomics, and the mediation of the stock market cycle. However, like most other micro-factors, crowd psychology has not been studied and appreciated in terms of its influence on economic policy, even though they are purely a crucial components causing asset bubbles are beyond the control and adjustment of monetary policy. Therefore, future studies should have a specific definition, as well as a proper assessment of the role of the crowd in the ability to make investment decisions as well as the market's risk tolerance in order to have specific recommendations for monetary policy.

Keywords: monetary policy, herd behavior, stock market cycle, systematic review, behavioral macroeconomics

JEL Calassification Codes: B26, D90, E70, G40

1. Introduction

The concept of herd behavior is the collective behavior of a social group. When interacting, individuals in this group tend to act the same on a large scale over a certain period of time (Freud, 1933). Therefore, herd psychology is mainly based on sociological theory and behavioral ecology. Meanwhile, the trend of crowd behavior has a certain influence on the decisions of investors in the market (Keynes 1930, 1936, 1937), causing convergence in buying or selling behavior simultaneously in the past periods of market stress (Prechter, 2001; Hwang and Salmon, 2004; Seetharam, 2013; Boortz et al., 2014; Rompotis, 2018; Economou, Hassapis and Phillippas, 2018). This convergence can cause asset price bubbles and shocks to stock market cycles, leading to the boom and bust phase of the cycle. When asset bubbles occur, asset price reversals (price shocks) have a severe effect on the performance and structure of the macro economy (Allen, 2000; Bordo & Jeanne, 2002; Lehnert, 2020 ; Shrestha, 2020). Therefore, monetary policy with the role of stabilizing the macro-economy by creating and directing monetary fluctuations in economic activities and social life through the intervention of the Central Bank, obviously have a certain influence on the volatility of the stock market. Thereby, hindering or amplifying the convergence of investors' behavior, and regulating herd behavior in the market. Moreover, the micro-base is also an essential foundation of the macroeconomic research framework, especially in the measurement of market pressures and the application of policy in times of crisis (Upper, 2011).

However, a review of the theory shows that there exist two schools of assessment of the relationship between monetary policy and herd behavior according to the volatility of phases in the stock market cycle. One is the existence of this correlation, which is usually short-term and negatively correlated (Mendoza, 1991; Lane, 2003; Kaminsky et al., 2004; Frankel, 2010; Duncan, 2014), while the second tendency is to negate the relationship between monetary policy and herd behavior since these behaviors are not intrinsically endogenous to cycles or asset price movements (Krustev, 2019; Ishrakieh et al. partner, 2020; Jawadi et al., 2021). Furthermore, by design of Basel III, monetary policy cannot prevent herd behavior because the pact is based on the Asymptotic Single Risk Factor Mode to calculate accounting of capital requirements for supervised institutions (Lopez, Markwardt and Savard, 2016). This makes it difficult to assess the causal relationship between monetary policy and herd behavior in the stock market. It raises the basic questions to form the idea for the article: "*A systematic literature review of the monetary policy and herd behavior*". The purpose of the

article is to review the relevant literature to provide a general rationale explaining the relationship between monetary policy and herd behavior in the stock market. Given the limited resources in the ability to exploit the detail and specificity of the concept of behavior, and its content cannot be encapsulated within the scope of this paper, the following review is mainly studied from an economic perspective.

2. A synopsis of the associated studies and the formulation of research question

The relationship between a micro-factor of the economy and monetary policy can be analysed based on two main pillars, including policy transmission to asset prices and economic shocks. Based on the study of Loayza & Schmidt-Hebbel (2002), the transmission mechanism of monetary policy affects the economy mainly through money supply, credit, market interest rate structure, asset prices and exchange rate. Each market structure is different, the transmission mechanism of monetary policy has different ways, characteristics and effects (Buch et al., 2018). Specifically, the transmission mechanisms of monetary policy in relation to the stock market fall into three categories: the effect of the stock market on investment, the effect of the firm's balance sheet, and the effect of the stock market on investment on household liquidity (Mishkin, 2001). Thereby, stock prices have a causal relationship with money supply (Rogalski & Vinso, 1977) or monetary policy affects short-term interest rates, promoting changes in stock prices (Ehrmann & Fratzscher, 2004). According to Mishkin (2009), there are three types of asset prices besides the prices of debt instruments that can also become important transmission channels of monetary policy including stock prices, real estate prices and exchange rates. At the micro level, stock prices are causally correlated with herd behavior in the stock market (Spyrou, 2013; Xu et al., 2017), thus studying the impact of monetary policy to asset prices can also serve as a basis for analysing the relationship between monetary policy and crowd psychology. However, there are two schools of thought that consider the impact of monetary policy on asset prices, one is that monetary policy should react to any shock that changes real interest rates (Cecchetti et al., 2000; Chadha et al., 2004; Orphanides, 2010). Conversely, Bernanke and Gertler (2001); Kohn (2008); Singh and Pattanaik (2010) argue that asset prices should be reacted only to the extent that asset prices affect the ultimate goals of monetary policy. Therefore, the causes of asset price fluctuations should be considered when assessing the relationship between monetary policy and micro-factors, such as crowd psychology. Singh and Pattanaik (2010) argue that asset prices should be reacted only to the extent that asset prices affect the ultimate goals of

monetary policy. Therefore, the causes of asset price fluctuations should be considered when assessing the relationship between monetary policy and micro-factors, such as crowd psychology.

Another school of thought holds that when asset bubbles occur, asset price reversals (price shocks) have serious macroeconomic effects (Allen, 2000; Bordo & Jeanne, 2002; Lehnert, 2020; Shrestha, 2020). In general, shocks are associated with continued declines and increases in production and commodity prices (Augustine, Ngalawa, 2016). The continuity of a shock in a particular period is known as the shock strength, while its effect on other variables is called the spill over or extension of the effect of the shock (Pedersen, 2011). The pressures and constraints of monetary policy stem from important events and unexpected and unpredictable events that have an impact on the economy (Badri, 2021). Studies on the relationship between price dynamics and monetary policy through price shocks have a variety of treatment models when different methods such as vector auto regression - VAR can be applied with different parameters which change over time (Maćkowiak, 2006; Bjørnland & Leitemo, 2009; Baumeister, Liu & Mumtaz, 2013; Nocera & Roma, 2017; Shrestha, 2020), conditional regression automatic generalization model - GARCH (Blau, 2017; Zhu, Fan & Tucker, 2018) and in recent time, the general stochastic dynamic equilibrium model – DSGE (Castelnuovo & Nisticò, 2010; Nisticò, 2012; Carrilo, Fève & Matheron, 2017; De Loecker, Fuss & Van Biesebroeck, 2018; Bretscher, Hsu & Tamoni, 2018; Fasolo, 2019; Takyi & Gonzalez, 2020). The DSGE model is a macroeconomic model that can optimize the actors, and reasonable expectations, and market offsets to produce data that resemble observed variables to a remarkable degree (Kydland & Prescott, 1982; Woodford, 2003; Edge et al., 2009), allowing for combinations micro factors such as investor attitudes, crowd behaviour according to Lucas's critical argument (Lucas, 1976) in order to evaluate policy effectiveness and economic structure. It is because the difference of monetary policy to price shocks in different times provides the basis for analysing the relationship between monetary policy and herd behavior through the cycle of the stock market.

Recently, theoretical and practical researchers have also become more and more interested in conducting investigations on the effectiveness of monetary policy in relation to modelling and forecasting stock market movements as well as in the future such as identifying the stages of the business cycle. Some topics focus on identifying the financial cycle or measuring its impact on monetary policy and applying forecasting models in monetary policy planning or adjustment such as the cyclical index (Kamada and Nasu, 2011; Li et al., 2020; Miranda-Agrippino and Rey, 2020), specific date-period algorithms (Harding and Pagan, 2002; Borio

et al., 2018/2020; Kumar et al., 2020) or the Financial Stress Index – FSI (Slingenberg and De Haan, 2011; Oet et al., 2015; Monin, 2019; Ishrakieh et al., 2020, etc). The most popular financial indicators that show high accuracy include stock prices, stock market volatility, actual easing prices and credit size, etc. However, due to the lag of a periodic cycle, variable selection mechanism and discrete information, lead to difficulties in identifying and forecasting financial cycles in macroeconomic systems, actually reducing the popularity of financial cycle theory, as well as its predictive ability to make monetary policy. Furthermore, although there are several macroeconomic archetypes considered to investigate the financial cycle including the Real Business Cycle through vector automatic regression model (Jawadi et al., 2021), financial stress index modelled by Principal Component Analysis (PCA) (Ishrakieh et al., 2020), and trend cyclical analysis based on dynamic equilibrium model (Krustev, 2019), but most macro studies fail to capture the micro-bases and key aspects of economic behaviour, such as stock volume – which is a quantitative alternative. As a result, the relationship between monetary policy and the stock market cycle cannot be accurately assessed. Popular studies for this aspect have often focused on the direction of monetary policy over time rather than cyclical modelling consistent with monetary policy. Accordingly, a number of studies demonstrate that procyclical monetary policies can cause systemic instability with large economic fluctuations (Mendoza, 1991; Lane, 2003; Kaminsky et al., 2004; Frankel, 2010; Duncan, 2014), leading to developing economies with strong political institutions,

With the change in the relationship between the natures of the currency indices according to the stock market cycle, the crowd psychology behaviour is an endogenous variable of the market cycle, so it will also be adjusted accordingly. Although the number of direct studies on the influence of monetary policy on herd behaviour and vice versa is not much, it also plays an important role in the process of empirical policy correction and becomes the basis for topic. Notable studies can be mentioned as the study on the ability to adjust the asset price volatility warning indicator caused by the cyclical crowd psychology of global liquidity management policy (Alessi and Detken, 2011), the field of monetary policy in commodity markets and the trend of herd behavior by Apergis et al. (2020), or research on the stock market with monetary indicators and herd behavior by Loisel, Pommeret and Portier (2012); Gong and Dai (2017); Micossi, D'Onofrio and Peirce (2019); Krokida, Makrychoriti and Spyrou (2020). Some studies show the limitation of monetary policy in dealing with the relationship between herd behaviour and stock market cycle such as Bagus (2008); Wibowo (2021). In general, due to the inclusion of many different factors and research angles, most

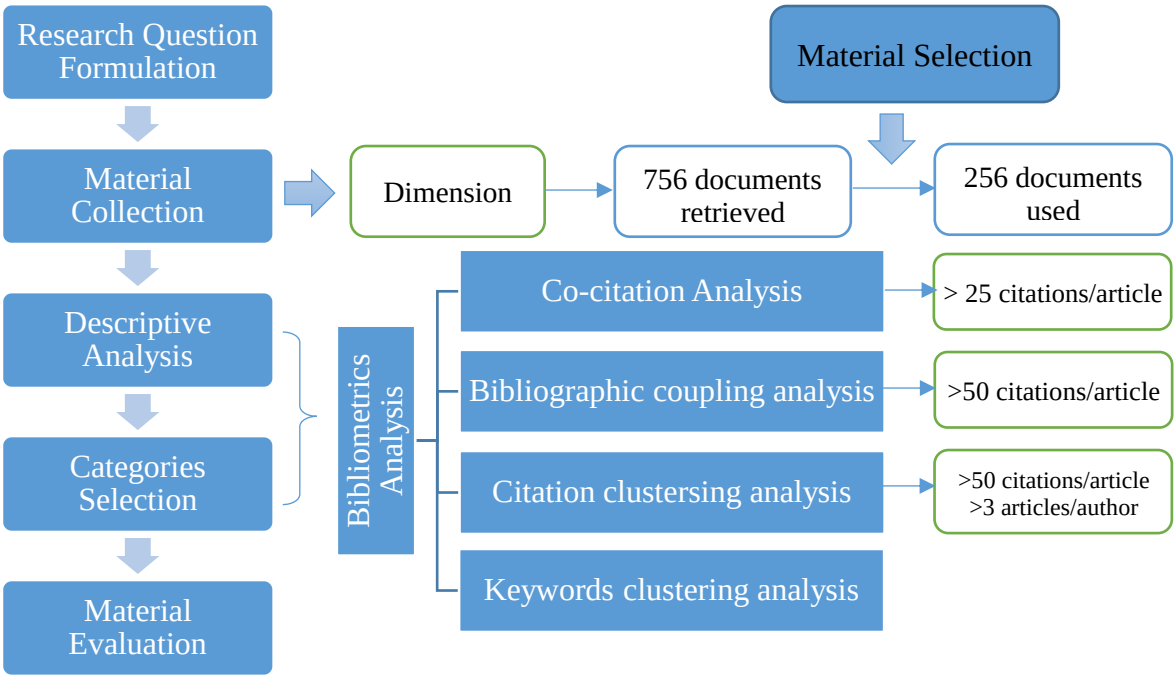
of the studies only deal with the problem during periods of market stress, not guaranteeing the randomness of the disturbance caused cyclical shocks. Therefore, empirical studies in this direction cannot generalize a unified rationale for the relationship between monetary policy and crowd psychology in the stock market.

