Maze-Runners: Sentiment and Bank Deposit Growth: Evidence from the UK

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Abstract

This paper investigates the relationship between household, managerial and economic sentiments, and bank deposits. Using UK monthly data from January 2000 to February 2018 and a sample of consumer, industrial and economic confidence indicators provided by the European Commission, this paper provides novel evidence on how sentiment affects the deposit growth and interest rates in the UK. In addition, this paper finds robust evidence regarding the impact of managerial sentiment on bond rates, LIBOR rates, and corporate deposit growth, implying that managers' sentiments play a significant role in determining the level of business's savings. It is also reported that household sentiment plays a significant role in shaping the households deposit growth. Moreover, economic sentiment is shown to affect the deposit growth of both households and institutions.

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1. Introduction

There has been a long-running debate on the success of the efficient market hypothesis (EMH) in predicting the future movements in stock markets and asset prices.[1][2][3][4] According to classical finance theory, it is assumed that financial markets are efficient, and investors are rational. However, classical finance theory provides no significant explanation for the behavioural anomalies in predicting future returns or asset pricing. Rather, and importantly, sentiment analysis plays a crucial role in driving both managers and investors in making significant decisions on their savings and investments.[5] In definitional terms, the sentiment is considered as the overall attitude toward a particular economic aspect or market activity. Yet, although sentiment is determined based on fundamentals and technical indicators, it may drive investors to make irrational decisions. In the context of such decisions, business and household sentiment refer specifically to the feelings and emotions that affect managers and consumers in making decisions and predicting the markets.[6][7]

It is important to note that investor sentiment is identified using selective proxies, for which investor confidence is often low or high, which represents whether the investor is pessimistic or optimistic.[8] Similarly, when sentiments are high, an investor's willingness to invest increases.[9] Indeed, sentiment analysis is arguably important in general, and also for the finan-

1. Kenneth Fisher and Meir Statman, "Consumer confidence and stock returns," *Journal of Portfolio Management* 30, no. 1 (2003): 115–127, doi:10.2139/ssrn.317304.

2. Edward R. Lawrence, George McCabe, and Arun J. Prakash, "Answering Financial Anomalies: Sentiment-Based Stock Pricing," *Journal of Behavioral Finance* 8, no. 3 (2007): 161–171, ISSN: 1542-7560, doi:10.1080/15427560701547248.

3. Malcolm Baker and Jeffrey Wurgler, "Investor sentiment in the stock market," *Journal of economic perspectives* 21, no. 2 (2007): 129–152, doi:10.1257/jep.21.2.129.

4. Constantinos Antoniou, John A Doukas, and Avanidhar Subrahmanyam, "Investor Sentiment and Beta Pricing," *Working Paper*, no. 310 (2013), http://subra.x10host.com/sentcap10.pdf.

5. San Lin Chung, Chi Hsiou Hung, and Chung Ying Yeh, "When does investor sentiment predict stock returns?," *Journal of Empirical Finance* 19, no. 2 (2012): 217–240, ISSN: 09275398, doi:10.1016/j.jempfin.2012.01.002.

6. Mohamed Zouaoui, Genevieve Nouyrigat, and Francisca Beer, "How does investor sentiment affect stock market crises? {E}vidence from panel data," *Financial Review* 46, no. 4 (2011): 723–747, doi:10.1111/j.1540-6288.2011.00318.x.

7. Baker and Wurgler, "Investor sentiment in the stock market."

8. Ibid.

9. Abderrazak Dhaoui and Nesrine Bensalah, "Asset valuation impact of investor sentiment: A revised Fama-French five-factor model," *Journal of Asset Management* 18, no. 1 (2017): 16–28, ISSN: 1479179X, doi:10.1057/s41260-016-0027-2.

cial sectors and banks in particular. For example, a manager's fear of the financial crisis might affect the initial interest rate on loans and deposits. Also, household sentiment drives consumers to make decisions such as savings, investing in a secured asset, or investing in more risky assets. This, in turn, sends signals to the financial system, which impacts on bank liquidity and reserve levels. In addition, the analysis of stock returns is useful in evaluating the effects of investor sentiments on returns. Here, previous studies have established that investor sentiments associated with stock returns can significantly affect the long-term deposits available to the banking sector. Considering that high investor sentiments induce a desire for large investments, then hypothetically, the high sentiment is associated with high earnings. Given that investors, especially household investors, reduce or withdraw their bank deposits to make investments in the stock markets, it is essential to examine the impact of investor sentiment on bank deposits and lending levels.[10] For instance, the increasing sentiments of investors in stock markets could negatively affect bank deposits, as investors become unwilling to lock their money in bank accounts, and instead have the desire to use and invest their money in stock markets. Conversely, when sentiments are low, this implies that investors would lose the willingness to invest in stock markets and thus hold their money as deposits in bank accounts, thus increasing the level of bank deposits.[11]

Furthermore, the managerial sentiment is the unjustified belief of managers about future firm performance. The managerial sentiment is, therefore, a result of judgement and estimates by the managers about possible future realisation.[12] The significance of the impact of managerial sentiment on firm performance and value is based on the fact that managers have adverse selection ability, as they have information that investors and consumers do not have about the organisation or a particular aspect of product quality. This empowers managers and enables them to add significant value to their companies. To date, the UK financial system has been shaped by various factors, such as technological innovations and deregulation. Most of the developments that have evolved in the financial system have been aimed

10. Alain Frugier, "Returns, volatility and investor sentiment: Evidence from European stock markets," *Research in International Business and Finance* 38 (2016): 45–55, ISSN: 02755319, doi:10.1016/j.ribaf.2016.03.007.

11. David Mclean and Mengxin Zhao, "The business cycle, investor sentiment, and costly external finance," *Journal of Finance* 69, no. 3 (2014): 1377–1409, ISSN: 15406261, doi:10.1111/jofi.12047.

12. Luo Zuo, "The informational feedback effect of stock prices on management forecasts," *Journal of Accounting and Economics* 61, nos. 2-3 (2016): 391–413, ISSN: 01654101, doi:10.1016/j.jacceco.2016.03.001.

at capturing the opportunities associated with globalisation and other financial innovations. In this context, we argue that critical decisions in the banking industry can be driven by managerial or household sentiment.

Several studies[13][14][15] over the last decade have devoted extensive attention to the role of sentiment in predicting asset prices. However, literature to explain how deposits, loans, and saving levels are shaped by a manager's sentiment and household attitudes is rare. In this paper, the author not investigating the relationship between sentiment and stock returns, but atypically, the investigation is extended to examine the relationship between the sentiment indicators and the household saving levels associated with the deposit growth and interest rates. Consumer confidence indicator (CCI) which is provided by the European Commission's (EC) consumer survey is used as a proxy for household sentiment, and the business survey confidence indicator (BCI) as a proxy for managerial sentiment indicators. In particular, the Granger casualty test is employed to examine the relationship between sentiment and deposit growth as a proxy for bank liquidity over the period from 2000-2018 in the UK economy.

The study findings provide novel evidence on that managerial and household sentiments have an impact on bank deposits and interest rates. It is also reported that household sentiment causes changes in the households deposit growth, and the managerial sentiment is shown to cause changes to the growth of institutional deposits. Moreover, the economic sentiment indicator plays a significant role in shaping both households and business deposits. Interestingly, the results demonstrate a significant association between managerial sentiment, interest rates, and LIBOR and Gilts rates. The remainder of this paper is structured as follows. Section 3 provides a literature review of studies that have considered the impact of investor sentiment, in particular on bank deposits and lending behaviour, in order to support the formulation of our hypotheses. Section 4 provides details of the data, models, and methodology. Section 5 presents the descriptive statistics and the empirical findings, and Section 6 concludes the paper, stating the significance of the main findings and outlining some avenues for future research.

