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Behavioural biases in investment decision making - a systematic literature review

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Abstract

Purpose – The purpose of this paper is to systematically review the literature published in past 33 years on behavioural biases in investment decision-making. The paper highlights the major gaps in the existing studies on behavioural biases. It also aims to raise specific questions for future research.

Design/methodology/approach – We employ systematic literature review (SLR) method in the present study. The prominence of research is assessed by studying the year of publication, journal of publication, country of study, types of statistical method, citation analysis and content analysis on the literature on behavioural biases. The present study is based on 117 selected articles published in peer-review journals between 1980 and 2013.

Findings – Much of the existing literature on behavioural biases indicates the limited research in emerging economies in this area, the dominance of secondary data-based empirical research, the lack of empirical research on individuals who exhibit herd behaviour, the focus on equity in home bias, and indecisive empirical findings on herding bias.

Research limitations/implications – This study focuses on individuals' behavioural biases in investment decision-making. Our aim is to analyse the impact of cognitive biases on trading behaviour, volatility, market returns and portfolio selection.

Originality/value – The paper covers a considerable period of time (1980-2013). To the best of authors' knowledge, this study is the first using systematic literature review method in the area of behavioural finance and also the first to examine a combination of four different biases involved in investment decision-making. This paper will be useful to researchers, academicians and those working in the area of behavioural finance in understanding the impact of behavioural biases on investment decision-making.

Keywords Herding, Home bias, Overconfidence, Disposition effect, Behavioural biases

Paper type Literature review

1. Introduction

Standard finance, also known as *traditional finance*, is based on various theories and principles, for example the arbitrage principles of Miller & Modigliani; the portfolio principles of Markowitz; the capital asset pricing theory of Sharpe, Lintner & Black; and the option-pricing theory of Black, Scholes & Merton. According to these approaches, markets and market agents are efficient and systematic. The efficient market hypothesis (EMH) states that in an efficient market, all the available information is incorporated while estimating the prices of financial assets. EMH is based on the belief that investors behave rationally in the financial market. In decision-making, investors have to choose a course of action among various alternatives in the world of uncertainty. The expected utility theory (EUT) proposes that investors behave rationally by judging

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all the alternatives on the basis of their utility and the associated risk and make a balanced decision. After the energy crisis of the 1970s, empirical studies (Kahneman and Tversky, 1979) found results that were inconsistent with EMH and EUT.

In the 1980s, behavioural finance emerged as a new concept combining behavioural and psychological aspects in economic and financial decision-making. Behavioural finance challenges the efficient market perspective and helps to understand why investors behave in a particular manner while investing in financial assets. Kahneman and Tversky (1979) developed the prospect theory[1], which is an alternative to EUT in explaining decision-making under uncertainty. Behavioural finance suggests that the investment decision-making process is influenced by various behavioural biases that encourage investors to deviate from rationality and make irrational investment decisions.

This is a comprehensive review of the behavioural biases in investment decision-making with a focus on individual investors. To our knowledge, till date, there is no systematic literature review of behavioural biases in which different biases have been examined in a single study. Here, we have considered four common biases that can creep into the investment decision-making process:

(1) overconfidence;

(2) disposition effect;

(3) herding bias; and

(4) home bias/familiarity bias.

There are only a very few empirical studies on herding behaviour of individual investors.

Thus, the main objectives of this study are as follows:

- to synthesise the existing literature on behavioural biases in a systematic manner;
- to identify the causes of these behavioural biases and their consequences on an individual's investment choice;
- to explore the impact of these behavioural biases in the investment decision-making process; and
- to identify the research gaps and future directions for research in this area.

The remainder of this paper is structured as follows:

- we explain the theoretical background of different behavioural biases and investment decision-making;
- we describe the methodology adopted for the systematic literature review. Further, we discuss the classification scheme and the literature; and
- we outline the findings and research gaps and then conclude with the future directions for research.

2. Behavioural biases and investment decision-making

In this section, we explain the theoretical background of behavioural biases involved in investors' investment decision-making. How do investors behave? Why do investors behave in a particular manner? To answer these questions, a relatively new concept, behavioural finance, emerged in the fields of economics and finance in the 1980s.