3. Research Methodology

3.1. Data collection

The main research method used in this article is systematic review of literature on the topic of the relationship between monetary policy and herd behavior on stock market. This method limit the narrative reviews (Tranfiled et al., 2003; Merli et al., 2018). It includes methods of synthesis and bibliometric analysis which can be depicted by below process.

Figure-1. Summary of the review process



Source: Merli et al., 2018

The essay, in particular, employs the strategy of integrating data performed through evaluations and overview descriptions. Dimensions is used to identify sources, point out and assemble research publications.

Table-1. Document guidelines for acceptance and elimination

Acceptance	Elimination
Language: English	Not related to herding and monetary policy
Electronic publishing, open source	Incomplete research
Period in 2014 - 2023	Not belong to the research period

In order to provide answers to the research objectives, secondary screening was then carried out by analyzing the abstracts and titles of the chosen publications (Bibliometrics). From there, a basic database for VOSViewer was created (around 2500 documents), from which graphical visualizations of bibliographic papers were created, resembling keyword journals and mapping visualizations, and incorporating both bibliographic and co-citation analyses. 256 articles (out of a total of 756 articles) were used as baseline data for analysis in this work after meeting the criteria for exclusion. The procedures and outcomes of the above-mentioned step-by-step review process are shown in each of the subsequent steps in Figure 1.

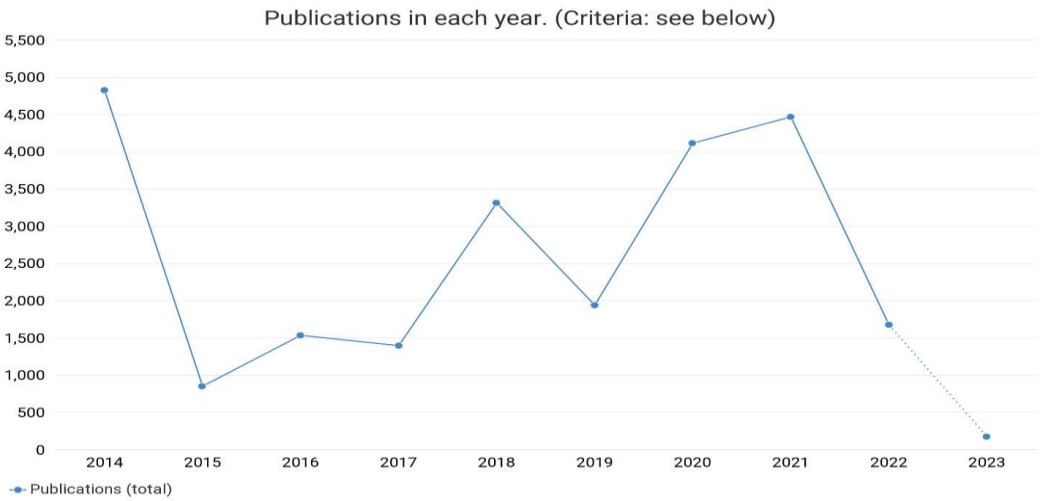
3.2. Data analysis

3.2.1. Literature mapping: Descriptive analysis

According to Dimensions, the topic of the relationship between monetary policy and herd behavior on stock market was first mentioned to in Keynesian Economic Theory during the 1930s. Although the real business cycle theory in New Keynesian theory considers the aggregate of money and credit as endogenous variables that cause an infinite series of explosive shocks and volatility, recessions appear as in the equilibrium of the macroeconomic structure (Spahn, 2009) but denies the role of intermediaries in microeconomics in the face of policy changes with exogenous macroeconomic fluctuations. (Lucas, 1976). It was not until the behavioral economics studies of Shiller and Akerlof (2009) were widely published that the relationship between monetary policy and herd behavior in the stock market was examined more carefully. The quantity of papers published annually before to 1981 was quite low, despite the fact that relevant research were published fairly early (less than 100 articles per year). The information from Dimensions also reveals that interest in this area tends to grow yearly until 2007. Studies on the issue of the connection between monetary policy and herd behavior have rapidly expanded, especially in 2007 (10,937 papers, representing 14.86% of all research on the topic from 1930 to the present).

Figure 2 depicts the number of articles that fit the stated criteria from 2013 to 2022, based on data extracted after screening according to the mentioned exclusion criteria. In recent years, research patterns on this area have shifted rapidly. There is a significant decline in publications on this issue, particularly in 2015, with less than 4000 articles compared to the previous year. This demonstrates that, during the economic crisis, the link between monetary policy and herd behavior in the stock market was a prominent issue in research and the theoretical - empirical framework, but has steadily deteriorated in subsequent years, leaving numerous research gaps.

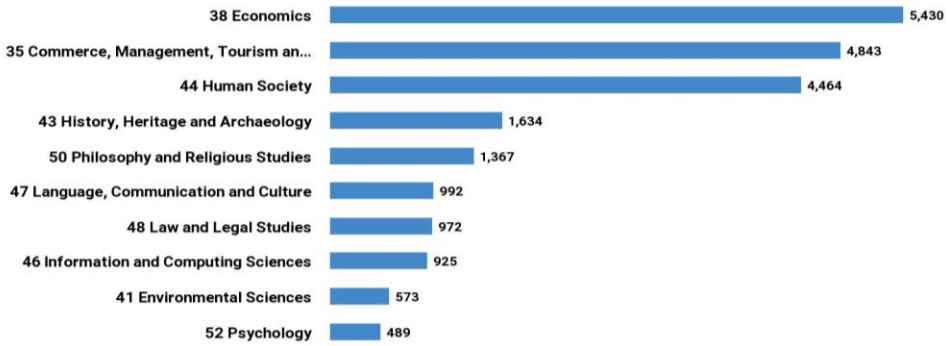
Figure-2. The total amount of articles selected between 2013-2022



Source: Dimension.ai

Based on the overview of Dimension, Economics field has the most amount of publications related to the topic, accounting for 5,430 articles. Meanwhile, although psychology is the basic field for determining the motivation of behavior, it is not used much in explaining herd behavior in the stock market. This data also shows that the ability to combine the psychological basis of behavior and the macroeconomic basis of monetary policy in related studies is not much.

Figure-3. Number of publications in each research category



Source: Dimension.ai

Evaluating journals that publish a large number of papers on topics linked to monetary policy and herd behavior is critical in determining the origin and credibility of referrals. This method aids in measuring the effects and relevance indexes of studies published in journals and bibliographies, as well as demonstrating a link between citation and journals cited (Leydesdorff, 2006; Pudovkin & Garfield, 2002). From the 73,578 extracted papers, the most popular journals in this subject were identified based on the overall amount of citations of papers on a similar theme and the cumulative amount of articles issued within that journal. Table 2 shows the findings among the leading 20 publications with the most subscribers figure. As a result, the SSRN Electronic Journal is ranked first. From 2013 to 2022, there are 1,420 papers with 11,205 citations. The SSRN Electronic Journal is an Elsevier open-access online repository of pre-print publications dedicated to the Social Sciences, with a 2021 impact factor of 1, placing it among the top 14% of journals. Encyclopedia of the United Nations Sustainable Development Goals and Sustainability are in second and third position, respectively. In particular, the most excellent journals do research utilizing the empirical methodologies, focusing on the impacts of the herding and the variables avoiding it. The primary trend in publishing the relationship between monetary policy and crowd behavior in stock market, which is frequently analyzed from the standpoint of behavioral economic, as pioneered by Fisher (1928) and Pigou (1929).

Table-2. Journals have published research on the correlation between monetary policy and herding based on financial cycle

No.	Journal	Quantity of papers	Time mentioned	IF
1	SSRN Electronic Journal	1420	11,205	4.98
2	The Economic History Review	87	131	2.57
3	arXiv	66	0	-
4	International Review of Financial Analysis	39	2,334	8.235
5	Journal of Economic Dynamics and Control	38	1,668	1.588
6	Economic Modelling	36	729	3.875
7	Journal of International Financial Markets Institutions and Money	36	1,022	4.35
8	Journal of International Money and Finance	34	1,542	2.731
9	International Review of Economics & Finance	34	664	2.5
10	Applied Economics	33	334	0.968
11	The Economic Journal	32	357	3.178
12	Research in International Business and Finance	31	432	5.91
13	Journal of Economic Behavior & Organization	29	706	1.635
14	The North American Journal of Economics and Finance	29	340	3.17
15	Journal of Financial Stability	27	2,644	3.727
16	The Journal of Economic History	24	4	1.638
17	Resources Policy	24	413	8.02
18	Energy Economics	22	927	7.042
19	Emerging Markets Finance and Trade	21	215	4.859
20	Contributions to Economics	19	113	0.3

By besides studying patterns and papers, it is critical to conduct micro-level evaluations through the scholarly influence of researchers (Bornmann & Daniel, 2007). The link among research efficiency (the amount of published papers) and reference influence is an essential metric for assessing scientific achievement (Ball, 2005). As a consequence, the degree of references gained by a piece of research is a prominent bibliographical index employed to assess the extent of the study (Duque Oliva et al, 2006). Table 3 includes the most influential writers in university entrepreneurial ecosystem research. According to Dimensions, Didier Sornette of ETH Zürich, Switzerland, has the greatest number of publications (43 articles), whereas David A. Hirshleifer holds the highest number of referenced research (2,199 citations, an average of 244.33 citations). Didier Sornette still has the greatest H-index, which reflects a scientist's cumulative effect (H-index = 112). The h-index is an excellent predictor of a scientist's overall effect in a certain field of study (Hirsch, 2005). As a result, the H-index is unaffected by a collection of unprocessed pages or the number of citations for a certain amount (Bornmann & Daniel, 2007). It highlights an issue with the bibliographic citation count indication, since the number of references obtained for a manuscript related to instead of the significance associated with the paper's substance, the author's recognition in the particular area of research (Rey-Mart et al, 2016). Sornette's works have the highest H - index, focused on theoretical models, empirical testing of detection, and practical execution of financial bubble forecasts (Kaizoji & Sornette, 2010; Sornette & Cauwels, 2015). His job entails developing a general framework for analyzing constructing stochastic nonlinear theories of phase transitioning among norms and financial cycles in economic mechanisms, in addition to the precursory and aftershock aspects of disturbances and breaks down in finance (Yukalov, Sornette, & Yukalova, 2009) and modeling periodically collapsing bubbles (Yukalov, Yukalova & Sornette, 2015). As a result, according to the economic hypothesis regarding reasonable expectancy bubbles, psychological dynamics of copying and crowding of shareholders and merchants cause a bubble regime on the stock market (Sornette et al., 2015; Seyrich & Sornette, 2018), violate the efficient time-scale (Sohn & Sornette, 2018), and serve as a warning signal of an unsustainable price increase and the ensuing crash (Sornette et al., 2017). He confirms there is a relationship between credit channels of monetary policy transmission on that of non-linear feedback mechanisms leading to financial bubbles (Corsi & Sornette, 2014). While the articles of Hirshleifer, the contributor with the most references generally researches on the influence of psychological factors on securities market under- and over-reactions (Hirshleifer, 2001; Hirshleifer et al, 2005; Hirshleifer & Teoh, 2003). Whereby, investor overconfidence may also help describe how immediate

dynamism (finance) and long-lasting reversal trends discovered numerous financial performance (Daniel et al., 2002).