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13. Baker and Wurgler, "Investor sentiment in the stock market."

14. Ahmed Salhin, Mohamed Sherif, and Edward Jones, "Managerial sentiment, consumer confidence and sector returns," *International Review of Financial Analysis* 47 (2016): 24–38, ISSN: 10575219, doi:10.1016/j.irfa.2016.06.009.

15. David Aboody et al., "Overnight Returns and Firm-Specific Investor Sentiment," *Journal of Financial and Quantitative Analysis* 53, no. 2 (2018): 485–505, ISSN: 17566916, doi:10.1017/S0022109017000989.

2. Theoretical Background

It is well documented that behavioural finance and investor sentiment plays a key role in solving asset pricing anomalies; managers also have behavioural biases which possibly make them irrational.[16][17] Indeed, manager sentiment is found to have a significant impact on stock returns.[18] It is worth noting that managerial sentiment has either numerator or denominator effects on stock prices. The former effect is associated with the expected future cash flow of stocks, while the latter is the effect of the discount rate on stock pricing. Herein, this paper aims to examine the relationship between the sentiment (household, managerial and economic) and the bank deposits in the UK market. In an attempt to achieve this aim, the literature review covers the following streams: (i) the UK banking industry and its role in the UK stock market; (ii) household sentiment and bank deposits; (iii) managerial sentiment and bank deposit; and (iv) economic conditions and bank deposit.

The core function of the financial system is to facilitate the financial resources and mediate between savers and borrowers, providing business insurance coverage against both risks and payment services.[19] The financial system, therefore, plays a significant role in enhancing the economy by supporting capital allocation, production and trade activities. According to,[20] given that economic functionality is dependent upon several regulatory developments, a key dominant feature is the financial system. Historically, the UK financial system was established with the establishment of the Bank of England in 1694. The bank of England then had the monopoly of supplying currency until the enactment of the 1844 Bank Act, which separated banking operations from note issuance. Then, following subsequent growth in commercial and industrialisation activities, other private banks started to operate in the financial industry.

16. Baker and Wurgler, "Investor sentiment in the stock market."

17. Nerissa Brown et al., "Investor sentiment and proforma earnings disclosures," *Journal of Accounting Research* 50, no. 1 (2012): 1–40, doi:`10.1111/j.1475-679X.2011.00427.x`.

18. Salhin, Sherif, and Jones, "Managerial sentiment, consumer confidence and sector returns."

19. Sergey Vladimirovitch Anureev, "Reconfiguration of financial system elements to restore economic growth: The system simplicity and transformation towards state-based and corporate-based types," *European Research Studies Journal* 20, no. 2 (2017): 281–307, ISSN: 11082976.

20. Michael Collins, *Money and banking in the UK: A history*, vol. 6 (Routledge, 2012), 1–640, ISBN: 9781136301612, doi:`10.4324/9780203116944`.

In this line,[21] identifies banks as playing the role of intermediaries between the ultimate number of creditors and borrowers, where credit comes to the borrowers from the government and corporate bonds, or the household deposits. In addition to the development of banking and the financial systems, researchers have established the role of the financial system on the stock market. In a key study by[22] it was claimed that there is a strong relationship between the indicators of the stock market and the intermediary developments in the banking sector. Their results demonstrated that banking financial intermediary developments are highly correlated with developments in the stock market. According to,[23] it was established that the development in the stock market and the banking sector are positively related to the rates of economic growth, both in the present and in the future. Similarly,[24] report a balance between the interest of the investors and the managers in the efficient stock markets, leading to the promotion of resource allocation and economic growth. In contrast, however,[25] find that price volatility is a critical factor that influences the stock markets. This implies that regular changes in stock pricing negatively affect the capacity of stock to stimulate the allocation of investments on stocks. In addition, price volatility was found to drive stock capitalisation, which in turn affects the development of the stock market and the volume of bank business.

In a related study,[26] argues that investments are vital in economic growth, even in the most developed markets. However, he indicated that development economists consider stock markets as insignificant regarding their impact on stock prices, given the fact that markets have the capacity to destabilise economies. Overall,[27] found that while there are arguments

21. Hyun Song Shin, "Global banking glut and loan risk premium," *IMF Economic Review* 60, no. 2 (2012): 155–192, ISSN: 20414161, doi:10.1057/imfer.2012.6.

22. Asli Demirgüç-Kunt and Ross Levine, "Stock market development and financial intermediaries: stylized facts," *The World Bank Economic Review* 10, no. 2 (1996): 291–321.

23. Ross Levine and Sara Zervos, "Stock market development and long-run growth," *World Bank Economic Review* 10, no. 2 (1996): 323–339, ISSN: 02586770, doi:10.1093/wber/10.2.323.

24. Michael C. Jensen and Kevin J. Murphy, "Performance Pay and Top-Management Incentives," *Journal of Political Economy* 98, no. 2 (1990): 225–264, ISSN: 0022-3808, doi:10.1086/261677.

25. Philip Arestis, Panicos O. Demetriades, and Kul B. Luintel, "Financial Development and Economic Growth: The Role of Stock Markets," *Journal of Money, Credit and Banking* 33, no. 1 (2001): 16, ISSN: 00222879, doi:10.2307/2673870.

26. Ross Levine, "Bank-based or market-based financial systems: which is better?," *Journal of Financial Intermediation* 11, no. 4 (2002): 398–428.

27. Ibid.

regarding the interaction between the stock markets and the banks, the argument should not be whether a financial system is bank-based or market-based, rather it should relate to the establishment of an environment where the banks provide key financial services to the markets, and subsequently boost economic growth.

In addition, the economic growth is associated with investment activities and influenced by the flow of surplus funds from those with a surplus to those with shortages via a bank-based financial system.[28] Therefore, banks are seen to have the role of providing funds to markets and investors when these are needed, through the bank-based financial system. In other words, banks should ensure that a balanced growth process is maintained. Furthermore, information asymmetries in the market influence the decisions of investors and therefore, the equity market. Since banks can monitor the performance of investment projects, banks can overcome the problem of information asymmetries, which bridges the gap between lenders and investors. Eventually,[29] investigate the role of the financial sector in the UK market. It is found that a causality relationship runs from stock market volatility to the GDP growth, implying that the domestic output of the UK economy is affected by the development of the banking sector.

Another stream of studies sheds light on the impact of household sentiment on bank deposit growth and lending behaviour. For example,[30] investigate the relationship between household sentiment and bank deposits and find that household sentiment has a positive impact on bank deposits in the long run, while in the short-run household sentiment either has a positive impact or no influence at all. It is also that investors are seeking safe investments and are concerned with whether the market is in mid-crisis or is stable. Such households hold their savings in the bank, and by withholding them in this way, increase the bank deposits. Indeed, the household sentiment is expected to be high when the financial market activities are high due to the overly optimistic behaviour of investors.[31] In addition,[32] report that

28. Willem Duisenberg, "The role of financial markets for economic growth," *BIS Review No* 48 (2001): 2–7.

29. Sami Fethi and Salih Katircioglu, "The role of the financial sector in the UK economy: Evidence from a seasonal cointegration analysis," *Economic Research-Ekonomska Istrazivanja* 28, no. 1 (2015): 717–737, ISSN: 1331677X, doi:10.1080/1331677X.2015.1084476.