Behavioural finance studies the psychological aspect of financial decision-making and explains the irrationality of investors in investment decision-making. Usually, the investor's behaviour deviates from making rational or logical decisions and leans towards being influenced by various behavioural biases. These biases influence the investor's rationality in investment decision-making. Kahneman and Tversky (1979) developed prospect theory and explained that the investor's decision-making is based on potential gains and losses rather than on final outcomes. This phenomenon occurs because of the cognitive biases that affect the judgement of these gains and losses. Investors show various types of behavioural biases, and we have reviewed four biases in the following sections.

2.1 Overconfidence

Overconfidence is a well-established and common bias that makes people too confident about their knowledge and skills and ignore the risk associated to investment Earlier studies in this area have explained how the overconfidence bias influences rational decision-making behaviour. Odean (1999) explained that investors with discount brokerage accounts become overconfident and engage in excess trading. However, Odean (1999) also proposed that because of excess trading, the realised gains are not sufficient to cover the transaction cost. Similarly, Barber and Odean (2000) analysed the data set of 78,000 households at a large discount brokerage house firm in the USA and found that excessive trading realised less returns. Further, various empirical studies have been conducted in this field, for example Daniel *et al.* (1998), Barber and Odean (2001), Statman *et al.* (2006), and Weber and Camerer (1998).

2.2 Disposition effect

Disposition effect is another important behavioural bias wherein investors are more prone to selling the winning stock and tend to hold on to the loss-making asset. Odean (1998) observed that at the end of the year, because of tax motivation, investors are more willing to sell the loss-making assets. Shefrin and Statman (1985) developed a theoretical framework concerned with selling of the winning stock and holding on to the loss-making asset, which is supported by empirical evidence also. Further, in various research studies (Frazzini, 2006; Weber and Camerer, 1998; Barberis and Xiong, 2009), empirical evidence for the disposition phenomenon has been generalised.

2.3 Herding

Herding refers to the situation wherein rational people start behaving irrationally by imitating the judgements of others while making decisions. There can be numerous reasons for herd behaviour being exhibited among different types of investors. Individual investors tend towards demonstrating herd behaviour because they follow the decisions of a large group or noise traders. Analysts may herd their past experiences/decisions or imitate others to protect their reputational or compensation concern. Lee *et al.* (2004) reported that individual investors are more inclined to adopting herding behaviour than are institutional investors. Further, some significant studies (Grinblatt *et al.*, 1995; Lakonishok *et al.*, 1992; Wermers, 1999) have been conducted on the herd behaviour in investment decision-making.

2.4 Home bias

Home bias, also termed equity home bias, refers to the situation wherein individuals or institutions prefer to hold on to domestic securities rather than to foreign assets in their portfolio. It is also known as the equity home bias puzzle because returns realised through domestic equity portfolio implies that more potential benefits are derived from the international diversification of portfolio. Initially, French and Poterba (1991) and Tesar and Werner (1995) analysed equity home bias in their studies. The possible reasons behind home bias may be investment barriers, transaction costs, information asymmetry, inflation hedging and non-tradable assets. Various research studies have elucidated that there are no conclusive explanations for home bias, so it remains a puzzle among market participants. Coval and Moskowitz (1999), Lewis (1999), Tesar and Werner (1995) and Ahearne *et al.* (2004) have also contributed by giving insightful meaning in the area of home bias.

3. Data and methodology

We adopted the systematic literature review methodology to review and analyse articles related to behavioural biases in investment decision-making. A diagrammatic representation of this methodology is shown in Figure 1.

3.1 Strategy for the literature search

We established search criteria for the systematic literature review and conducted a search by identifying relevant keywords, time frame, various databases and by developing other inclusion and exclusion criteria. We used EBSCO, Emerald and other database (Google Scholar) for the literature search and the following keywords: overconfidence in individual investors' decision-making, disposition effect in individual investors' decision-making and home bias and herding bias in individual investors' decision-making. This paper spans a time horizon of around three decades (1980-2013). The year 1980 was considered as the initial year for search because in 1979, Kahneman and Tversky (1979) developed the prospect theory, which was the first theoretical base of behavioural finance, and empirical studies in this area have been conducted only after 1980. Further, we considered the following articles for inclusion in our study:

- articles published in peer-reviewed journals;
- articles published only in English and with full-text access;

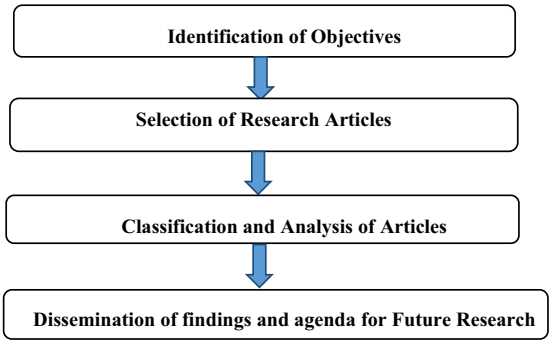

Figure 1.
Methodology for the systematic literature review

- different article types including research paper, case study, review paper, conceptual paper and working paper; and
- articles having the search keywords in the article title, keywords or abstract.