Table-3. Notable authors with publications related to the topic

No.	Author	No. of publications	Citations	Mean citations	H - Index
1	Didier Sornette	43	651	15.14	112
2	Cars H Hommes	21	1,716	81.71	55
3	Christian Pierdzioch	15	163	10.87	19
4	Anjan V Thakor	14	498	35.57	80
5	Rangan Gupta	14	332	23.71	75
6	Jan-Christoph Rülke	13	102	7.85	11
7	Viral V Acharya	13	1,969	151.46	84
8	M Ayhan Kose	12	340	28.33	57
9	Shawkat M Hammoudeh	12	529	44.08	76
10	David A Hirshleifer	9	2,199	244.33	69
11	Graciela Laura Kaminsky	9	1,132	125.78	38
12	Tanju Yorulmazer	9	1,070	118.89	21
13	Thorsten Beck	9	927	103	106
14	Campbell R Harvey	8	904	113	99
15	Geert Bekaert	8	1,548	193.5	76
16	Larisa Yarovaya	7	1,114	159.14	36
17	Claudio E V Borio	7	1,493	213.29	47
18	Duc Khuong Nguyen	6	352	58.67	61
19	Xuan Vinh Vo	7	263	37.57	40
20	Enrique Gabriel Mendoza	6	883	147.17	56

3.2.2. Comprehensive reference analysis: bibliographical integration and assessment of co-citations

After an initial review of the research collecting data, the compilation of references, co-citations, and bibliographical links of related articles on the issue of the connection of monetary policies and crowd psychology in stock markets is examined.

In terms of citations, out of a total of 256 papers, there are 95 authors with three or more papers that have been referenced more than 50 times, organized into 14 clusters. Table 4 summarizes the subjects of each cluster.

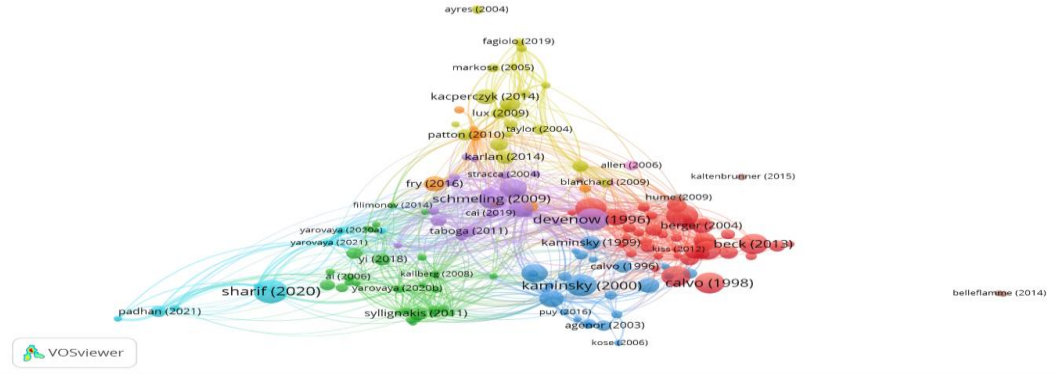
Table-4. Assessment of reference segmentation

Segment	**Number of papers**	**The main theme**	**Featured Author(s)**
1	13	Risk and Monetary Policy	Borio & Zhu (2008); Corsetti et al. (1999); Bekaert et al. (2013)
2	11	Bank Stability	Acharya & Yorulmazer (2007); Acharya & Naqvi (2012); Beck et al. (2013)
3	10	Behavioral Economic Models	Hommes (2011); Lux (2009); Sornette (2014)
4	9	Investor behavior on stock market	Schmeling (2009); Kizys et al. (2021); Economou et al. (2011)
5	8	Contagion in financial markets	Gravelle et al. (2006); Calvo & Mendoza (2000)
6	8	Dynamic volatility in the cryptocurrency market	Yi et al. (2018); Fry & Cheah (2016)
7	6	Investor psychology in financial markets	Daniel et al. (2002); Devenow & Welch (1996)
8	6	Macroeconomics with financial frictions	Brunnermeier et al. (2013)
9	5	Financial Crisis	Calvo (1998); Santiso (2003)
10	5	Asian financial markets	Krugman (1999); Sarno & Taylor (1999)
11	4	Emerging market finance	Bekaert & Harvey (2003)
12	4	Monetary & Financial Stability	Borio (2004)
13	4	Investor sentiment & stock return	Schmeling (2009)
14	2	Procyclicality of bank behavior	Berger & Udell (2004)

The majority of the themes are linked by the notion of risk-taking, market stability, and investor mood. This supports Baddeley's (2010) conclusion on the influence of stock market price volatility on herd behavior and monetary policy transmission channels, as well as serving as a basis and intermediary for the interaction between crowd decision and the monetary policy mechanism (Krokida & Makrychoriti, 2020; Wibobo, 2021).

Bibliographic coupling takes place when two subsequent papers quote an earlier released works. A bibliographical integration research will be generate a series of papers that quote the same article, demonstrating commonalities between these publications. Figure 2 depicts six bibliographic clusters, the most co-cited document being Devenow and Welch (1996). Their research proposes a framework for investigating rational herding in financial economics and forecasting its spread in the stock market in face of direct reward externalities, principal-agent difficulties, or informational learning.

Figure 4. The visualization diagram of the assessment of pairing bibliography



When earlier released two papers were mentioned by a subsequent publication of a comparable materials, this is referred to as co-citations analysis. The citation of two papers by a younger article may imply a numerical relationship among both papers. The number of times the two documents are quoted together determines the degree of linkage. Figure 5 depicts six co-citation segments, that are relatively near as far as of academic content and asynchronously linked. Virtually all studies by Banerjee (1992), Kiyotaki (1997), and Bikhchandani et al. (1992), which are part of existing co-citation clusters, indicate a higher quantitative association with the topic.

Figure-5. Visual map of co-citation analysis

3.2.3. Keyword cluster analysis

To identify related studies, the author conducts an analysis of articles on herd behavior in the recent period using a data bibliographic network with the keywords "herd behavior", "financial cycle", and "monetary policy" on Dimensions, mid-2017 through early 2021. The primary data in the current research will be the headlines and summary paragraphs of comparable term inquiries (746 publications). The data is entered into VOSViewer application, which generates the majority of often occurring terms that are closely connected to the major keywords. A step-by-step choice procedure was additionally used to enhance the findings based on the dimensions of the research (256 papers were acceptable). This technique will aid in the presentation of three major diagrams: the graph displaying the growth of herd behavior conceptual terms, the graphical structure collecting similar subjects, and the picture showing the abundance of the themes' included terms.

The bibliographic evaluation's findings do more than only explain the setting of research that develop the concept of herd behavior, but also reveal issues that are often considered at the same time as their variability, including monetary policy.

Figure-6. Density of topics

Figure 6 shows that there are not many studies related to monetary policy and the cycle is directly correlated with the keyword “herd behavior”. The fragmentation of themes and the huge disparity among herd behavior and monetary policy are evidence of this argument. The most discussed research when it comes to herd behavior is the uncertainty of economic policy and the stock market. It is demonstrated by the bigger circle and the near proximity of the two topics in the illustration. The remaining topics in Figure 6 have similar sphere dimensions, indicating that study into herding behavior in other domains remains in the beginning phases. Despite the fact which the theory-growth subject cluster is an often mentioned notion that explains herd behavior, the relationship connecting them and herd behavior is really insufficient, barely assessed compared to the subject, means that investors are concerned about market volatility.

The seventh diagram shows the outcome, which depicts the developmental hierarchy of herd behavior theory. It summarizes the themes linked with the terms, as well as the length of time during which they were addressed. It is possible to assume from Figure 7 that most researchers mainly discuss the effect of herd behavior on volatility or markets, prices, returns, etc. Topics are often discussed in recent years have focused on investor sentiment, herd behavior, systematic risk, empirical shocks, and market volatility. In 2018, the topics related to behavioral theory were the major subject. Scientists started looking at the influence of herd behavior more from the end of 2018, and moreover pay more attention to the correlation of

herd behavior and monetary policy in different periods. The diagram also shows the topic of effectiveness discussed only in the mid-2019 months. The fundamental cause for this is the formation of the Covid pandemic, which is progressively expanding, impeding economic circulation and putting existing enterprises in a vulnerable and unsafe situation, unable to coordinate goods in time to the trend of massive hoarding.

Figure-7. Evolution network of the related topics

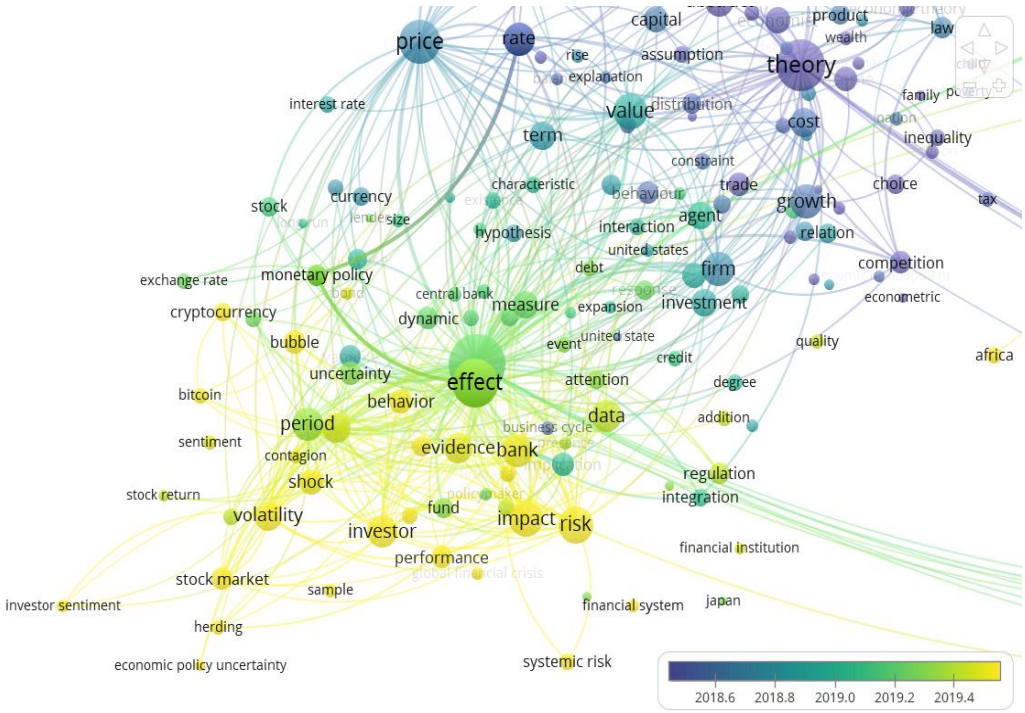
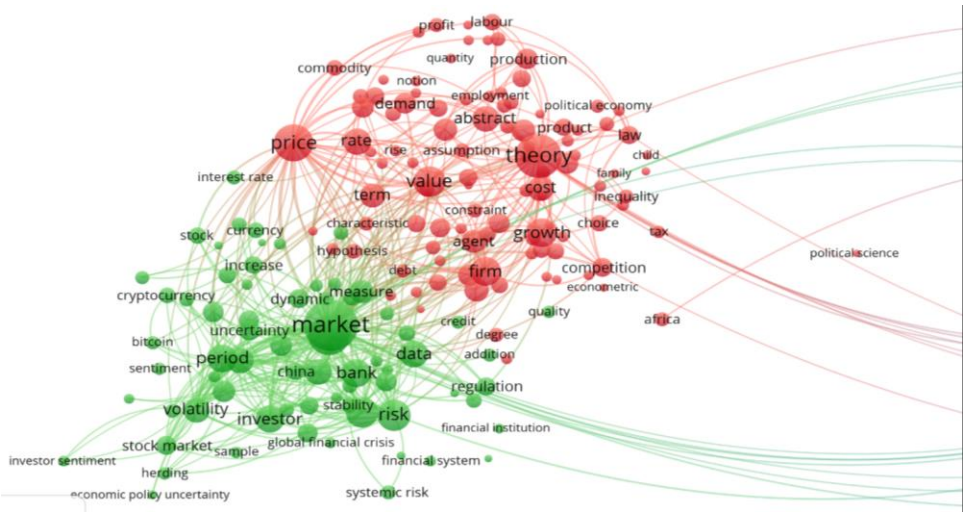