30. F Mat Nor et al., "Investor sentiment and bank deposits in Malaysia: Do bank managers time the market while pricing deposits," *Journal of Finance and Financial Services* 1, no. 1 (2014): 71–84, doi:10.5709/ce.1897-9254.125.

31. Christina Synn, *Aggregate Disclosure and Sentiment* (University of Michigan (BA PhD. Dissertation). Available at: https://pdfs.semanticscholar.org/4d6d, 2017).

32. Mat Nor et al., "Investor sentiment and bank deposits in Malaysia: Do bank man-

the sentiment index has a positive influence on the flow of bank deposits in the long run and a partially positive significance in short-run. Herein,[33] claim that households' geographical locations drive their sentiments toward investment preferences, which generates Home Bias attitude or puzzle.[34] It is worth noting that Home Bias exists when investors are more optimistic toward the performance of domestic assets. In this line,[35] find that asset prices vary in accordance with the level of foreign aversion in the country. This implies that the high foreign aversion or high Home Bias drives investors to an increasing and growing level of demand on domestic equities, which in turn has an inverse impact on the expected return.

Moreover,[36] uses a news sentiment index and find a negative relationship between news and the changes in Credit Default Swaps (CDS) spreads, however, LIBOR-OIS showed no reaction toward the news sentiment supporting the argument that, where the financial market is dependent on bank activities, then high household sentiment will result in increased financial market activities and stocks. In this line,[37] investigate the impact of the changes and volatility in investor's sentiment on the lending behaviour of commercial banks. They find that before any changes in the economic activities, there are leading indicators that provide information about the future direction of the state of the economy. Furthermore, they claim that different economic agents rely on a set of imperfect information that is very much influenced by their strategies and their goals, and that these aggregately affect the economy. In another study,[38] argues that when household sentiment concerning the growth prospects of a stock declines, it will depress or lift markets. The nature of the change may be caused by a number of factors, including the reassessment of an emerging market, deflation, or unfavourable monetary policies. These factors also increase the market risk on the value of loans and consequently may lead to a decline in bank lending.

agers time the market while pricing deposits."

33. Bruno Solnik and Luo Zuo, "Relative optimism and the home bias puzzle," *Review of Finance* 21, no. 5 (2017): 2045–2074, doi:10.1093/rof/rfw021.

34. Gavriilidis Constantinos, ""Home Bias Puzzle". Is It a Puzzle or Not?," *Economic analysis* 43, nos. 3-4 (2010): 7–14, doi:sr-lat/2010/2010-3-4.

35. Bruno Solnik and Luo Zuo, "A global equilibrium asset pricing model with home preference," *Management Science* 58, no. 2 (2012): 273–292, doi:10.1287/mnsc.1110.1361.

36. Lee A. Smales, "News sentiment and bank credit risk," *Journal of Empirical Finance* 38 (2016): 37–61, ISSN: 09275398, doi:10.1016/j.jempfin.2016.05.002.

37. Mustafa Caglayan and Bing Xu, "Sentiment volatility and bank lending behavior," *International Review of Financial Analysis* 45 (2016): 107–120, ISSN: 10575219, doi:10.1016/j.irfa.2016.03.009.

38. Benton Gup, *International banking crises: large-scale failures, massive government interventions* (Greenwood Publishing Group, London, 1999).

Conversely,[39] find a negative influence of stock returns and bank deposits implying that through household asset allocation, a spill-over effect from the stock market is displayed in deposits, lending and funding. It is worth noting that households withdraw their bank deposits to invest in stock markets when the returns in these markets are high. Accordingly, banks reduce deposit lending in stock market booms due to the fact that the deposit funding is adversely affected at this time and bank deposits are the cheapest, thus explaining why households first drain bank deposits.

Similarly,[40] find that sentiments affect large firms less lightly compared to small firms. When the household sentiment is high, it has less effect on small firms and more effect on large firms. Similarly,[41] investigate the influence of both the bullish and bearish sentiments and find that household sentiment is a contrary indicator. Here,[42] claim that, when sentiments are low, firms profitability is declined. This outcome validates earlier works that show that sentiments assist in elaborating on the series of returns.

In contrast,[43] argue that the value of an organisation with a long history of gains, visible assets, and static dividends is less subject to investor criticism. This explains the assumption that investors demand stocks that have salient features that intertwine with their sentiments. Therefore, it is indicated that household sentiment affects the choice of investment because of the profit share. Investors thus seek potential returns with regard to stock choice. This implies that household sentiment has a strong indirect relationship with bank deposits. The reason for this is that it is expected that investors will not hold their savings as bank deposits but withdraw them once their sentiments drive their need for investment in a newly anticipated well-paying stock.

In this vein,[44] investigate the impact of sentiment proxies on deposit

39. Leming Lin, "Bank Deposits and the Stock Market," *SSRN Electronic Journal* a working (2017), doi:10.2139/ssrn.2986251.

40. Baker and Wurgler, "Investor sentiment in the stock market."

41. Chong Oh and Olivia R.Liu Sheng, "Investigating predictive power of stock micro blog sentiment in forecasting future stock price directional movement," in *International Conference on Information Systems 2011, ICIS 2011*, vol. 4 (Citeseer, Shanghai, China., 2011), 2860–2877, ISBN: 9781618394729.

42. Jerry Coakley, Heba Gazzaz, and Hardy Thomas, "The impact of mispricing and growth on UK M&As†," *European Journal of Finance* 23, no. 13 (2017): 1219–1237, ISSN: 14664364, doi:10.1080/1351847X.2016.1206585.

43. Doojin Ryu, Hyeyoen Kim, and Heejin Yang, "Investor sentiment, trading behavior and stock returns," *Applied Economics Letters* 24, no. 12 (2017): 826–830, ISSN: 14664291, doi:10.1080/13504851.2016.1231890.

44. Paul De Grauwe, Yuemei Ji, and Corrado Macchiarelli, "Fundamentals versus market sentiments in the euro bond markets: implications for quantitative easing ({QE})," *SRC*

levels across the bull and bear market conditions. It is reported that investors are more likely to invest if they are well-informed with the stock profitability position. This implies that their deposits are directly affected by investors decisions that have been driven by sentiment. Furthermore,[45] investigate the factors that an investor takes into account other than the stock's profit before investing. These factors include the nature of the market and existing data about the past performance of that stock. Indeed, these factors have an indirect impact on the propensity of the investors to retain or withdraw their savings from the bank.[46] further look at the impact of investor's sentiment that has been build based on anxiety regarding the performance of the market or stock and find that the household sentiment only affects the bank deposits in the short term but not on the long-term. The reason behind this is that in the long run, the actual market movement is unveiled, which in most cases is found to have lagged behind due to investors' anxious sentiment.