We conducted the database search in October 2013, and it included all the articles that satisfied the above-mentioned search criteria. We found several articles on the basis of our search criteria. After reviewing the title and abstract, we included 117 articles for the review. Out of these articles, we considered Barber and Odean (1999) twice because this paper explained both overconfidence and the disposition effect, and we therefore independently classified it under both the biases. Table I shows our database search protocol.

4. Classification and analysis of the literature

In this section, we have systematically classified the 117 selected research studies on the basis of publication year, journal title, location of study, type of research and data, statistical techniques, etc. Thus, in this context, it will be expedient to understand the literature available on the behavioural biases in investment decision-making.

4.1 Year of publication

Figure 2 shows the distribution of articles published from 1980 to 2013. It can be seen that there has been an increasing interest in this topic mainly in the past decade. During 1980 to 2003, very few studies were conducted on these behavioural biases. The increasing number of studies conducted elucidate that behavioural approach has been considered in the investors' financial decision-making.

4.2 Journal of publication

The literature was analysed with respect to the journal of publication to identify important journals in this area. Results revealed that the data set of 117 articles is spread over 52 journals. Seventeen journals had two or more published articles, and these are shown in Figure 3. The remaining journals had only one published article each. The 17 journals comprise around 67 per cent of the journals covered in this study. Figure 3 shows that the top two journals in terms of the number of research articles published are *The Journal of Finance* and *The Journal of Behavioural Finance*, with 18 and 12 articles, respectively. It also shows that these journals had articles related to all the biases considered in this study.

			No. of articles				No. of selected articles				
Database	Date of search	Time frame	O[a]	D.E.[b]	He[c]	Ho[d]	O[a]	D.E.[b]	He[c]	Ho[d]	Total
EBSCO	October 2013	1980–2013	120	427	72	119	19	26	27	23	95
Emerald	October 2013	1980–2013	71	15	31	23	3	1	2	2	8
Others	October 2013	1980–2013	–	–	–	–	2	4	4	4	14
Total							24	31	33	29	117

Notes: [a]Overconfidence bias; [b]disposition effect; [c]herding bias; [d]home bias