Figure-8. Keyword clusters network



The findings of the graphic representation in the eighth illustration reveal that themes may be categorized into two main categories. Each section is connected to the others in some way, and the dimension of the circles symbolizes the major issue was debated in regard to the terms "herd behavior," "monetary policy," and "economic cycles." The separation between each circle represents the subject's link to other concerns. There are two major groupings which based on the largest topics include: market and theory.

Cluster 1: Red: Theory. Topics discussed in this scope can be mentioned as cost, price, value, rate, maturity, growth, enterprise, demand, production, etc. Despite the amount of research obviously concerning herd behavior or economic cycles is limited, the research findings in this field are frequently associated with one another and some with monetary policy (especially between interest rates and monetary policy). The majority of research papers in this area examine the link involving property significance and data asymmetry (Çetin, 2021), and credit risk (Abad, Ferreras and Robles, 2019; Galema and Lugo, 2021), and exchange rate (Wehrli, Wheatley and Sornette, 2021; Jia et al., 2021), and liquidity (Ahmed et al., 2020) or equity risk premium (Guvenen and Lustig, 2018). The methods used are diverse, ranging from macroeconomic modeling (Greenwood, Landier and Thesmar, 2021), causal testing in non-parametric quanta (Pretorius and Botha, 2020; Balcilar et al., 2020; Li et al., 2021), ABM models (Lamperti, Roventini and Sani, 2018; Kukacka, 2019), to functional magnetic resonance imaging (fMRI) studies of asset price bubbles in the laboratory and herd behavior (Haracz, 2019). This makes sense because the scope of the theory of crowd behavior is relatively wide, possibly requiring a combination of econometric and neuroscientific modeling frameworks. On the other hand, the microstructure of the market - a basic

foundation for studying the relationship between macroeconomics (such as monetary policy, business cycle) and some micro factors (such as herd behavior) are also mentioned in this topic group, with studies by O'Hara (2018), Firouzi and Wang (2019), Li and Linton (2019), Apergis, Koutmos and Payne (2021), etc. However, a common micro aspect is mainly the uncertainty of market participants. Because the circle dimensions in this group are so diverse, each subject gets a variable mentioning impact. Thus, academics prioritize theory, value, and pricing over other concerns. The disparity illustrates that anytime value-related themes are brought up, concerns of development, rate of return, and growth are covered. For example, if business studies, studies on investment (Franke, 2018; Focacci, 2019; Brooks et al., 2020), growth and competition (Chaudhry and Sam, 2018; Sørensen, 2018) have possibility will appear. This shows that when herd behavior can affect the price or value of assets, it will be affected by money supply / demand, capital source, income, scale, which is equivalent to research model requires the participation of these variables. In which, the scale is a very important component of the psychological behavior of the crowd (Lin, Tsai and Lung, 2013). On the other hand, in this cluster, it can be seen that the approach to herd behavior through political economy is mentioned but the density and frequency are relatively weak.

Cluster 2, market: with green links, includes issues about investors, asset bubbles, volatility, stocks, bonds, monetary policy, shocks, stock market, investment funds, financial system, economic cycle, etc. This is a set of themes with tight association, which includes main terms; this finding indicates that the subject of the paper is compatible with the international study pattern. Figure 8's circle size reflects the huge number of research included. This demonstrates that having the appropriate mindset in market research can help you acquire the best findings while analyzing herd behavior. Cluster 2 discusses how herd behavior may change, excite, or postpone investor decisions (Kirman, 2018; Dragomirescu-Gaina, Galariotis and Philippas, 2021). Accordingly, herd behavior is approached through four main objects, including: market, cycle, uncertainty and effect. Whereas, cycles are mainly studied through shocks, volatility and contagion. The cycle is also a research intermediary between monetary policy and herd behavior, and is also a micro-base in macroeconomics that allows testing to measure the effect of monetary policy on the investment behavior of investors (Qureshi, 2019; Zimmermannová, 2019). Cycles also have an impact on returns through stock market volatility (Rosati et al., 2020), through investments (Liu and Zhang, 2019; Liu, Vedenov and Power, 2020) and bubbles assets (Gerlach, Demos and Sornette, 2019; Mathur, 2020).

4. Conclusions on the basis for the relationship between monetary policy and herd behavior in the stock market

4.1. Micro basis in macroeconomics

Macroeconomics is characterized as a sub-discipline of economics, specializing in the study of the general and comprehensive characteristics and structure of an economy, which can be determined through the results of the synthesis of economic behavior of microeconomic actors participating in that economy (Wreight, 2008; Duarte and Lima, 2012). Therefore, the micro-base is an essential foundation of the macroeconomic research framework, especially in the measurement of market pressures and the application of policy in times of crisis (Upper, 2011). According to the development process of neoclassical macroeconomic theory merged with Keynesian macroeconomics (Denis, 2016), studies on economic cycles, growth patterns and policy effects are gradually being developed, and added by the participation of variables that represent economic decisions of consumers and businesses (Barro, 1984; Blanchard and Fischer, 1989; Romer, 1996; Hoover, 2012). Typically, the micro-basis in macroeconomics is viewed from two angles: structural analysis for monetary policy choices (Lucas, 1987) and household welfare optimization (Hoover, 1988) expressed through the consumption and investment functions of the synthetic models. Although the micro basis has been mentioned in the Walras general equilibrium theory (Walras, 1870; Hans, 2012), the research trend has only really changed after Lucas's critical argument about the models. Traditional macroeconomic forecasting argues that the correlation between aggregate variables observed in macroeconomic data will tend to change whenever microeconomic policy changes (Lucas, 1977). So, based on rational expectations hypothesis - an approach to explain macroeconomic phenomena in terms of micro-foundation when building a consistent system over time series for different equations , which includes an individual choice function and equations illustrating the context in which that choice is made (Lucas, 1972; Sargent and Wallace, 1975; Kydland and Prescott, 1982), given that the cost of the making-decision process is necessary for economic functions, and understanding of market structure is imperfect (Lancaster, 1991; Twoney, 1998; Van den Bergh and Gowdy, 2003). The optimal selection mechanism ensures the explanation for the participation of micro-components, but this is also a defect of the theory of the general equilibrium model when it is not possible to guarantee that the behavior of the individual is always the behavior of rational economic people (Rivzi, 1994; Gaffeo et al., 2007). So, usually, the law of large numbers is applied to a large population so that the variance in individual behavior gradually cancels out when aggregated, but in many cases the individual variances outweigh the total. It leads to an

increased likelihood of misrepresentation of the composite results (Aoki and Yoshikawa, 2007; Wright, 2009). To overcome this, crowd psychology or herd behavior can be used for a micro-based macroeconomic model. The basis of herd behavior shows that crowds are more representative than economic individuals, herd behavior shows a tendency to imitate a large number of individuals participating in the market, ensuring a optimal selection mode in the model.

In summary, both micro and macroeconomics are basic elements of the economic rationale, in which, micro focuses on the behavior of individuals in the economy, while macro studies the behavior of individuals in the economy generally (Zimmermannová, 2020). The common variables of microeconomics are income, and prices, while macroeconomics places emphasis on the value of money supply and demand, production, spending, and public investment. This shows that the ability to observe independent behaviors and the overall context of the economy cannot be separated. They always have interactions with each other, exist a cause-and-effect relationship, even endogenous to each other (for example, expenditure and disposable income, average income and GDP targets...). However, the mainstream macroeconomic theories of the Keynesian, New Keynesian, and Chicago schools do not focus on their inclusive relations. On the other hand, most macroeconomic models are aggregate functions from many variables under different conditions, so researchers often have to make unrealistic assumptions to ensure the uniformity of input data and linearity of the model (Scarth, 1988; Van den Bergh and Gowdy, 2003). These research hypotheses support the abstract model of natural and technical constraints to focus on the relationships between economic intermediaries, but they also exclude independent economic mechanisms (such as individual behavior) or the randomness of cyclical turning points (Wright, 2009). To remedy this, New Keynesian and Neoclassical economic theories supplement the real business cycle methodology and identify empirical market failures by adding specific equations to some traditional econometric models (Lucas and Sargent, 1979; Wren-Lewis, 2015). As a result, macroeconomists can focus on building theoretical models with non-empirical assumptions for each equation they are using, while econometricians can completely apply mathematical bases to time series data without worrying about economic theory limitations (Wren-Lewis, 2018). Based on a direct correlation with rational expectations, the most common model types representing this school are the VAR models initiated by Sims (1980) and the group of dynamic equilibrium models (DSGE) being actively used by the European Central Bank. Whereas VAR considers the historical interaction between ranges of macroeconomic variables, DSGE implies that output or

unemployment will fluctuate randomly according to cyclical laws and reasonable expectations will be illustrated by Phillips curve (Wren-Lewis, 2018). However, the US Federal Reserve still maintains the use of the SEM model as the core model for policy orientation, forecasting and analysis because of its ability to additionally explain latent micro variables or treat handle mutant data situations (Tomarken and Waller, 2005; Wren-Lewis, 2018). In general, the fact that a macro model needs to have a micro foundation depends on the research objective of that model. Differences in research orientation will lead to different methods of problem solving. For example, the Wharton model does not deal with the micro basis but can still make short-term predictions relatively effectively (Wharton, 1963; Evans et al., 1972) or the pure statistical analogy method, without the need to the economic representative variables of Sims (1980), Litterman (1986). However, if we want to determine the impact of economic behavior (independent or herd) on policy change and vice versa, it is still necessary to model the individuals involved (Heathcote et al., 2009; Wren-Lewis, 2018).