Eventually, equipped with the mixed results on the impact of household sentiment on the deposit levels in previous literature, the first hypothesis is proposed as follows:

H1.Household sentiment doesn't cause the household deposit growth

Another strand of research has examined the relationship between managerial sentiment and bank performance. In this context,[47] examines the relationship between effective management and profitability and finds that inefficient management practices and low asset quality lowers the growth of deposits. High liquidity was also found to lower deposit growth due to the association of high liquidity with poor cash management. Elsewhere,[48] find that managerial sentiment can be employed to predict stock returns. It is also found that consumer confidence and sentiment have only an insignifi-

cant impact on stock returns and as such would not be used to predict the bank deposit funding or lending. Similarly,[49] find a negative relationship between managerial sentiment and provisions for loan loss, implying that managers will fluctuate the provisions of the loan loss depending on the amount of loan likely to be impaired. They also find that when the loan amount decreases, the loss provision likewise decreases. Moreover,[50] report that the incentives for managers who are seeking a boost to stock prices in the short term inflate the accruals in periods when household sentiment is high. Here,[51] indicate that managers identify stock mispricing that has resulted from the investor's sentiments and use this information to manage earnings so that the stock prices are increased temporarily. Subsequently, managers may be induced by high household sentiment to change earnings so that they reflect the achievement of an optimistic forecast. In addition,[52] find that managerial sentiment has a negative influence on future estimated aggregate market returns on stocks. Also, in cross-sectional stock returns, the managerial sentiment is a negative predictor of future aggregate earnings.

Eventually,[53] report that in qualitative disclosures, managers tend to be more optimistic under the significant household sentiment and that in periods of high sentiment, managers are more likely to report proforma earnings. Equipped with these mixed findings on the role of managerial sentiment in shaping the deposit growth; the second hypothesis is proposed as follows:

H2. Managerial sentiment doesn't cause the institutional deposit growth

Banks play a key role in any economy as they simultaneously provide a guaranteed source of fixed income investment for investors and different

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49. Paul Hribar et al., "Does managerial sentiment affect accrual estimates? {E}vidence from the banking industry," *Journal of Accounting and Economics* 63, no. 1 (2017): 26–50, doi:10.1016/j.jacceco.2016.10.001.

50. Ana Simpson, "Does investor sentiment affect earnings management?," *Journal of Business Finance and Accounting* 40, nos. 7-8 (2013): 869–900, ISSN: 0306686X, doi:10.1111/jbfa.12038.

51. Ashiq Ali and Umit G. Gurun, "Investor sentiment, accruals anomaly, and accruals management," *Journal of Accounting, Auditing and Finance* 24, no. 3 (2009): 415–431, ISSN: 0148558X, doi:10.1177/0148558X0902400305.

52. Fuwei Jiang et al., "Manager sentiment and stock returns," *Accounting Review* 90, no. 6 (2015): 2267–2303, doi:10.1016/j.jfineco.2018.10.001.

53. Khrystyna Bochkay and Valentin Dimitrov, "Qualitative Management Disclosures and Market Sentiment," *SSRN Electronic Journal* 21, no. 2 (2014): 140–152, doi:10.2139/ssrn.2538812.

savings options for depositors. Economists argue that central banks can improve macroeconomic performance by responding directly to the movement of asset prices.[54] Accordingly, stock markets have a role in determining the level of macroeconomic stability, indicating the possibility to stabilise the economy and to stop financial concern about the reaction associated with the stock market movements. Herein,[55] claim that the central bank can respond to asset price movements, either re-actively or pro-actively through the use of particular monetary policies.

With regard to the late 1990s' wealth effect on the US economy,[56] and[57] find that the central bank reacted to stock market movement. Both studies, however, indicate that the wealth effect increasingly impacted on expenditure and also boosted personal consumption. Subsequently, stock prices increased, leading to a boom in business investment with a reduction in the cost of capital. Government expenditure increased accordingly, leading to a significant cut in taxes, while in the long run, the demand growth outstripped the increases in supply leading to inflationary pressure. For the central bank's reactions to the economy;[58] report that by raising the nominal interest rate in the short term, it affects the stock price index by raising it above the value reflected in the economic fundamentals through creating a bubble shock. In contrast,[59] find that in circumstances where other factors such as technological innovation influence output, it is challenging for the central bank to determine whether a rise in stock prices is a result of a fundamental shock or a bubble shock. Similarly,[60] indicate that the reaction by the central bank to lower or raise the interest rate influences the movement of stock markets and instead becomes the main driver of market volatility. They also find an increase in the interest rate has no negative impact on bank performance in the emerging markets.

54. Ben Bernanke and Mark Gertler, "Should central banks respond to movements in asset prices?," *American Economic Review* 91, no. 2 (2001): 253–257, doi:10.1257/aer.91.2.253.

55. Christos Ioannidis and Alexandros Kontonikas, "Monetary policy and the stock market: Some international evidence," *A working paper. Available at: https://www.gla.ac.uk/media/media_219105_en.pdf*, 2006,

56. Bernanke and Gertler, "Should central banks respond to movements in asset prices?"

57. S. G Cecchetti, R. S Chu, and C. Steindel, "The unreliability of inflation indicators," *Federal Reserve Bank of New York Current Issues in Economics and Finance* 6, no. 4 (2000): 1–6.

58. Ibid.

59. Bernanke and Gertler, "Should central banks respond to movements in asset prices?"

60. Roberto Rigobon and Brian Sack, "Measuring the reaction of monetary policy to the stock market," *Quarterly Journal of Economics* 118, no. 2 (2003): 639–669, ISSN: 00335533, doi:10.1162/003355303321675473.

Following the 1987 market crash, the UK central bank reacted by cutting interest rates to counteract an expected recession. Instead of a recession, an economic boom was experienced, followed by an economic growth stimulated by low-interest rates. Also, in the period 2000-2004, a fall in share prices resulted in economic growth in the UK, while the 2008/2009 period witnessed a fall in share prices due to an economic downturn. In addition,[61] find inter-dependency among some stock markets during the financial crisis claiming a reinforcement in the interdependence of the major global stock markets, indicating interdependence between the reactions of central banks to stock market movement globally.

In light of evidence lack on the impact of the economic conditions on the banking industry, this paper attempts to investigate the impact of the economic sentiment on deposit growth and interest rates. The third hypothesis is proposed as follows:

H3. Economic sentiment doesn't cause the institutional deposit growth

Equipped with the above-mentioned literature; it can be shown that most studies have identified a number of behavioural anomalies influencing stock return and share prices. However, several factors that could influence the saving behaviour represented in bank deposits are yet to be investigated, such as household and managerial sentiment. This is the research gap our paper attempts to address and to make genuine contributions to the fill it by investigating the impact of three levels of sentiment on the deposit growth of firms and households.

3. Data, Models, and Methodology

3.1. *Data*

The sample adopted in this study covers the period from January 2000 to February 2018 for the UK market. Due to data availability for the sentiment proxies provided by the European Commission and the deposit levels, the author concludes the longest and the most recent and time series. Sentiment indicators are determined on three levels: firstly, the household sen-

61. Yonghong Jiang, Mengmeng Yu, and Shabir Mohsin Hashmi, "The financial crisis and co-movement of global stock markets-a case of six major economies," *Sustainability (Switzerland)* 9, no. 2 (2017): 260–278, ISSN: 20711050, doi:10.3390/su9020260.

timent; secondly managerial sentiment; thirdly, economic sentiment. Consumer Confidence Indicators (CCI) is employed as a proxy for household sentiment; Business Confidence Indicators (BCI) is employed as a proxy to represent managerial sentiment; the total market sentiment is the economic sentiment indicator (ESI) calculated as the weighted average of the market sectors' indicators. The data sources and description are provided in Table 1.