Table I.
Database search protocol

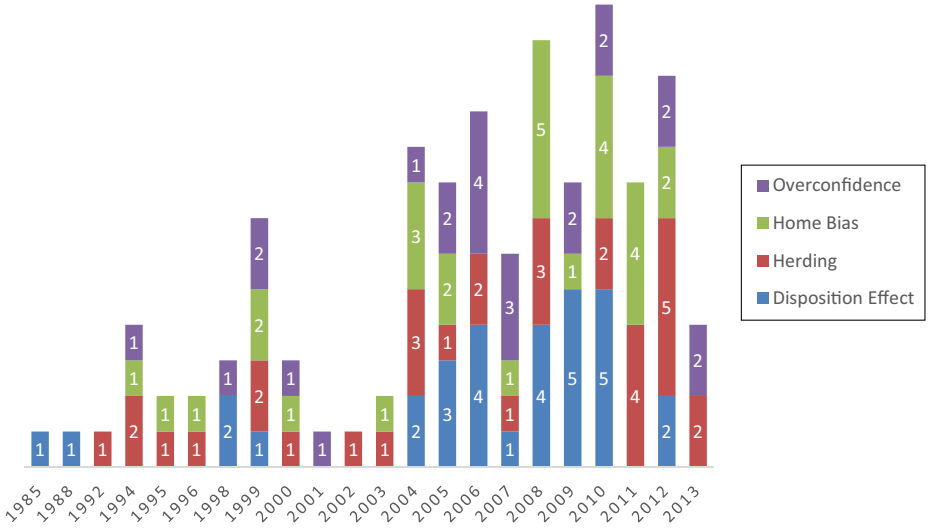

Figure 2.
Article distribution from 1980 to 2013

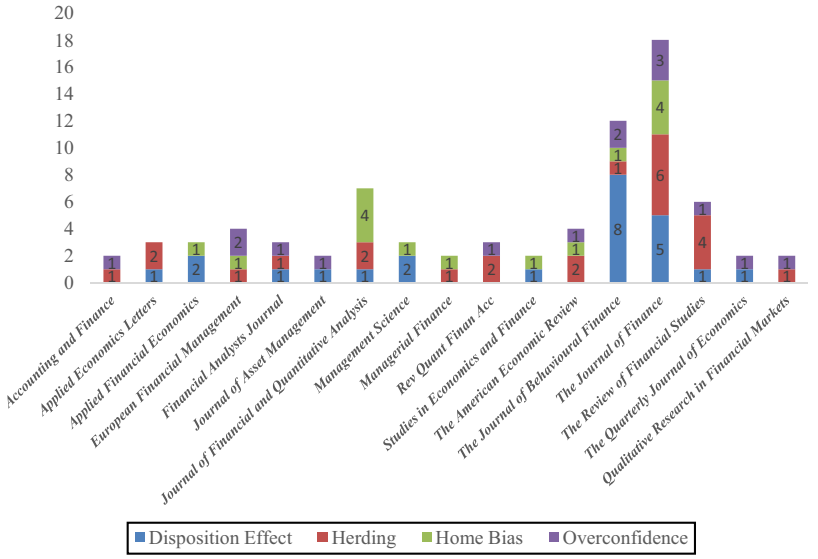

Figure 3.
Article distribution by journal of publication

4.3 Country of sample data collection

Table II gives the frequency of countries from where the sample data have been obtained in the articles selected for the review. The classification showed that the majority of studies involved totally 23 single countries, whereas a few studies were conducted in multiple countries. From Table II, it is clear that the majority of studies have been conducted in developed countries, especially in the USA and Australia, while there is a dearth of studies in developing countries such as India, Pakistan and China. Table II also

Country	Overconfidence	Disposition effect	Herding	Home bias	Grand total	%
Australia	1			2	3	2.56
Austria		1			1	0.85
Brazil		1			1	0.85
Canada	1				1	0.85
China		1			1	0.85
Finland	3	2			5	4.27
Germany		1		1	2	1.71
India	1				1	0.85
Indonesia	1		1		2	1.71
Iran			1		1	0.85
Israel		1	1		2	1.71
Italy		1	1		2	1.71
Japan	1				1	0.85
Korea		1	1		2	1.71
Malaysia	1		2		3	2.56
New Zealand	1				1	0.85
Pakistan	1				1	0.85
Portuguese		1			1	0.85
Spain			3		3	2.56
Sweden		2		1	3	2.56
Taiwan	2	2	4		8	6.84
UK	1		2	1	4	3.42
USA	9	13	15	8	45	38.46
Multiple countries		1		14	15	12.82
Not mentioned	1	3	2	2	8	6.84
Grand total	24	31	33	29	117	100.00

Table II. Frequency distribution based on country of sample data collection

shows that the majority of studies conducted in multiple countries are related to home bias in investment decision-making.

4.4 Type of study and data

Analysis of the literature on the basis of the type of research study and data helps to identify the focus of past research. Figure 4 shows the distribution of the type of study along with the type of data collected in the selected articles. We have classified the research studies into five categories: empirical, descriptive, analytical, conceptual and others. In empirical research, we have included studies based on observations or experiments, while in conceptual research, we have included articles related to the development of some model or theory. In descriptive research, we have included studies that are related to surveys or fact findings, and analytical research consists of studies that have analysed previously available model or facts. We have placed a few studies in the category named "others", which includes review papers. Figure 4 shows that the majority of studies, that is 99, are empirical in nature, and that most of them are based on secondary data. Our analysis shows that secondary data have been generally collected through discount brokerage house firms or from different databases and are longitudinal in nature. There are very few research studies that are based on primary data or that are qualitative in nature.