One point to keep in mind when analyzing the micro basis in macroeconomics is the equilibrium of the research context. Accordingly, the equilibrium of the macroeconomic model is the statistical equilibrium of the sets of probability distributions (Wright, 2009; Gallegati and Kirman, 2012; Scharfenaker, 2020). This equilibrium is a metaphor for the fact that random factors from the macro point of view will be eliminated (Mirowski, 1989; Franke, 2012). While, at the microscopic level, the equilibrium is always in motion and constantly changing, leading to the need to randomly take a period to effectively evaluate the entire time-space state (Scharfenaker, 2020). Therefore, in order to see the trend of mean reverted values of random values in both types of economic models, it is necessary to define a certain rule to form the probability transformation mechanism, such that time-varying values, the coefficient or probability of the appearance of new information will enter the model as flexible parameters (Weidlich and Haag, 1983; Franke, 2012). It should be noted, however, that the variables participating in the model's equilibrium are not 'points' or subsets of the state space but a probability distribution that can cause aggregate transformations (Franke et al., 2012). The usual distinction between the relatively equilibrium and the relatively unbalanced states of the economic system is of prime importance for the description and measurement of cyclical phenomena (Schumpeter, 1935). New Keynesian real business cycle theory considers the aggregate of money and credit as endogenous variables that cause an infinite series of explosive, recessionary shocks and volatility, appearing as processes in equilibrium steady-state of the macroeconomic structure (Spahn, 2009). This theory provides a theoretical and methodological basis for micro-based

macroeconomic models (Auerbach, 2002; Bracke et al., 2010) when built on the synthesis of all three aspects. macro-micro and behavioral aspects, including the concept of preferences and expectations of micro theory; a set of selected behaviors of individuals according to behavioral theory analyzed in terms of the subjects' reactions to the impact of economic, institutional and policy fluctuations. The last is the firmness of nominal prices to produce output effects for shocks and central bank interventions (Dosi, Fagiolo and Roventini, 2006/2010; Spahn, 2009; Cristini et al. events, 2015).

4.2 Behavioral Macroeconomics

The concept of "behavior" in macroeconomics is not an entirely new aspect, but has originated very early in the theory of behavioral economics by Fisher (1928) and Pigou (1929). They suggest that money illusions and expectations of returns are the drivers of economic cycle volatility through investment adjustment. Psychological bias in expectations is also considered an exogenous factor affecting conditional macroeconomics proposed by Keynes (1936) with the assumption of independent variables for a behavioral macroeconomic model must include:

- Consumer sentiment trends, interest rate expectations and attitudes towards liquidity
- The wage unit is agreed between the actors participating in the economic structure
- The amount of money issued by the central bank

Expectations are the subjective confidence of the individual investor, so there is no possibility of forecasting (Keynes, 1970). They are governed by an element that Keynes collectively referred to as the "Animal Spirit". "Animal spirit" refer to the upward and downward trend of investment prices based on human emotions rather than the intrinsic value of the asset itself. The presence of “animal spirits” can create a loophole, not only for direct government intervention in the market, but can also promote “liberal families” to stimulate microeconomic agents (Schwartz, 2010). However, most macroeconomists promote market efficiency, arguing that self-healing mechanisms can offset irrationalities in investor behavior, and asset bubbles mainly due to money supply inflation rather than behavioral convergence. They argue that the origin of cyclical fluctuations is purely due to supply and demand dynamics in the market distributed over time and space (Wright, 2009), while pure trend fluctuations are mainly derived from currency shocks (Spahn, 2009). Akerlof and Shiller (2009) also acknowledge:

"*While the souls of animals are important, it is equally important that governments actively intervene to control them — through economic policymaking — when necessary. Otherwise, souls could converge unreasonably — that is, capitalism could get out of hand, and lead to the kind of exaggeration we saw during the 2008 financial crisis*".

Therefore, behavioral economics is not emphasized in the fundamentals of macroeconomics, but is most common in experimental economics with the theory of equity (Güth et al., 1982; Kahneman et al., 1982; Akerlof and Yellen, 1988), mental accounting models (Shefrin and Thaler, 1988) or the life cycle of behavior (Thaler, 1981; Shefrin and Thaler, 1988; Frederick et al., 2002). These studies are placed in the context of behavioral macroeconomics, showing the correlation between microeconomic factors and macroeconomic conditions such as consumption and income with the savings rate, and investment, etc. (Roos, 2017). They should be considered as research in the field of behavioral economics rather than macroeconomics because it has not yet shown the structure of a comprehensive economic system. In fact, the nature of behavioral economics is complementary to the theory of microeconomics, so it is understandable that the rationale of behavioral economics holds that the behavior of economic agents not completely rational, but there are "bias" due to subjective perception, and tend to converge causing herd behavior. The difference between the micro-base in macroeconomics and behavioral macroeconomics is largely based on the argument of Keynes' theory when the micro-base in macroeconomics holds that human irrationality derived from incomplete information leads to the economic forecasting model is not really feasible, while behavioral macroeconomics often rejects the ability to optimize investor utility, so even though with enough information, irrational behavior can still occur, this is a limitation of the financial market that no macro model can overcome. Keynesian theory builds the micro-foundation of macroeconomics from observations of the real behavior of the monetary economy under conditions of uncertainty, behavioral economics also uses an inductive approach similarly, leading to contrasting notions of market equilibrium compared with neoclassical economic theory (Schettkat, 2020). This forces macroeconomic models to use the assumption of optimal equilibrium to improve growth, employment, and the institutional framework through voluntary trade. However, optimal equilibrium is an assumption that has not been empirically tested (Blinders and Solow, 1973) and affects fiscal policy and business cycles only when the economy is operating below equilibrium equals optimality (Kopcke, Tootell, and Triest 2006; Leclaire, 2007).

According to Akerlof (2002), to explain economic fluctuations, the rationale of macroeconomics is often based on information imperfections and technology shocks that

cause cyclical turning points. In fact, the behavioral assumptions in the behavioral macroeconomic model are often ineffective in macroeconomic analysis, but conversely, the policy recommendations of the macroeconomists have assumptions about behavior does not accurately reflect the reality of consumption and investment (Schwartz, 2010). Although the price and wage hypotheses have a solid, clear micro-foundation, the behavioral assumptions are still very simple, leading to the possibility of negating particular economic phenomena, making it difficult to in identifying and measuring six macroeconomic incidents, such as:

- the presence of unintentional unemployment;
- the effect of monetary policy on outcome and labor;
- the inability of inflation to rise rapidly if unemployment is significant;
- the incidence of overbearing saving following retirement;
- the abnormally high volatility of stock prices compared to basics; and
- the poor societal class's impatient, detrimental determination.

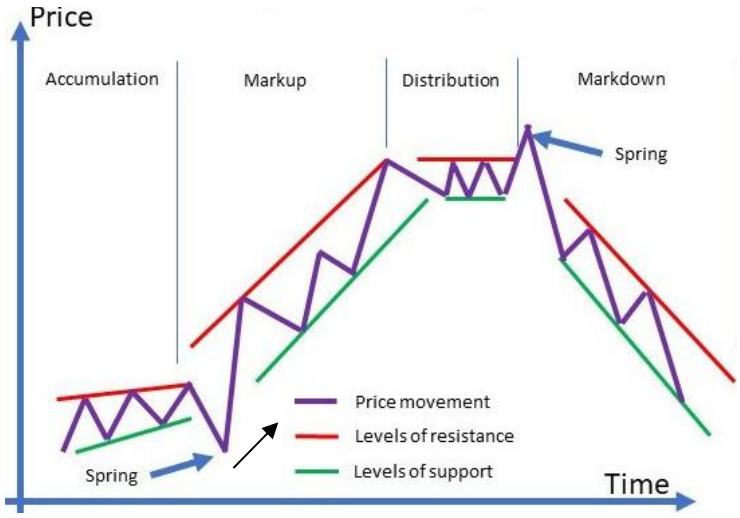
Abnormal fluctuation in stock prices in comparison to foundations is one of the causes of asset bubbles and financial crises. Macroeconomic theory with the efficient market hypothesis holds that stock prices reflect fundamentals as well as the discounted value of future earnings streams. Therefore, they do not have deviations from historical data. However, as analyzed in the practical context and related studies, asset prices, especially stock prices, are always influenced by the convergence of irrational behavior of investors, leading to the need for a suitable behavioral macroeconomic model to account for this variability. Furthermore, behavioral macroeconomics focuses on analyzing economic systems under the influence of cognitive, affective, cultural and some factors arising from neuroeconomics (Schwartz, 2010). To simplify the complexity of information uncertainty, behavioral macroeconomics studies use statistical methods when assuming individuals into representative groups and estimating a regression equation that solves the problem such as the predictor variable by some exogenous variables (Sargent, 1993; Evans and Honkapohja, 2001; Bullard and Mitra, 2002; Gaspar and Smets, 2006; Orphanides and Williams, 2004; Milani, 2007; Branch and Evans, 2009; Grauwe, 2010).

4.3. The mediating role of the stock market cycle

Business cycles and growth expectations play an important role in understanding macroeconomic and microeconomic relationships (Rülke, Silgoner and Wörz, 2016).

Accordingly, asset prices are an important component of the money-asset market in the monetary policy transmission mechanism. The volatility of asset prices is also the main basis for identifying and simulating the financial cycle in general and the stock market cycle in particular (Miranda- Agrippino and Rey, 2015/2020). In contrast, the length and amplitude of the stock market cycle is not a constant but depends on the existing policy mechanisms, including the financial regime, the monetary regime, and the real economic structure. (Borio and Lowe, 2002; Borio, 2007/2014). Specifically, to maintain price stability, monetary policy will depend on the source of price fluctuations (Smets, 1997; Detken and Smets, 2004). According to Wyckoff (1931), Hirshleifer (2001), Ackert, Church and Deaves (2003), Griffith, Najand and Shen (2020), stock market asset prices are driven by investor emotions. Therefore, it is imperative that monetary policy intervenes in what causes these price movements. However, stock prices reflect current prices of assets and discount expected future dividends, implying that monetary policy cannot influence stock prices in the long run (Bordo and Wheelock, 2007). Therefore, an asset's price range should be within the range between support and resistance levels at each stage, as illustrated by the Wyckoff market cycle (stock price cycle) as follows:

Figure-9. Economic cycle of Wyckoff



Source: Wyckoff, 1931.

Based on Figure 9, the Wyckoff cycle rules are based on market trends, trend positions, reversal patterns, and historical data. Trends are the main oscillators of asset price movements, while reversal patterns give indications of the tops and bottoms of each cycle. Historical data is the basis for determining the market's trend, but position in the new trend

reflects the decision of the majority of investors to follow or abandon the market. Wyckoff's technical analysis for investing shows the trend of herd behavior through the relative strength of the market when providing leading groups for investors to choose from. According to Fisher (1911), Bordo and Jeanne (2002), Detken and Smets (2004) there is evidence that an increased money supply causes a higher demand for assets and thus an increase in asset prices, while Mandelker and Tendon (1985), Asprem (1989), Lin (2012), Cho et al (2016) demonstrate a positive relationship between money supply, exchange rate and stock returns. Moreover, Christiano et al. (2006) assert that boom and bust shocks are related to the credit and money cycle. Therefore, to stabilize stock prices, monetary policy can intervene in the market through the mechanism of regulating the resistance and support levels of the cycle by credit transmission channels and money supply. Thereby, it is possible to adjust the trend, change the trend position of the market and influence the leading groups to influence the herd behavior of investors. However, developed countries often use countercyclical monetary policies to curb the sudden increase and decrease, causing uncertainty for investor decisions (Rehman et al., 2021). This leads retail investors in times of market stress or new monetary policy announcements to try to protect their portfolios by excessively mimicking the behavior of the leading group, and contributing to increase the probability of stock market boom (Hammami & Boujelbene, 2016). The fact also proves that the stock market boom that occurred in the United States in the period 1926–1929 was due to restrictive monetary policy and irrational credit allocation in the stock market (White, 1990).