INSERT Table 1 here

The Consumer Confidence Indicator (CCI), the Business Confidence Indicator (BCI) and the Economic Sentiment Indicator (ESI) are obtained from the European Commission (EC). The EC publishes business and consumer surveys on a monthly basis that, (i) reflect the households and managers opinions on the economic environment their financial situations, consumer prices, unemployment, savings and savings intentions, and; (ii) reflect their purchases, their capacity to save, and their predictions for the next period, which is usually 12 months. These surveys are administered by national institutions such as central banks, statistical offices, ministries, and public and private companies in 27 European countries.[62] The surveys also are conducted at the beginning of each month, usually during the first ten days. These surveys describe consumer and manager feelings and expectations about overall economic conditions and not only focused on the stock market. Therefore, they are more likely to explain when they would prefer to save or to invest.

Likert scale questions are constructed for the surveys with responses of three, five, or six choices on an ordinal scale such as ("got a lot better", "got a little better", "stayed the same", "got a little worse", "got a lot worse", "don't know"), ("improved", "remained unchanged", "deteriorated") or ("increased sharply", "increased slightly", "remained the same", "fell slightly", "fell sharply", "don't know"). The surveys are then harmonised and seasonally adjusted to provide economic, business, and consumer sentiment indicators that are compared to other countries or are used in statistical analysis (more details are provided in Appendix 1 and 2). The European Commission has divided the market into five main sectors: construction, services,

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62. Salhin, Sherif, and Jones, "Managerial sentiment, consumer confidence and sector returns."

retail, trade, and industrial, and it has developed a sectorial confidence indicator to represent sentiment toward each separate industry. The Economic Sentiment Indicator (ESI) consists of five sectorial indicators with different weights as follows; industrial confidence indicator (40%); construction confidence indicator (5%); services confidence indicator (30%); consumer confidence indicator (20%); retail trade confidence indicator (5%). ESI is considered a composite indicator that represents the sentiment of the whole market, and assists in tracking overall economic activity. It has a mean value equal to 100, where the whole economy is identified as pessimistic if the ESI is less than 100, and optimistic if the value of ESI is more than 100. Panel A in Table 3 shows that, the ESI is the study sample has a men value 101 indicating that the UK market is slightly neutral across being pessimistic or optimistic, the ESI standard deviation is 10 (see Figure 1); the CCI reported a standard deviation of 8.47 and a mean of -7.32 implying that household sentiment over the study period is relatively low.

INSERT Figure 1 here

With regard to NIPOs, these indicate investor willingness to buy new shares, whereby the higher the number of NIPOs is the higher is the optimism of investors regarding the stock market return, and the lower the probability of saving will be. However, the lower the number of NIPOs is, the higher the probability of consumers to save will be. Data for NIPOs is obtained from the London Stock Exchange (LSE) with a mean value of 11.5 and a standard deviation of 10.4. Furthermore, the household sentiment indicator (HHSEN) is constructed as the percentage change of the CCI (HHSEt $=(CCI_t - CCI_{t-i})/ CCI_{t-i}$) from each month to the subsequent one. HHSEN, in our sample, has a mean value of 1.5% and standard deviation of 2.65 (see Figure 2).

INSERT Figure 2 here

The BCI is the business confidence indicator provided by the European Commission, and it has a mean value of - 6.14 and a standard deviation of 5.3 implying that the managers are slightly pessimistic regarding the UK economic conditions, however, managers are shown to be more optimistic

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than households (see Figure 3). The core managerial sentiment indicator CMI was constructed by[63] by selecting a combination of the questions that had significant prediction ability from the EC business survey. The CMI indicator is calculated as the weighted average of the market sectors, where 50% is assigned to the industrial sector, 37.5% to the Services sector, 12.5% is allocated equally to the construction and the retail trade sectors. As can be seen in Table 3, the study sample has a mean of 97.6 and standard deviation of 10 for the CMI sentiment variable.

INSERT Figure 3 here

3.2. Models

The analysis in this study is based on the employed regression model, which has the following functional form:

$$BKDPO_t = \left[\alpha + \beta_1 CCI_t + \beta_2 CMIt + \beta_3 ESI_t + \beta_4 \sum_{i=1}^{4} CONT + \epsilon_{i_t}\right] \quad (1)$$

where t is the time period (Jan, 2000 - Feb, 2018); CCI_t is the consumer sentiment indicator, CMI_t is the managerial sentiment indicator of the period $t - i$, ESI_t is the whole market sentiment and CONT refers to the control variables of the study. A Vector AutoRegression (VAR) model and a Granger-Causality test are employed to examine the causality relationship between household and managerial sentiment indicators and bank deposit growth on both household and institutional levels (**?**). For the causality from sentiment indicators to bank deposits, following **?**, **?** and **?**, this study adopts the same methodology to examine the causality between sentiment proxies and deposit growth. Granger-Causality tests were finally conducted using the following equations:

$$D_t = \left[\alpha_d + \sum_{n=1}^{ML} \beta_t D_{t-1} + \sum_{n=1}^{ML} \gamma_{i_t} S_{t-1} + \mu_{dt}\right] \quad (2)$$

63. Salhin, Sherif, and Jones, "Managerial sentiment, consumer confidence and sector returns."

$$S_t = \left[\alpha_s + \sum_{n=1}^{ML} \beta_t S_{t-1} + \sum_{n=1}^{ML} \gamma_{i_t} D_{t-1} + \mu_{st} \right] \tag{3}$$

where S_t denotes sentiment indicator at time t; D_t is the monthly deposit growth rate at time t; is a disturbance term, and ML is the maximal lag. Equation 2 indicates that sentiment indicators are expected to Granger-cause the changes in deposit growth and interest rate, and the null hypothesis is H0: Sentiment variables do not Granger-cause the deposits. However, Equation 3 is employed to test the relationship from deposits to sentiment and indicates that deposits are supposed to Granger-cause the sentiment indicators. Tables 5 & 6 provide the bidirectional Granger causality relationship between the sentiment indicators to the deposit growth.

3.3. *Preliminary Test*

First, the researcher confirms that the data series is stationary and does not have a unit-root. To overcome multicollinearity among the study variables, as shown in Table 2, the Augmented Dickey-Fuller (ADF) test is adopted to examine whether the study time series has unit-root or is non-stationary. The null hypothesis H0: the variable is not stationary or has a unit-root, and the alternative hypothesis is H1: the variable is stationary and does not have a unit-root. Notably, the ADF test reports that all the time series data is stationary except the household deposits, where the null hypothesis is accepted, and the data is adapted to be stationary by calculating the arithmetic algorithm for the deposit amounts each month and calculating for the change in deposits. The ADF test also shows that LIBOR and Gilts data are non-stationary and null hypothesis cannot be rejected; the first difference is adopted to overcome the unit-root series for each of LIBOR and Gilts variables.

INSERT Table 2 here

A VAR pre-estimation lag order test was employed to choose the appropriate lag order for the causality estimates. AIC, FBE, HQIC, and SBIC were used to determine the number of lags. One month lag is recommended by the whole measures to test the causality between sentiment indicators and deposit rates.