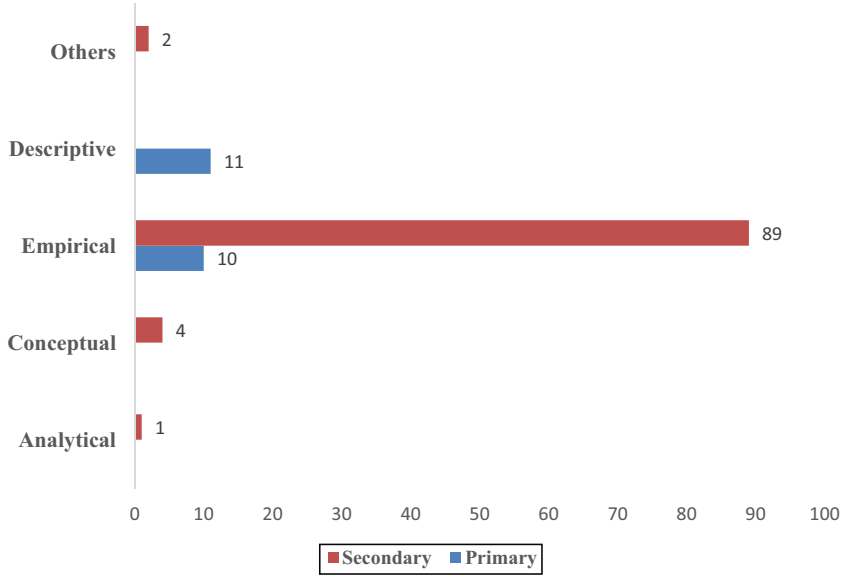

Figure 4.
Article distribution by type of study and data

Further, Table III shows that there is infrequent use of primary data (experimental and survey)-based studies in this research area. Only 21 out of the total 117 studies are based on primary data, whereas the others are based on secondary data. An increase in the trend of primary data-based studies has been seen only in the past decade. Thus, there is more scope to judge the behavioural aspect of investors in financial decision-making based on primary data.

4.5 Statistical techniques/methods

In this section, we have analysed the selected articles with respect to the statistical techniques used in the respective studies. Such an analysis provides information about the most popular and widely used techniques in this area of research. Table IV gives the frequency of statistical techniques used in the selected research articles, and it shows that regression analysis is the most popular and frequently used technique. Table IV shows that 77 of the 117 articles used regression analysis as a statistical tool. Various types of regressions, such as cross-sectional, logit, ordinary least squares, linear regression, panel regression and lead lag regression, were used. A few studies applied multiple approaches including a combination of techniques such as analysis of variance, chi-square, *t*-statistics and structural equation modelling. Some articles were included in the "others" category, which mostly consisted of conceptual and analytical papers.

4.6 Citation analysis

In this section, we analysed the selected articles with respect to their citation in other publications to identify the most relevant and important papers available on behavioural biases. We used Google Scholar to find the citations. We found that 108 of the 117 selected articles were cited elsewhere. This shows that most of the selected research articles are relevant and important in our research area. We did not find any

Year	Primary	Secondary	Total
1985		1	1
1988		1	1
1992		1	1
1994		4	4
1995		2	2
1996		2	2
1998	1	2	3
1999		7	7
2000		3	3
2001		1	1
2002		1	1
2003		2	2
2004		9	9
2005	3	5	8
2006	3	7	10
2007		6	6
2008	1	11	12
2009	2	6	8
2010	4	9	13
2011	1	7	8
2012	3	8	11
2013	3	1	4
Grand Total	21	96	117

Table III.
Articles by their year of study and type of data

Techniques/Methods	No. of articles	%
ANOVA	1	0.85
Correlation analysis	5	4.27
Log linear analysis	1	0.85
Mann–Whitney *U*-test	1	0.85
Regression analysis	77	65.81
Simulation	2	1.71
Structural equation modelling	2	1.71
t-statistics	10	8.55
Multiple techniques	7	5.98
Others	11	9.40
Grand total	117	100.00

Table IV.
Frequency of the statistical techniques used in the articles

citations for nine articles that were published recently (during 2012 or 2013). Table V presents the articles on different behavioural biases with respect to their citations. To avoid having a long list of articles, we have shown only those articles that have more than 100 citations on different biases. Totally, 42 such articles were found. Daniel *et al.* (1998) is the most cited (3507) article on overconfidence bias, followed by Barber and Odean (2001), Barber and Odean (2000) and Odean (1999). Odean (1998), Grinblatt *et al.* (1995) and Coval and Moskowitz (1999) are the most cited articles on disposition effect, home bias and herding bias, respectively.