On the other hand, although monetary policy actions only affect stock prices in the short run, the form of policy rules and the transmission mechanism of policy information can affect stock market performance over the long term where market participants will have interpretations and reactions based on their feelings and experiences. False and excessive judgments, concurrently and widespread among the majority of investors, are the foundation of herd behavior and fueling new market trends. In particular, in countries where central bank credit is low or the economy suffers from persistent inflation and volatile markets, herd behavior often does not follow the direction of the main monetary management objectives (Neuhierl & Weber, 2019; Wibowo, 2021) and will tend to continue the phenomenon of speculation and devaluation if the market is not corrected in time. Conversely, when the optimistic expectations of the majority of investors due to loose monetary policy and strong confidence in the central bank can also lead to imbalance and irrational herd behavior, led to the bursting of asset bubbles (Borio and Lowe, 2002), similar to the origin of the US financial crisis of 2008-2009.

For the above reasons, if monetary policy is applied to adjust the psychological behavior of the crowd or vice versa, whether the herd behavior affects the transmission of monetary policy or not, needs to be approved by intermediary objects such as credit flows, asset prices, information mechanisms, especially through stock prices. This means that if you want to look at the relationship between monetary policy and crowd psychology, the mediating role of the stock market cycle is very important.

5. Conclusion

Crowd behavior or herd behavior is a state of mutual imitation when faced with risky or uncertain situations (Banerjee, 1992; Rook, 2006) or convergence of social behavior under pressure reference groups (Bikhchandani et al., 1998; Cucker and Smale, 2007; Rafaat et al., 2009) and information transmission mechanisms (Frith and Frith, 2006) lead to irrational behavior. Herd behavior emerges and spreads through mechanisms of social learning (Süssmuth, 2002), often fluctuating over time and financial cycle turning points (consequences from economic shocks). (Wang, 2008). In particular, the change of state mimicking herd behavior depends on investor expectations. When the stock market tends to prosper, the market size and value increase, and a feeling of optimism prevails, investors have expectations for the possibility of price increase and are motivated to spread information and experience leading to an increase in prices. to the speculative bubble phenomenon. On the contrary, when the cycle enters the recession phase, the expectation is low, which can cause a situation where investors simultaneously flee the market. To overcome or contain the crisis in the recession phase of the cycle, the Government's monetary policies also become the anchor of investors' expectations, leading to limiting irrational herd behavior (Micossi, D'Onofrio and Peirce, 2019). However, this anchor of expectations can also cause investors' overconfidence in the government's ability to intervene (one of the causes of the financial crisis in 2008). Therefore, the relationship between monetary policy and herd behavior in the stock market becomes an important theoretical foundation for policy making and market regulation. This study presents the results of a systematic literature review that explores the most representative academic research in behavioral economics on monetary policy. The articles explore the literature regarding the relationship between monetary policy and herd behavior in the stock market by taking a systematic approach to provide a comprehensive phenomenological analysis with rigorous and reproducible research criteria.

The literature includes 746 articles that were collected through the Dimensions database, and were evaluated using specific structural dimensions to group documents into category

analysis. Starting from a studied concept related to animal spirits, herd behavior has gradually acquired its independent role in scholarly research, framing mainly studies related to the nature of uncertainty in stock market. Studies on the relationship between monetary policy and herd behavior in the stock market are determined based on three main theoretical foundations, including: one is the micro-base in macroeconomics, and the second is behavioral macroeconomics, the third is the intermediate mechanism of the stock market cycle. Accordingly, the relationship between a micro-factor of the economy and monetary policy can be analyzed based on two main pillars, including policy transmission to asset prices and economic shocks, while behavioral economics is not emphasized in the fundamentals of macroeconomics but is mostly common in empirical economics. This is also very evident in the VOS keyword analysis network (Figure 8) when there are only 2 popular topic clusters related to theory and market. The findings of this study emphasize the existence of a theoretical relationship between monetary policy and stock market herd behavior and have been empirically verified in a number of countries. However, the experimental results are still quite sporadic, even some studies deny this relationship. The cause of these two schools of thought is due to the difference in the trend of currency indices before the fluctuations of the business cycle. Then, with the change in the relationship between the natures of the currency indexes according to the stock market cycle, the crowd psychology behavior is an endogenous variable of the market cycle, so it will also be adjusted accordingly.

Considering the theoretical foundations of the relationship between monetary policy and herd behavior in the stock market, it is still not possible to give a clear definition or fully consider the effects between them to have a reasonable policy adjustment plan. The tendency to control herd behavior has blurred boundaries, because there is no clear definition and there is a possibility of disagreement on the principles of action of independent rational individuals. For this reason, herding behavior is often associated with fluctuations in asset prices in the stock market, implying random, uncertain market changes. Determining the relationship between monetary policy and herd behavior in the stock market is meant as a study describing the interaction between macroeconomic policy and the microstructure of the economy. The results of systematic literature review show that this research trend has not been taken seriously and has not been properly evaluated. When it is clear that this relationship can be a warning of a crisis, a sign of turning points in the economic cycle, as well as supporting or hindering the level of macroeconomic policy transmission efficiency. Therefore, the academic approach to herd behavior in the stock market needs a clearer definition and

monetary policy must take concrete action to act when necessary. This necessity must stem from attention to the cyclical movements of the market.

References

Ackert, L. F., Bryan K. C., & Deaves, R. (2003). Emotion and financial markets. *Federal Reserve Bank of Atlanta Economic Review*, 88(2), 33-41.

Adam, K. & Merkel, S. (2019). Stock price cycles and business cycles. *European Central Bank WP 2316*. https://dx.doi.org/10.2139/ssrn.3455237

Adjemian, S., Darracq Paries, M., & Moyen, S. (2008). Towards a monetary policy evaluation framework. *ECB Working Paper No. 942*. https://dx.doi.org/10.2139/ssrn.1265506

Akerlof, G. A. (2002). Behavioral macroeconomics and macroeconomic behavior. *The American Economic Review*, 92(3), 411-433. https://doi.org/10.1257/00028280260136192

Akerlof, G. A., & Shiller, R. J. (2010). *Animal spirits: How human psychology drives the economy, and why it matters for global capitalism*. Princeton university press. https://doi.org/10.1515/9781400834723

Aksoy, Y., Basso, H. S., & Coto-Martinez, J. (2012). Lending relationship and monetary policy. *Economic Inquiry*, 51(1), 368–393. https://doi.org/10.1111/j.1465-7295.2012.00453.x

Alber, N., & Ezzat, E. (2021). The impact of herding behavior on stock mispricing: The case of listed companies at the Egyptian exchange. *European Journal of Business & Management Research*, 6(4), 7-10. https://dx.doi.org/10.2139/ssrn.3879706

Alessi, L., & Detken, C. (2011). Quasi real time early warning indicators for costly asset price boom/bust cycles: A role for global liquidity. *European Journal of Political Economy*, 27(3), 520–533. https://doi.org/110.1016/j.ejpoleco.2011.01.003

Amromin, G., Bhutta, N., & Keys, B. J. (2020). Refinancing, monetary policy, and the credit cycle. *Annual Review of Financial Economics*, 12(1), 67-93. https://doi.org/10.1146/annurev-financial-012720-120430

Andersson, M., Hedesström, M., & Gärling, T. (2014). A social-psychological perspective on herding in stock markets. *Journal of Behavioral Finance*, 15(3), 226–234. https://doi.org/10.1080/15427560.2014.941062

Andrés, J., David López-Salido, J., & Vallés, J. (2006). money in an estimated business cycle model of the Euro area. *The Economic Journal*, 116(511), 457–477. https://doi.org/0.1111/j.1468-0297.2006.01088.x

Apergis, N., Christou, C., Hayat, T., & Saeed, T. (2020). U.S. monetary policy and herding: Evidence from commodity markets. *Atlantic Economic Journal*, 48, 355–374. https://doi.org/10.1007/s11293-020-09680-4

Arkes, H., Herren, L., & Isen, A. (1988). The role of potential loss in the influence of affect on risk taking behavior. *Organizational Behavior and Human Decision Processes*, 35, 124–140. https://doi.org/10.1016/0749-5978(88)90011-8

Avouyi-Dovi, S. & Matheron, J. (2003). Interactions between business cycles, financial cycles and monetary policy: Stylised facts. *BIS Paper No.22*, 273-298.

Baddeley, M. (2009). Herding, social influence and economic decision-making: Socio-psychological and neuroscientific analyses. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365(1538), 281–290. https://doi.org/10.1098/rstb.2009.0169

Bagliano, F. C., & Favero, C. A. (1999). Information from financial markets and VAR measures of monetary policy. *European Economic Review*, 43(4-6), 825–837. https://doi.org/10.1016/s0014-2921(98)00097-x

Bagus, P. (2008). Monetary policy as bad medicine: The volatile relationship between business cycles and asset prices. *The Review of Austrian Economics*, 21(4), 283–300. https://doi.org/10.1007/s11138-008-0042-8

Barnett, W. A., & Chauvet, M. (2011). How better monetary statistics could have signaled the financial crisis. *Journal of Econometrics*, 161(1), 6–23. https://doi.org/10.1016/j.jeconom.2010.09.002

Bauer, G., Pasricha, G., Sekkel, R., & Terajima, Y. (2018). The global financial cycle, monetary policies, and macroprudential regulations in small, open economies. *Canadian Public Policy*, *44*(2), 81-99. https://doi.org/10.3138/cpp.2017-018

Baur, D. (2006). Multivariate market association and its extremes. *Journal of International Financial Markets, Institutions and Money*, *16*(4), 355-369. https://doi.org/10.1016/j.intfin.2005.05.006

Beck, T., Colciago, A., & Pfajfar, D. (2014). The role of financial intermediaries in monetary policy transmission. *Journal of Economic Dynamics and Control*, *43*, 1–11. doi:10.1016/j.jedc.2014.04.010

Bekaert, G., Hoerova, M., & Lo Duca, M. (2013). Risk, uncertainty and monetary policy. *Journal of Monetary Economics, 60*(7), 771–788. https://doi.org/10.1016/j.jmoneco.2013.06.003

Bekiros, S., Jlassi, M., Lucey, B., Naoui, K., & Uddin, G. S. (2017). Herding behavior, market sentiment and volatility: Will the bubble resume? *The North American Journal of Economics and Finance*, *42*, 107–131. https://doi.org/10.1016/j.najef.2017.07.005

Bernanke, B. S., & Gertler, M. (2001). Should central banks respond to movements in asset prices? *American Economic Review*, 91(2), 253–257. https://doi.org/10.1257/aer.91.2.253

Boivin, J., & Giannoni, M. P. (2006). Has monetary policy become more effective? *Review of Economics and Statistic*s, 88(3), 445–462. https://doi.org/10.1162/rest.88.3.445

Bolten, S. E., & Weigand, R. A. (1998). The generation of stock market cycles. *The Financial Review*, *33*(1), 77–84. https://doi.org/10.1111/j.1540-6288.1998.tb01608.x

Bordo, M. D. & Wheelock, D.C. (2007). Stock market booms and monetary policy in the twentieth century. *Federal Reserve Bank of St. Louis Review*, *89*(2), 91-122.

Borio, C. (2014). The financial cycle and macroeconomics: What have we learnt? *Journal of Banking & Finance, 45,* 182-198. https://doi.org/10.1016/j.jbankfin.2013.07.031

Borio, C., & Zhu, H. (2012). Capital regulation, risk-taking and monetary policy: A missing link in the transmission mechanism? *Journal of Financial Stability*, 8(4), 236–251. https://doi.org/10.1016/j.jfs.2011.12.003

Bräuning, F., & Ivashina, V. (2020). US monetary policy and emerging market credit cycles. *Journal of Monetary Economics*, *112*, 57-76. https://doi.org/10.1016/j.jmoneco.2019.02.005

Buch, C. M., Doepke, J., & Pierdzioch, C. (2005). Financial openness and business cycle volatility. *Journal of International Money and Finance, 24*(5), 744–765. https://doi.org/10.1016/j.jimonfin.2005.04.002

Bui, N. D., Nguyen, L. T. B., Nguyen, N. T. T., & Titman, G. F. (2018). Herding in frontier stock markets: Evidence from the Vietnamese stock market. *Accounting & Finance, 58*, 59-81. https://doi.org/10.1111/acfi.12253

Burns, A. F. (1969). Front matter, the business cycle in a changing world. In *The Business Cycle in a Changing World*(pp. 14-0). NBER.