4. Descriptive Statistics and Empirical Findings

4.1. *Descriptive Statistics*

The household deposit growth variable (CHHHD) is the percentage change of the household deposit level from one month to another, and is calculated as ($CHHHDt = (Deposits_t$ - $Deposits_{t-i}$)/ $Deposits_{t-i}$). The data was obtained from the Bank of England database for the UK. Notably, the CHHHD has a positive value if the level of household savings increase and has a negative value if the deposit level has decreased. The CHHHD variable has a mean of + 3.2% and a standard deviation of 0.23, which refers to the stability of the variations of deposit changes around its mean. Importantly, this study uses the London Interbank Offered Rate (LIBOR) as a proxy for debt instruments such as corporate bonds and mortgages. Following,[64] LIBOR is employed as a benchmark for different currencies. In our study, we test if this rate is affected by one of the sentiment variables. As shown in Table 3, the LIBOR rate data was obtained from the Bank of England economic database and had a mean value of 3.3 and a standard deviation of 2.1. The Government Issued Long Term Stocks or Gilts rate is considered a low-risk investment with a fixed income, and are government bonds issued by the British Government. Table 3 also shows that the Gilts rate has a mean value of 3 and standard deviation of 2.2; Gilts rates are determined on a monthly basis and were gathered from the Bank of England interactive database. Panel B in Table 3 also reports the deposit growth on the institutional level, where Findep is the deposit growth of financial firms, and Nonfindep is the deposit growth of non-financial institutions. The statistics show that institutional deposit growth is slightly lower than households deposit growth by almost 1%. Figure 4 presents the deposit values on households, financial institution, and non-financial institutions levels.

INSERT Figure 4
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64. Rosa M. Abrantes-Metz, Sofia B. Villas-Boas, and George Judge, "Tracking the Libor rate," *Applied Economics Letters* 18, no. 10 (2011): 893–899, ISSN: 13504851, doi:10.1080/13504851.2010.515197.

With regard to the control variables, this study follows[65] and[66] who claim that bank deposit flow is connected to output growth represented in the GDP, the interest rate in banks, inflation and term spread. Therefore, a set of macroeconomic variables were used when the association between the sentiment variables and deposit growth and interest rates. These variables included the Gross Domestic Product (GDP), the change in the Inflation rate (INF), the change in the total index of production (chIPT), the three-month Treasury bill (T-bill), and an average of the monthly official interest rates (IR). All the above-mentioned macroeconomic variables were gathered on a monthly basis except for the GDP where polynomial interpolation was employed to transform the quarterly data to monthly data. All data is obtained from DataStream. Panel C in Table 3 reports that the average interest rate over the study period is 3% implying that the motivation to save money in banks is relatively low. This, indeed, encourage households and managers to find a profitable investment opportunity. It is also shown that the GDP growth is quietly steady (0.40%) with an increasing inflation rate that has a mean value of 2.2%, which is very close to the average interest rate. This implies that households are expected to seek an investment decision rather than saving their wealth at a low rate fixed-income to account for the risk of economic uncertainty. The index of production, as shown in Table 3, has a negative mean value implying that the country relies more on trading than on production, which might have an impact on driving the economic sentiment. Data for T-bills is also provided in panel c, the mean value of the T-bills is 3, and the standard deviation is 2.15. The correlation across the study variables is presented in Table 4. The multicollinearity between sentiment proxies is expected to be high as there are constituted based on surveys and have the same scoring system. However, they have never been together in the same Granger-causality models as each model measures the causality between deposit growth and sentiment proxies. Therefore, to avoid multicollinearity effect, there was no model that includes two or more sentiment measures; there was also no model includes two or more deposit growth proxies. In addition, the ADF test, as previously stated, was adopted to determine the need for using the differenced figures.

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65. Maik Schmeling, "Investor sentiment and stock returns: Some international evidence," *Journal of Empirical Finance* 16, no. 3 (2009): 394–408, ISSN: 09275398, doi:10.1016/j.jempfin.2009.01.002.

66. Mat Nor et al., "Investor sentiment and bank deposits in Malaysia: Do bank managers time the market while pricing deposits."

INSERT Tables 3 & 4

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4.2. Empirical Findings

The findings are structured to cover three streams. First, the impact of sentiment on deposit growth. Second, the impact of deposit growth on sentiment. Third, the impact of the control variables on deposit growth. The sentiment is grouped to include household sentiment, managerial sentiment and economic sentiment. The household sentiment is measured by two proxies which are CCI and CMI; managerial sentiment is measured by BCI; economic sentiment is measured by ESI and NNIPOs. Deposit growth is classified into deposit growth of institutional level and deposit growth of the individual level. The institutional level includes deposit growth of financial and non-financial firms; the individual level includes the deposit growth of households.

The study findings in Table 5 show that the household sentiment indicator Granger-causes (p= 0.001) deposit growth rate of households (HHdeposit) in the UK economy; therefore, *Hypothesis 1* is rejected where it is evident that household sentiment drives the deposit growth. In addition, it is also reported that managerial sentiment Granger-causes the deposit growth of financial and non-financial firms at p= 0.006 and p=0.015 respectively. This implies that managerial sentiment plays a key role in determining the deposit growth on the institutional level in the UK economy, which is in line with the findings of.[67] These findings, indeed, reject *Hypothesis 2* in that managerial sentiment doesn't Granger-cause institutional deposits. These results are supported by the findings of the CMI, which is shown to cause deposit growth in financial firms (0.025), LIBOR (0.000), and Gilts (0.031) which comes in line with the findings of.[68] However, the CMI is less likely to cause any changes to non-financial institutions deposit growth (0.352). Table 5 also reports that NIPOs Granges-causes the growth of all deposit level at higher significance levels (0.000)& (0.003); however, it fails to predict LIBOR and Gilts values. In addition, it is reported that the deposit growth of household (0.085), financial firms (0.093), and non-financial firms (0.031) is driven by the economic sentiment mode of the economy in the last month. These results, indeed, reject *Hypothesis 3* as it is evident that

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67. Mat Nor et al., "Investor sentiment and bank deposits in Malaysia: Do bank managers time the market while pricing deposits."

68. Salhin, Sherif, and Jones, "Managerial sentiment, consumer confidence and sector returns."

economic sentiment causes changes in the deposit growth on an individual and institutional level.

The relationship between sentiment indicators and deposit growth is shown to be a bidirectional relationship where sentiment can be shaped by changes in the deposit rates. Table 6 shows how to deposit growth to cause changes to household sentiment, managerial sentiment, and economic sentiment. It is shown that household sentiment can be driven by the deposit levels of households (0.017) and non-financial firms (0.069). This implies that behaviour anomalies can be built on economic observations and might be partially shaped by rational thinking. Additionally, the managerial sentiment is shown to be affected by changes in LIBOR (0.098), households deposits (0.074), financial (0.084) and non-financial firms (0.035) deposits. Indeed, this indicates that managers' awareness of the economic conditions directly affects their sentiment and modes. These results also support the information asymmetry theory in the assumption that managers have access to superior information that enables them to make more rational decisions than investors. Moreover, managers are more likely to understand and react to macroeconomic conditions.

INSERT Tables 5 & 6

For the control variables, Table 7 presents the causality tests from macroeconomic variables to sentiment indicators. The selection of the macroeconomic variables follows[69] and[70] where these variables were shown to have a significant impact on driving sentiment of managers and households. It is reported that NIPOs are affected by almost all of the macroeconomic variables except the total production index. Importantly, household sentiment (CCI) is caused by the inflation rate and changes in the GDP implying that households react to the macroeconomic situation and their mode is constructed by the changes in the key economic indicators. The managerial sentiment index (CMI) is shown to be affected by inflation (0.002), GDP (0.000), and TPI (0.000). This indicates that managers account for changes in macroeconomic conditions while building their thoughts toward investing and saving decisions. Here, managers are shown to be more rational than households.

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69. Schmeling, "Investor sentiment and stock returns: Some international evidence"; Baker and Wurgler, "Investor sentiment in the stock market."