Sr no.	Article	No. of citations
Overconfidence bias		
1	Daniel *et al.* (1998)	3,507
2	Barber and Odean (2001)	2,037
3	Barber and Odean (2000)	1,709
4	Odean (1999)	1,469
5	De Bondt and Thaler (1994)	597
6	Statman *et al.* (2006)	395
7	Barber and Odean (1999)	288
8	Grinblatt and Keloharju (2009)	211
9	Doukas and Petmezas (2007)	182
Disposition effect		
10	Odean (1998)	2,275
11	Shefrin and Statman (1985)	1,857
12	Barber and Odean (2008)	1,142
13	Weber and Camerer (1998)	489
14	Frazzini (2006)	337
15	Ferris *et al.* (1988)	219
16	Barberis and Xiong (2009)	217
17	Calvet *et al.* (2009)	155
18	Gomes (2005)	149
19	Dhar and Zhu (2006)	117
Herding bias		
20	Grinblatt *et al.* (1995)	1,488
21	Lakonishok *et al.* (1992)	1,362
22	Wermers (1999)	1,188
23	Nofsinger and Sias (1999)	917
24	Trueman (1994)	635
25	Sias (2004)	474
26	Hirshleifer *et al.* (1994)	473
27	Hirshleifer and Teoh (2003)	450
28	Clement and Tse (2005)	305
29	Dennis and Strickland (2002)	215
30	Avramov *et al.* (2006)	110
31	Lee *et al.* (2004)	105
Home bias		
32	Coval and Moskowitz (1999)	1,353
33	Lewis (1999)	1,122
34	Tesar and Werner (1995)	1,013
35	Ahearne *et al.* (2004)	614
36	Cooper and Kaplanis (1994)	566
37	Pastor (2000)	339
38	Bohn and Tesar (1996)	316
39	Van Nieuwerburgh and Veldkamp (2009)	293
40	Bradshaw *et al.* (2004)	264
41	Strong and Xu (2003)	171
42	Seasholes and Zhu (2010)	114

Table V. Articles listed according to their citations

4.7 Content analysis

Content analysis is defined as "a research technique for the objective, systematic, and quantitative description of manifest content of communications" (Berelson, 1952). Content analysis provides information about the empirical findings of previous research studies. In this section, we have systematically done content analysis on different behavioural biases, namely, overconfidence, disposition effect, herding bias and home bias, in investment decision-making.

4.7.1 Overconfidence. Table VI shows the empirical findings on overconfidence bias in investment decision-making. The findings are classified into two categories, i.e. demographic variables and trading behaviour, and individual's psychological aspect and trading patterns.

4.7.2 Disposition effect. Table VII shows the empirical evidence for disposition effect in investment decision-making. The findings are divided into three categories:

(1) effect of tax consideration;
(2) demographic variables; and
(3) the return on investment.

4.7.3 Herding bias. Table VIII shows the empirical findings of herding behaviour in investment decision-making. The empirical evidence is differentiated into four categories:

(1) institutional investors;
(2) analyst recommendations;
(3) individual investors; and
(4) herding in the financial market.

Table VI. Empirical findings on overconfidence bias in investment decision-making

Effect	Empirical findings
Demographic variables and trading behaviour	Barber and Odean (2001) found that men are more overconfident and get involved in excessive trading than women do. Further, Bhandari and Deaves (2006) empirically supported the findings of Barber and Odean (2001). Ekholm and Pasternack (2008) documented that large investors react in a more positive manner to good news and vice versa than do small investors. Moreover, past experience and age also significantly influence the trading pattern of investors. Zaidi *et al.* (2012) stated that investors' past experience influences their behaviour and reflects in overconfidence
Psychological aspect and investment pattern among individuals	Daniel *et al.* (1998) developed a theory by combining investors' confidence and self-attribution bias. It was observed that investors react more towards private information and thus become more confident. The findings of Barber and Odean (2000) reveal that the overconfident investor trades in excess that results in less returns. These findings are more empirically consistent with those of Odean (1999), Statman *et al.* (2006) and Grinblatt and Keloharju (2009)