Cassola, N., & Morana, C. (2004). Monetary policy and the stock market in the euro area. *Journal of Policy Modeling, 26*(3), 387–399. https://doi.org/10.1016/j.jpolmod.2004.03.012

Castro, V., & Sousa, R. M. (2012). How do central banks react to wealth composition and asset prices? *Economic Modelling, 29*(3), 641–653. https://doi.org/10.1016/j.econmod.2012.01.006

Caverzasi, E., & Russo, A. (2018). Toward a new microfounded macroeconomics in the wake of the crisis. *Industrial and Corporate Change, 27*(6), 999-1014. https://doi.org/10.1093/icc/dty043

Cecchetti, S. (2000). Making monetary policy: Objectives and rules. *Oxford Review of Economic Policy, 16*(4), 43–59. https://doi.org/10.1093/oxrep/16.4.43

Chang, B. Y. (2011). Investor behavior and economic cycles: The impact of human biases and cognitive limitations on economic booms and busts. *The Journal of Behavioral Finance & Economics, 1*, 1-26.

Chari, V. V., Kehoe, P. J., & McGrattan, E. R. (2000). Sticky price models of the business cycle: can the contract multiplier solve the persistence problem?. *Econometrica, 68*(5), 1151-1179. https://doi.org/10.1111/1468-0262.00154

Chaudhry, M. I., & Sam, A. G. (2018). Herding behaviour and the declining value relevance of accounting information: evidence from an emerging stock market. *Applied Economics, 50*(49), 5335-5353. https://doi.org/10.1080/00036846.2018.1486989

Chiang, T. C., & Zheng, D. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking & Finance, 34*(8), 1911–1921. https://doi.org/10.1016/j.jbankfin.2009.12.014

Cho, J. W., Choi, J. H., Kim, T., & Kim, W. (2016). Flight-to-quality and correlation between currency and stock returns. *Journal of Banking & Finance, 62*, 191-212. https://doi.org/10.1016/j.jbankfin.2014.09.003

Christiano, L., Ilut, C., Motto, R. & Rostagno, M. (2008). Monetary policy and stock market boom – bust cycles. *European Central Bank WP 955*. http://dx.doi.org/10.2139/ssrn.1285421

Christie, W. G., & Huang, R. D. (1995). Following the pied piper: Do individual returns herd around the market? *Financial Analysts Journal, 51*(4), 31–37. https://doi.org/10.2469/faj.v51.n4.1918

Cipriani, M., & Guarino, A. (2009). Herd behavior in financial markets: An experiment with financial market professionals. *Journal of the European Economic Association, 7*(1), 206–233. https://doi.org/10.1162/jeea.2009.7.1.206

Clements, A., Hurn, S., & Shi, S. (2017). An empirical investigation of herding in the U.S. stock market. *Economic Modelling, 67*, 184–192. doi:10.1016/j.econmod.2016.12.015

Clements, M. P. (2018). Do macroforecasters herd? *Journal of Money, Credit and Banking*, *50*(2-3), 265–292. https://doi.org/10.1111/jmcb.12460

Collard, D. (1996). Pigou and modern business cycle theory. *The Economic Journal, 106*(437), 912. https://doi.org/10.2307/2235364

Corsi, F., & Sornette, D. (2014). Follow the money: The monetary roots of bubbles and crashes. *International Review of Financial Analysis, 32*, 47-59. https://doi.org/10.1016/j.irfa.2014.01.007

Coskun, E. A., Lau, C. K. M., & Kahyaoglu, H. (2020). Uncertainty and herding behavior: Evidence from cryptocurrencies. *Research in International Business and Finance*, *54*, 101284. https://doi.org/10.1016/j.ribaf.2020.101284

Dallari, P., & Ribba, A. (2020). The dynamic effects of monetary policy and government spending shocks on unemployment in the peripheral Euro area countries. *Economic Modelling*, *85*, 218-232. https://doi.org/10.1016/j.econmod.2019.05.018

De Graeve, F., Kick, T., & Koetter, M. (2008). Monetary policy and financial (in)stability: An integrated micro–macro approach. *Journal of Financial Stability*, *4(*3), 205–231. https://doi.org/10.1016/j.jfs.2007.09.003

De Grauwe, P., & Ji, Y. (2018). Behavioural economics is useful also in macroeconomics: The role of animal spirits. *Comparative Economic Studies*, *60*, 203-216. https://doi.org/10.1057/s41294-018-0061-9

Dées, S., & Galesi, A. (2021). The Global Financial Cycle and US monetary policy in an interconnected world. *Journal of International Money and Finance*, *115*, 102395. https://doi.org/10.1016/j.jimonfin.2021.102395

Dées, S., Pesaran, M.H., Smith, L.V., & Smith, R.P. (2010). Supply, demand and monetary policy shocks in a multi-country New Keynesian model. *ECB Working paper No. 1239.* https://dx.doi.org/10.2139/ssrn.1663882

Delis, M. D., & Karavias, Y. (2015). Optimal versus realized bank credit risk and monetary policy. *Journal of Financial Stability, 16*, 13–30. https://doi.org/10.1016/j.jfs.2014.11.004

Delis, M. D., Hasan, I., & Mylonidis, N. (2012). The risk-taking channel of monetary policy in the USA: Evidence from micro-level data. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2013787

Denis, A. (2016). Microfoundations. *Review of Political Economy*, *28*(1), 134–152. https://doi.org/10.1080/09538259.2016.1108132

Detken, C. & Smets, F. (2004). Asset price booms and monetary policy. *European Central Bank Working Paper No 364.* https://dx.doi.org/10.2139/ssrn.533122

Dridi, I., & Boughrara, A. (2023). Flexible inflation targeting and stock market volatility: Evidence from emerging market economies. *Economic Modelling, 126*, 106420. https://doi.org/10.1016/j.econmod.2023.106420

Duncan, R. (2014). Institutional quality, the cyclicality of monetary policy and macroeconomic volatility. *Journal of Macroeconomics, 39*, 113–155. https://doi.org/10.1016/j.jmacro.2013.11.004

Edwards, S., Biscarri, J. G., & Pérez de Gracia, F. (2003). Stock market cycles, financial liberalization and volatility. *Journal of International Money and Finance, 22*(7), 925–955. https://doi.org/10.1016/j.jimonfin.2003.09.01

Fang, H., Lu, Y-C., Shieh, J.C.P., & Lee, Y-H. (2021). The existence and motivations of irrational loan herding and its impact on bank performance when considering different market periods. *International Review of Economics & Finance, 73,* 420-443. https://doi.org/10.1016/j.iref.2021.01.015

Filardo, A., Genberg, H., & Hofmann, B. (2016). Monetary analysis and the global financial cycle: An Asian central bank perspective, *Journal of Asian Economics, 46,* 1-16. https://doi.org/10.1016/j.asieco.2016.08.002

Franke, R. (2012). Microfounded animal spirits in the new macroeconomic consensus. *Studies in Nonlinear Dynamics & Econometrics, 16(*4). https://doi.org/10.1515/1558-3708.1898

Friedman, B. M. (1976). Targets, instruments, and indicators of monetary policy. *Journal of Monetary Economics, 1*(4), 443–473. https://doi.org/10.1016/0304-3932(76)90013-1

Friedman, M. (1982). Monetary policy: Theory and practice. *Journal of Money, Credit and Banking, 14*(1), 98. https://doi.org/10.2307/1991496

Gaffeo, E., Delli Gatti, D., Desiderio, S., & Gallegati, M. (2008). Adaptive microfoundations for emergent macroeconomics. *Eastern Economic Journal, 34*(4), 441–463. https://doi.org/10.1057/eej.2008.27

Galí, J., & Gambetti, L. (2015). The effects of monetary policy on stock market bubbles: Some evidence. *American Economic Journal: Macroeconomics, 7*(1), 233–257. https://doi.org/10.1257/mac.20140003

Gong, P. & Dai, J. (2017). Monetary policy, exchange rate fluctuation, and herding behavior in the stock market. *Journal of Business Research, 76,* 34-43. https://doi.org/10.1016/j.jbusres.2017.02.018

Gordon, D. B., & Leeper, E. M. (1994). The dynamic impacts of monetary policy: An exercise in tentative identification. *Journal of Political Economy, 102(*6), 1228–1247. https://doi.org/10.1086/261969

Griffith, J., Najand, M. & Shen, J. (2020). Emotions in the stock market. *Journal of Behavioral Finance, 21*(1), 42-56. https://doi.org/10.1080/15427560.2019.1588275.

Haiss, P. (2010). Bank herding and incentive systems as catalysts for the financial crisis. *The IUP Journal of Behavioral Finance, 7*(1&2), 30-58.

Hammami, H., & Boujelbene, Y. (2015). Investor herding behavior and its effect on stock market boom-bust cycles. *IUP Journal of Applied Finance, 21*(1), 38-53.

Hammami, H., & Boujelbene, Y. (2016). Boom-bust cycles and herding behaviour in the Tunisian stock market. *International Journal of Data Science, 1*(3), 259. https://doi.org/10.1504/ijds.2016.075935

Heo, Y. (2019). The impact of bank herding on systemic risk. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3366128

Hirshleifer, D. (2001). Investor psychology and asset pricing. *Journal of Finance, 56*(4), 1533–1597. https://doi.org/10.1111/0022-1082.00379

Hohnisch, M., & Westerhoff, F. (2008). Business cycle synchronization in a simple Keynesian macro-model with socially transmitted economic sentiment and international sentiment spill-over. *Structural Change and Economic Dynamics, 19*(3), 249–259. https://doi.org/10.1016/j.strueco.2008.04.001

Howden, D. (2009). Knowledge shifts and the business cycle: When boom turns to bust. *The Review of Austrian Economics, 23*(2), 165–182. https://doi.org/10.1007/s11138-009-0095-3

Hwang, S., & Salmon, M. (2004). Market stress and herding. *Journal of Empirical Finance, 11*(4), 585–616. https://doi.org/10.1016/j.jempfin.2004.04.003

Iacoviello, M. (2005). House prices, borrowing constraints, and monetary policy in the business cycle. *American Economic Review, 95*(3), 739–764. https://doi.org/10.1257/0002828054201477

Ireland, P. (2001). Sticky price models of the business cycle: specification and stability, *Journal of Monetary Economics, 47(1*), 1–18. https://doi.org/10.1016/S0304-3932(00)00047-7

Ireland, P. (2004). Money's role in the monetary business cycle. *Journal of Money Credit and Banking, 36*(3), 969–984. https://doi.org/10.3386/w8115

Javaira, Z., & Hassan, A. (2015). An examination of herding behavior in Pakistani stock market. *International Journal of Emerging Markets, 10(*3), 474–490. https://doi.org/10.1108/ijoem-07-2011-0064

Koppl, R., & Koppl, R. (2002). Herding in money demand. In *Big Players and the Economic Theory of Expectations*, (pp.184-194). Palgrave Macmillan. https://doi.org/10.1057/9780230629240_10

Krokida, S. I., Makrychoriti, P., & Spyrou, S. (2020). Monetary policy and herd behavior: International evidence. *Journal of Economic Behavior & Organization*, *170*, 386-417. https://doi.org/10.1016/j.jebo.2019.12.01