70. Salhin, Sherif, and Jones, "Managerial sentiment, consumer confidence and sector returns."

The economic sentiment indicator is reported to reflect the changes in the macroeconomic variables. Hence, it has been proven that deposit growth is affected by household and managerial sentiment; it can be concluded that deposit growth is indirectly caused by changes in macroeconomic variables that cause changes to the sentiment. These findings are in line with[71] who report that GDP causes deposit growth. Indeed, these findings provide clear evidence on how deposit growth can be driven by macroeconomic variables. Consequently, the study's hypotheses are rejected, and the author suggests that managerial and household sentiment have an important impact in determining the deposit levels for both households and institutions.

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INSERT Tables 7
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5. Conclusion

This study investigates the relationship between household and managerial sentiments and bank deposits and interest rate in the UK. The concept of managerial and household sentiments is quantified to test their potential importance in economic decisions. To measure household sentiment, the consumer confidence indicator (CCI) is used as a proxy to represents both household satisfaction toward the economic conditions and also their expectations for the future economic situation. The business confidence indicator (BCI) is used as a proxy to measure the managerial sentiment in the UK economy. In addition, a market sentiment variable which we named the Economic Sentiment Indicator (ESI) that combines both managerial and household sentiments.

First, the impact of sentiment variables on deposit growth is estimated using a VAR model, and it is reported that there is a significant impact of managerial sentiment on bank deposits from private non-financial corporations implying that managerial sentiment is more likely to cause deposit growth in an institutional level. With regard to household sentiment, the findings report a significant impact of household sentiment on household deposit growth. For the Granger-causality test, the results show that household sentiment greatly causes household deposits; the deposit growth is also shown to have an impact on sentiment implying that the relationship between sentiment and deposit growth is a bidirectional relationship.

71. Mat Nor et al., "Investor sentiment and bank deposits in Malaysia: Do bank managers time the market while pricing deposits."

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Second, this study provides evidence on that managerial sentiment causes the LIBOR rate, the official interest rate, and corporate deposits. It is also found that deposit growth of non-financial corporations, financial firms, and households significantly cause the managerial sentiment. The findings also suggest that both managerial and economic sentiment significantly cause the government's bond (Gilts) and the LIBOR rate.

This study is the first to examine the relationship between household and managerial sentiment and the changes in deposit rates and bond rates in the UK market. It, therefore, provides insights to policymakers, managers, investors and consumers on the importance of both managerial and household sentiment, and their role in the UK economy. The study results are also important for regulators to understand how managers can affect interest rates and market behaviour. Furthermore, the study findings reveal new information on the long and short-run dynamics in the relationships between sentiment, bank deposits and lending behaviour.

These findings, therefore, have several important implications. Firstly, it provides households with evidence on the importance of managerial sentiment in predicting future deposit growth and interest rates. Managers have superior information; therefore, their sentiment is better aligned with corporate deposits and official interest rates when compared to households. Secondly, the findings are important for regulators who are concerned with the relationship between managers and consumers. Future research in this area could be directed to sentiment transformation among households and managers, which would provide more insights regarding how managers can shape household sentiment in making future decisions and also help with predicting economic conditions.

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Table 1

Data Sources of Deposits, Managerial and Household Sentiments, and Control
Variables

Variables	Data Source	Notes
Households Deposits	Bank of England Database	The natural algorithm of monthly outstanding amounts of monetary financial institutions' sterling deposits from households (in sterling millions) not seasonally adjusted.
Corporate Deposits	Bank of England Database	The natural algorithm of monthly outstanding amounts of monetary financial institutions' sterling deposits from non-financial private corporation (in sterling millions) not seasonally adjusted.
Macroeconomic variables	Datastream	The choice of macroeconomic variables.
Economic Confidence Indicator (ESI)	European Commission	The market confidence indicator, which is a linear combination of consumer and business confidence indicators.
Consumer Confidence Indicator (CCI)	European Commission	The CCI is used as a proxy for household sentiment, and measures expectations toward the UK economy.
Business Confidence Indicator (BCI)	European Commission	The BCI is used as a proxy for managerial sentiment, and measures expectations toward the UK economy.
London Interbank Offered Rate (LIBOR)	Bank of England Database	This is used a proxy for debt instruments such as corporate bonds and mortgages.
Government Issued Long Term Stocks (Gilts)	Bank of England Database	This is considered the low-risk investment with fixed income, which is the governmental bonds issued by the British Government.

Table 2
Unit-root Tests.

Unit root test is employed to include the intercept with variable lags. length for ADF and is determined based on Akaike Information Criterion (AIC) with maximum of twelve lags (one year) differences. Number of observations is 412.

	Level			Differenced		
	ADF	PP	DF-GLS	ADF	PP	DF-GLS
CCI	-2.031	-2.350	-1.875	-9.216	-14.75	-7.357
BCI	-2.443	-3.138	-2.496	-10.51	-17.62	-10.41
ESI	-3.239	-2.245	-1.526	-8.018	-14.48	-7.613
HHsen	-8.258	-14.17	-7.168	-15.49	-38.834	-14.861
CMI	-1.498	-1.830	-1.454	-8.618	-14.78	-7.833
NIPOs	-4.673	-6.306	-4.175	-17.889	-24.525	-8.918
HHdeposit	-4.206	-4.805	0.271	-10.910	-13.974	-9.861
Nonfindep	-1.489	-1.559	-1.352	-17.391	-18.827	-16.07
Findep	-1.745	-1.707	0.233	-8.679	-12.948	-8.443
Gilts	-1.579	-1.069	-2.382	-6.028	-5.751	-5.574
LBOR	-1.235	-1.001	-1.870	-6.867	-7.532	-6.554
Tbill	-1.338	-1.046	1.014	-5.6253	-6.8106	0.243
IR	-1.548	-0.943	-2.298	-5.489	-5.697	-4.337
IPT	-10.71	-16.25	0.055	-18.07	-41.90	0.003
INF	-2.243	-2.300	0.849	-7.903	-11.363	0.160
GDP	-5.457	-2.849	0.251	-12.70	-4.8027	0.099

Table 3
Descriptive Statistics for Sentiment, Deposits and Macroeconomic Indices.

Data covers the period from January 2000 to February 2018 for the UK market. Sentiment indices are consumer confidence indicator (CCI) , managerial confidence indicator (BCI), number of Initial Public Offerings (NNIPOs), household sentiment indicator (HHsen) and core managerial sentiment index (CMI). HH deposit represents the housholds deposit level, Nonfindep is the deposits level of non-financial companies, Findep is the financial companies deposits, Gilts and LIBOR rates are the deposit proxies. The macroeconomic variables are IPT, IR, INF, GDP are percentage change in industrial production, interest rates, level, inflation rate and GDP growth rate.