Effect	Empirical findings
Tax consideration and disposition effect	Shefrin and Statman (1985) considered four elements, namely, mental accounting, regret aversion, self-control and tax consideration, while studying disposition effect. Moreover, empirically, it has been observed that disposition effect occurs in the financial market, and tax consideration alone cannot explain the patterns of realised gains and loss. Odean (1998) and Barber and Odean (1999) observed that investors are prone to disposition effect, and some investors are involved in tax-driven selling at the end of the financial year. However, the findings of Ferris *et al.* (1988) are inconsistent with tax loss selling
Demographic factors and disposition effect	Dhar and Zhu (2006) found that non-professional and low-income individuals are more prone to getting influenced by disposition effect. Moreover, the findings of Calvet *et al.* (2009) reveal that educated and wealthier individuals are less inclined to being influenced by disposition effect and can more efficiently rebalance their portfolio. Da Costa *et al.* (2008) studied the disposition effect and gender difference with a reference point. They documented that if the previous price is considered as the reference point, then females are less influenced by the disposition effect. Jordan and Diltz (2004) empirically supported the theory that individuals have a tendency to be influenced by the disposition effect
Investment returns and disposition effect	Goetzmann and Massa (2008) found that disposition effect is negatively correlated with the stock returns, trade volume and volatility. Moreover, Svedsater *et al.* (2009) stated that in the short run, past returns are positively correlated with disposition effect, whereas in the long run, past returns are negatively correlated with disposition effect. Leal *et al.* (2010) suggested that in a bullish market, investors are more inclined to being influenced by the disposition effect than they are in a bearish market

Table VII.
Empirical findings on disposition effect in investment decision-making

4.7.4 Home bias. Table IX shows the empirical findings on home bias in investment decision-making. The findings are divided into institutional investors and home bias, individual investors and the home bias puzzle and portfolio selection.

5. Findings and research gaps

In this section, we discuss the findings and identify research gaps on behavioural biases in investment decision-making. As discussed above, behavioural finance has flourished in the past three decades. We have made efforts to include all the relevant studies and identified the following issues that are relevant to our research area.

5.1 Limited research in developing countries (emerging markets)

As the area of behavioural finance is relatively new, most of the empirical research studies (Daniel *et al.*, 1998; Barber and Odean, 2001; Barber and Odean, 2000; Odean, 1999; Odean, 1998; Grinblatt *et al.*, 1995 and others) have been conducted in developed countries, especially in the USA. The reason for this could be that in developing countries, markets are emerging. Since the past decade, researchers

Effect	Empirical findings
Institutional investors and herding behaviour	Lakonishok *et al.* (1992) found that US pension fund managers are inclined to being less influenced by herd behaviour during the trade of large stocks. Grinblatt *et al.* (1995) examined the US mutual fund for momentum trading and herd behaviour and found that evidence is inconsistent for the herding behaviour in trading. Wermers (1999) revealed very less evidence of herding behaviour in US mutual funds in average stocks; however, in the trade of small stocks, a higher level of herding exists. In the USA, Nofsinger and Sias (1999) found a positive correlation between the changes in institutional ownership and returns. Moreover, they also suggested that institutional investors' herd affects stock prices more than that of individuals. Sias (2004) documented that the trading pattern of institutional investors at a specific period follows that of the earlier period. Dennis and Strickland (2002) found that in a highly volatile market, institutional investors respond more than individual investors do in the USA
Analyst recommendations and herding behaviour	Trueman (1994) found that analysts underestimate private information signals, and their forecasts are based on prior earning expectations. Hirshleifer *et al.* (1994) suggested a model for herding behaviour. They analysed trading behaviour and acquisition of information when private information becomes available to some investors before it becomes available to others. In a related study, Dasgupta *et al.* (2011, 2011b) showed through a model that because of reputational concern, fund managers exhibit herding behaviour in their trades. Salamouris and Muradoglu (2010) revealed a positive relationship between forecasting by analysts and herding behaviour. Clement and Tse (2005) divided analysts' earnings forecast into herding and bold forecasts and concluded that bold forecasts are more accurate than herding
Individual investors and herding behaviour	Lee *et al.* (2004) documented that individual investors are more prone to engaging in liquidity trades and herd behaviour, whereas institutional traders are more prone to being informed traders in the Taiwan stock exchange. Fernandez *et al.* (2011) found an interdependent relationship between availability of information, investors' behavioural biases and herding behaviour. Choi (2013) found that individual investors belonging to the same geographical area are more inclined to adopting herding behaviour than are investors across the country
Herding behaviour in the financial market	Olsen (1996) documented that herding behaviour in trading results in more unpredictable earnings. When herding occurs risk perception is underweighed that results in to low abnormal returns. Puckett and Yan (2008) analysed the impact of short-term herding on the stock prices. They found that results are more consistent with a selling herd rather than with a buying herd in the short term. Caparrelli *et al.* (2004) stated that during extreme market conditions, investors are more prone to exhibiting herding behaviour. Similarly, Andronikidi and Kallinterakis (2010) explained that the lower frequency of trading tends to overcome the impact of herding behaviour