Laopodis, N. T. (2009). Dynamic linkages between monetary policy and the stock market. *Review of Quantitative Finance and Accounting, 35*(3), 271–293. https://doi.org/10.1007/s11156-009-0154-7

Levin, A. T., Onatski, A., Williams, J. C., & Williams, N. (2005). monetary policy under uncertainty in micro-founded macroeconometric models. *NBER Macroeconomics Annual, 20,* 229-287. https://doi.org/10.1086/ma.20.3585423

Li, X.-L., Yan, J., & Wei, X. (2021). Dynamic connectedness among monetary policy cycle, financial cycle and business cycle in China. *Economic Analysis and Policy, 69,* 640–652. https://doi.org/10.1016/j.eap.2021.01.014

Lin, C. H. (2012). The comovement between exchange rates and stock prices in the Asian emerging markets. *International Review of Economics and Finance, 22*(1), 161–172. https://doi.org/10.1016/j.iref.2011.09.006

Loisel, O., Pommeret, A. & Portier, F. (2012). Monetary policy and herd behavior: Leaning against bubbles. *Banque de France Working Paper No.412.* https://dx.doi.org/10.2139/ssrn.2192466

Ludvigson, S. C., Sai Ma, & Serena Ng. (2021). uncertainty and business cycles: Exogenous impulse or endogenous response? *American Economic Journal: Macroeconomics, 13*(4), 369-410. https://doi.org/10.1257/mac.20190171

Lux, T. (1995). Herd behaviour, bubbles and crashes. *The Economic Journal, 105(*431), 881-896. https://doi.org/10.2307/2235156

Marrucci, L., Daddi, T., & Iraldo, F. (2019). The integration of circular economy with sustainable consumption and production tools: Systematic review and future research agenda. *Journal of Cleaner Production, 240,* 118268. https://doi.org/10.1016/j.jclepro.2019.118268

McCallum, B. & Nelson, E. (1999). An optimizing IS-LM specification for monetary policy and business cycle analysis. *Journal of Money, Credit and Banking, 31*(3), 296-316. https://doi.org/10.3386/w5875

McDonald, I. M. (2009). The global financial crisis and behavioral economics. *Economics Papers, 28(*3), 249-254. https://doi.org/10.1111/j.1759-3441.2009.00026.x

Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production, 178,* 703–722. https://doi.org/10.1016/j.jclepro.2017.12.112

Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production, 178,* 703-722. https://doi.org/10.1016/j.jclepro.2017.12.112

Migranda-Agrippino, S. & Rey, H. (2015). World asset markets and the global financial cycle. *WP 21722 NBER*, Cambridge, MA.

Migranda-Agrippino, S. & Rey, H. (2020). U.S. monetary policy and the global financial cycle. *The Review of Economic Studies, 87*(6), 2754–2776. https://doi.org/10.1093/restud/rdaa019

Mishkin, F. (2001). The transmission mechanism and the role of asset prices in monetary policy. *NBER Working paper 8617,* National Bureau of Economic Research. https://doi.org/10.3386/w8617

Mishkin, F. (2015). *The economics of money, banking and financial markets*. London: Pearson.

Persaud, A. (2000). Sending the herd off the cliff edge: The disturbing interaction between herding and market-sensitive risk management practices. *The Journal of Risk Finance, 2*(1), 59–65. https://doi.org/10.1108/eb022947

Prechter, R. R., Jr. (2001). Unconscious herding behavior as the psychological basis of financial market trends and patterns. *The Journal of Psychology and Financial Markets, 2*(3), 120–125. https://doi.org/10.1207/S15327760JPFM0203_1

Rey, H. (2015). Dilemma not trilemma: The global financial cycle and monetary policy independence. *WP21162 NBER.* https://doi.org/10.3386/w21162

Ritter, J. R. (2003). Behavioral finance. *Pacific-Basin Finance,11*(4), 429-437. https://doi.org/10.1016/S0927-538X(03)00048-9

Rizzi, J. V. (2008). Behavioral bias of the financial crisis. *Journal of Applied Finance, 18*(2), 1-13.

Rogers, C. (2018). The conceptual flaw in the microeconomic foundations of dynamic stochastic general equilibrium models. *Review of Political Economy, 30*(1), 72–83. https://doi.org/10.1080/09538259.2018.1442894

Rotemberg, J. J. (1987). *The New Keynesian microfoundations*. Creative Media Partners.

Rötheli, T. F. (2001). Competition, herd behavior, and credit cycles: Evidence from major Swiss banks. *Journal of Economics and Business, 53*(6), 585–592. https://doi.org/10.1016/s0148-6195(01)00050-9

Rülke, J.-C., Silgoner, M., & Wörz, J. (2016). Herding behavior of business cycle forecasters. International Journal of Forecasting, 32(1), 23–33. https://doi.org/10.1016/j.ijforecast.2015.02.

Schaal, E. & Taschereau-Dumouchel, M. (2020). Herding cycle. *Barcelona GSE WP No.1166.*

Schaal, E. và Taschereau-Dumouchel, M. (2021). Herding through booms and busts. *CEPR Discussion Paper No.DP16368.*

Schettkat, R. (2020). Micro-foundations of diverging economic policies: Keynesian, behavioural, neoclassic. *Intereconomics, 55*(2), 105–111. https://doi.org/10.1007/s10272-020-0879-z

Schiefeling, M. (2020). Lakatos and the assumption of the neutrality of money in neoclassical economics. *The Maastricht Journal of Liberal Arts, 12,* 43-51. https://doi.org/10.26481/mjla.2020.v12.773

Schmitt, N., & Westerhoff, F. (2017). Herding behaviour and volatility clustering in financial markets. *Quantitative Finance, 17*(8), 1187–1203. https://doi.org/10.1080/14697688.2016.126739

Schuberth, F., Henseler, J., & Dijkstra, K. (2018). Confirmatory composite analysis. *Frontiers in Psycology, 9,* 2541-2555. https://doi.org/10.3389/fpsyg.2018.02541

Schularick, M., & Taylor, A. M. (2012). Credit booms gone bust: Monetary policy, leverage cycles, and financial crises, 1870–2008. *American Economic Review, 102*(2), 1029–1061. https://doi.org/10.1257/aer.102.2.1029

Schumpeter, J. A. (1935). The analysis of economic change. *The Review of Economics and Statistics, 17*(4), 2-10. https://doi.org/10.2307/1927845

Schwartz, H. (2010). Does Akerlof and Shiller's animal spirits provide a helpful new approach for macroeconomics? *The Journal of Socio-Economics, 39*(2), 150–154. https://doi.org/10.1016/j.socec.2010.02.018

Seetharam, Y. & Britten, J. (2013). An analysis of herding behaviour during market cycles in South Africa. *Journal of Economics and Behavioral Studies, 5*(2), 89-98. https://doi.org/10.22610/jebs.v5i2.383

Serletis, A., & Xu, L. (2020). Functional monetary aggregates, monetary policy, and business cycles. *Journal of Economic Dynamics and Control, 121*, 103994. https://doi.org/10.1016/j.jedc.2020.103994

Sharma, S. S., Narayan, P., & Thuraisamy, K. (2015). Time-varying herding behavior, global financial crisis, and the Chinese Stock Market. *Review of Pacific Basin Financial Markets and Policies, 18*(02), 1550009. https://doi.org/10.1142/s0219091515500095

Shrestha, M. R. (2020). Monetary policy and stock price dynamics in Nepal. *Journal of Business and Management Research, 3*(1&2), 18-38.

Simões Vieira, E. F., & Valente Pereira, M. S. (2015). Herding behaviour and sentiment: Evidence in a small European market. Revista de Contabilidad, 18(1), 78–86. https://doi.org/10.1016/j.rcsar.2014.06.003

Sims, C. A. (1980). Macroeconomics and reality. *Econometrica, 48*(1), 1-48. https://doi.org/10.2307/1912017

Singh, B. và Pattanaik, S. (2010). Should monetary policy in india respond to movements in asset prices? Reserve Bank of India Occasional Papers, 31(3), 1-34.

Süssmuth, B. (2002). Can herding explain cyclic co-movement? *International Game Theory Review, 4*(1), 33-51. https://doi.org/10.1142/s0219198902000537

Tran, N. M. và Truong, H.H. 2011. Herding behavior in an emerging stock market: Empirical evidence in Vietnam. *Research Journal of Business Management, 5*(2), 51-76

Tran, T. N., (2022). The volatility of the stock market and financial cycle: GARCH family models. *Jurnal Ekonomi Malaysia, 56*(1), 151–168. https://doi.org/10.17576/JEM-2022-5601-11.

Truong, N. H. vả Le, M. 2014. An exploratory study of herd behaviour in Vietnamese stock market: A new method. *Asian Journal of Finance and Accounting, 6*(1), 464-475. http://dx.doi.org/10.5296/ajfa.v6i1.5326

Tsuchiya, Y. (2020). Crises, market shocks, and herding behavior in stock price forecasts. Empirical Economics, 61, 919–945. https://doi.org/10.1007/s00181-020-01894-4

Uchida, H., & Nakagawa, R. (2007). Herd behavior in the Japanese loan market: Evidence from bank panel data. *Journal of Financial Intermediation, 16*(4), 555–583. https://doi.org/10.1016/j.jfi.2007.03.007

Van den Bergh, J. C. J. M. & Gowdy, J. M. (2003). The microfoundations of macroeconomics: An evolutionary perspective. *Cambridge Journal of Economics, 27*(1), 65–84. https://doi.org/10.1093/cje/27.1.65

Van Guten, T. và Habinek, J. (2019). *Relational herding in financial markets: Mortgage securitization and the Spanish banking crisis*. https://todvangunten.com/pdf/Van%20Gunten%20and%20Habinek_relational%20herding_v1-2%20ASA.pdf

Vo, X. V., & Phan, D. B. A. (2016). Herd behavior in emerging equity markets: Evidence from Vietnam. *Asian Journal of Law and Economics, 7*(3). https://doi.org/10.1515/ajle-2016-0020

Von Hagen, J., Hayo, B., & Fender, I. (2002). Monetary theory, monetary policy, and financial markets. *Frontiers in Economics*, 1–36. https://doi.org/10.1007/978-3-540-24739-5_1

Wang, D. (2008). Herd behavior towards the market index: Evidence from 21 financial markets. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1316783

Wang, G., & Wang, Y. (2018). Herding, social network and volatility. *Economic Modelling, 68*, 74–81. doi:10.1016/j.econmod.2017.04.018

Wibowo, B. (2021). Monetary policy and herding behavior developed market and emerging market comparison. *Trikonomika, 20*(1), 11-16. https://doi.org/10.23969/trikonomika.v20i1.1579

Wren-Lewis, S. (2018). Ending the microfoundations hegemony. *Oxford Review of Economic Policy, 34*(1-2), 55–69. https://doi.org/10.1093/oxrep/grx054

Wright, I. (2009). Implicit Microfoundations for Macroeconomics. *Economics, 3*(1). https://doi.org/10.5018/economics-ejournal.ja.2009-19

Xu, N., Jiang, X., Chan, K. C., & Wu, S. (2016). Analyst herding and stock price crash risk: Evidence from China. *Journal of International Financial Management & Accounting, 28*(3), 308–348. https://doi.org/10.1111/jifm.12062

Zhang, J., & Liu, P. (2012). Rational herding in microloan markets. *Management Science, 58*(5), 892–912. https://doi.org/10.1287/mnsc.1110.1459

Zhu, Y., Fan, J., & Tucker, J. (2018). The impact of monetary policy on gold price dynamics. *Research in International Business and Finance, 44*, 319–331. https://doi.org/10.1016/j.ribaf.2017.07.100