Table VIII.
Empirical findings on herding bias in investment decision-making

Effect	Empirical findings
Institutional investors and home bias	Coval and Moskowitz (1999) documented that US investment managers tend to invest in small, highly levered and locally situated firms. Similarly, Strong and Xu (2003) reported that fund managers are more optimistic towards investing in familiar securities and inclined to home bias
Individual investors and the home bias puzzle	Tesar and Werner (1995) reported that due to transaction cost, investors are inclined to investing in local securities instead of investing in foreign securities that are realising higher returns. Ahearne *et al.* (2004) analysed the direct and indirect barriers to foreign investment among US investors. Similarly, Seasholes and Zhu (2010) found empirical evidence that individuals are more likely to hold local stocks in their portfolios. Moreover, they reported that there is information asymmetry among individuals. They found that information asymmetry is an indirect obstruction to foreign investment in the home bias puzzle. Karlsson and Norden (2007) analysed individuals' demographic and socioeconomic characteristics and found that investors are likely to invest in local securities. They found that hedge against inflation and overconfidence are the reasons behind home bias. Cooper and Kaplanis (1994) analysed the relationship between inflation hedging and home bias and found a negative relationship between returns and inflation. Further, they explained that investors are risk-averse and that they hedge the inflation with domestic equity and become more prone to home bias
Home bias and portfolio selection	Antoniou *et al.* (2010) found empirical evidence that investors do not realise specific benefits by investing in foreign securities. Investors can realise the same level of returns from their domestic asset portfolio. Giannetti and Koskinen (2010) analysed the effect of investors' protection on returns and portfolio allocation. They found that investors' protection positively affects the stock returns. Therefore, in countries where investors' protection is weak, private investors select more international securities in their portfolio

Table IX.
Empirical findings on home bias in investment decision-making

in developing countries are making efforts to work in this area (Da Costa *et al.*, 2008; Zaidi and Tauni, 2012; Sahi and Arora, 2012; Nga and Yien, 2013).

5.2 Dominance of secondary data-based empirical research

The majority of the articles reviewed are based on secondary data and are empirical in nature. A few studies (Weber and Camerer, 1998; Fogel and Berry, 2006; Wong *et al.*, 2006; Rubaltelli *et al.*, 2005) used primary data through experiments to analyse the disposition effect.

5.3 Limited studies on herding bias among individual investors

Limited research has been carried out on herding bias among individual investors (Lee *et al.*, 2004; Fernandez *et al.*, 2011; Choi, 2013), and the majority of studies are on institutional and analysts' forecast.

5.4 Focus on equity in home bias

The review shows that most of the research studies are based on a single asset, i.e. equity (Lewis, 1999; Cooper and Kaplanis, 1994; Bohn and Tesar, 1996).

5.5 Indecisive empirical findings on herding

The review shows that in herding bias, empirical findings are indecisive. This is because some studies have found limited evidence of herding behaviour in institutional investors (Lakonishok *et al.*, 1992; Grinblatt *et al.*, 1995; Wermers, 1999), while a few studies show herding behaviour in this group (Sias, 2004).

6. Avenues for future research

The aim of this paper was to determine the effect of behavioural biases on investors' investment decision-making and to address the question as to why investors' behaviour deviates from rationality. The analysis and discussion of studies have brought forward many issues for future research. These are discussed below.

First, future research studies can concentrate on emerging stock markets. It has also been observed that after globalisation, emerging economies have higher growth potential and investors (institutional and individuals) are more inclined to invest in the share market, which leaves a wide scope for future research. Further, along with the stock market, there should be focus on other markets such as the derivatives market. Second, attention should be given to primary data-based empirical research to analyse the behaviour of investors during investment decision-making. Third, besides equity, other cross-border classes of assets, such as bonds and multi-assets, can be included while analysing home bias. The rationale for such inclusion is that most of the research is focused on equity home bias in portfolio allocation. Fourth, in home bias, more studies should be directed towards herding in individuals' investment decision-making. Fifth, research can be performed by combining different types of investors such as individuals, institutional (mutual funds, hedge funds, pension funds, investment advisors, etc.) to find out the difference in their behaviour and the effect of behavioural biases in their financial decision-making.

Note

1. People assign values to the gains and losses rather than to the final outcomes.

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