Panel A: Sentiment

	mean	sd	median	trimmed	min	max
CCI	-7.324	8.474	-4.900	-6.9600	-34.50	8.100
BCI	-6.134	5.300	-5.500	7.000	-45.00	15.60
ESI	101.3	9.856	103.05	102.1	63.30	118.8
HHsen	0.150	2.658	-0.100	-.0900	-7.100	9.500
CMI	98.693	10.00	98.45	96.64	55.10	111.8
NIPOs	11.539	10.413	8.00	10.58	0.0	52.00

Panel B: Deposit Growth

	mean	sd	median	trimmed	min	max
HHdeposit	13.687	0.295	13.766	13.700	13.094	14.109
Nonfindep	12.325	0.318	12.384	12.326	11.664	12.901
Findep	12.998	0.511	13.159	13.0012	12.100	13.779
Gilts	3.005	2.147	3.831	2.985	0.392	6.013
LIBOR	3.297	2.181	4.016	3.282	0.506	6.647

Panel C: Macro-economic Indices

	mean	sd	median	trimmed	min	max
T-bill	2.970	2.150	3.820	2.960	0.230	5.960
IR	3.050	2.160	04.00	3.024	0.25	06.00
IPT	-0.070	0.980	00.00	-0.030	-4.680	2.600
INF	2.230	1.070	02.00	2.130	0.500	5.20
GDP	0.440	0.660	0.570	0.540	-2.200	1.420

Table 4

Correlation between Sentiment, Deposits and Macroeconomic Indices.

Panel A: Correlations between sentiment and depossit proxies

Variables	CCI	BCI	ESI	HHsen	CMI	NIPOs	HHd	Nondin	Findep	dGILT	dLIBOR
CCI	1.000										
BCI	0.436	1.000									
ESI	0.780	0.837	1.000								
HHsen	0.189	-0.060	-0.011	1.000							
CMI	0.752	0.715	0.906	-0.067	1.000						
NIPOs	0.472	0.176	0.418	-0.024	0.476	1.000					
HHdeposit	-0.130	0.421	0.091	0.058	-0.306	-0.403	1.000				
Nondindep	-0.037	0.476	0.179	0.051	-0.225	-0.334	0.986	1.000			
Findep	-0.466	0.175	-0.214	0.041	-0.518	-0.488	0.853	0.784	1.000		
dGILT	0.336	0.434	0.413	0.075	0.339	0.190	-0.005	0.018	-0.088	1.000	
dLIBOR	0.319	0.430	0.439	0.032	0.389	0.192	-0.010	0.019	-0.092	0.818	1.000

Panel B: Correlations between sentiment and macroeconomic indices

	CCI	BCI	ESI	HHsen	CMI	NIPOs	Tbill	INF	IPT	GDP	IR
CCI	1.000										
BCI	0.436	1.000									
ESI	0.780	0.837	1.000								
HHsen	0.189	-0.060	-0.011	1.000							
CMI	0.752	0.715	0.906	-0.067	1.000						
NIPOs	0.472	0.176	0.418	-0.024	0.476	1.000					
Tbill	0.438	-0.005	0.317	-0.139	0.557	0.555	1.000				
INF	-0.714	0.001	-0.393	-0.100	-0.453	-0.355	-0.442	1.000			
IPT	0.207	0.095	0.174	0.171	0.093	0.056	-0.000	-0.092	1.000		
GDP	0.386	-0.021	0.204	0.200	0.105	0.202	-0.062	-0.456	0.092	1.000	
IR	0.414	-0.044	0.283	-0.146	0.532	0.533	0.995	-0.443	-0.027	-0.069	1.000

Panel C: Correlations between deposits and macroeconomic indices									
	HHd	Nonfin	Findep	dGilts	dLIBOR	Tbill	INF	IPT	GDP	IR
HHdeposit	1.000								
Nonfindep	0.986	1.000							
Findep	0.853	0.784	1.000						
dGILT	-0.005	0.018	-0.088	1.000					
dLIBOR	-0.010	0.019	-0.092	0.818	1.000				
Tbill- MDI	-0.766	-0.688	-0.803	0.065	0.138	1.000			
INF	0.633	0.602	0.739	-0.147	-0.046	-0.442	1.000		
IPT	-0.014	-0.003	-0.031	0.272	0.201	-0.000	-0.092	1.000	
GDP	-0.295	-0.326	-0.328	0.133	0.062	-0.062	-0.456	0.092	1.000
IR	-0.773	-0.698	-0.804	-0.021	0.070	0.995	-0.443	-0.027	-0.069	1.000

Table 5

Granger-Causality Tests for Sentiment and Deposit Proxies.

This table presents the p-value for Granger-Causality tests across sentiment and deposit proxies. These findings cover a time period spans January 2000 to February 2018. d is deposit, *g-cause* is Granger-cause, and *sent* is sentiment.

	HHdeposit	Nonfindep	Findep	LIBOR	Gilts
NIPOs	15.382	9.099	28.467	0.219	0.297
(*sent g-cause d*)	(0.000)	(0.003)	(0.000)	(0.640)	(0.585)
CCI (HHsen)	0.108	1.154	0.711	4.815	0.202
(*sent g-cause d*)	(0.001)	(0.283)	(0.399)	(0.028)	(0.653)
BCI	0.011	0.030	2.069	14.74	5.774
(*sent g-cause d*)	(0.091)	(0.006)	(0.015)	(0.000)	(0.016)
ESI	0.033	0.991	2.827	9.890	2.149
(*sent g-cause d*)	(0.085)	(0.031)	(0.093)	(0.002)	(0.143)
CMI	0.099	0.866	5.026	12.33	4.642
(*sent g-cause d*)	(0.075)	(0.352)	(0.025)	(0.000)	(0.031)

Table 6

Granger-Causality Tests for Sentiment and Deposit Proxies.

This table presents the *p*-value for Granger-Causality tests across sentiment and deposit proxies. These findings cover a time period spans January 2000 to February 2018. *d* is deposit, *g-cause* is Granger-cause, and *sent* is sentiment.

	HHdeposit	Nonfindep	Findep	LIBOR	Gilts
NIPOs	10.724	4.406	0.689	0.2093	0.223
(*d g-cause sent*)	(0.001)	(0.036)	(0.406)	(0.647)	(0.637)
CCI	5.648	3.298	0.065	0.583	0.204
(*d g-cause sent*)	(0.017)	(0.069)	(0.798)	(0.445)	(0.651)
BCI	3.191	4.437	2.990	2.743	0.233
(*d g-cause sent*)	(0.074)	(0.035)	(0.084)	(0.098)	(0.629)
ESI	2.471	3.262	1.056	5.815	1.690
(*d g-cause sent*)	(0.116)	(0.071)	(0.304)	(0.1440)	(0.194)
CMI	1.421	1.748	0.355	2.741	0.345
(*d g-cause sent*)	(0.233)	(0.186)	(0.551)	(0.098)	(0.556)

Table 7

Granger-Causality Tests for Sentiment and Macroeconomic Variables.

This table presents the *p*-value for Granger-Causality tests across sentiment and macroeconomic variables. These findings cover a time period spans January 2000 to February 2018. *m* is macroeconomic variable, *g-cause* is Granger-cause, and *sent* is sentiment.

|	INF	GDP	TPI	IR	T-bill
NIPOs	9.359	2.859	0.412	15.797	18.199
(*m g-cause sent*)	(0.002)	(0.091)	(0.521)	(0.000)	(0.000)
CCI	9.477	12.244	0.632	0.750	0.577
(*m g-cause sent*)	(0.002)	(0.000)	(0.426)	(0.386)	(0.447)
BCI	0.650	2.330	2.932	2.381	1.533
(*m g-cause sent*)	(0.420)	(0.127)	(0.087)	(0.123)	(0.216)
ESI	5.808	9.091	.0.748	3.900	2.709
(*m g-cause sent*)	(0.016)	(0.003)	(0.387)	(0.048)	(0.100)
CMI	9.541	12.869	0.355	1.826	1.535
(*m g-cause sent*)	(0.002)	(0.000)	(0.000)	(0.177)	(0.215)
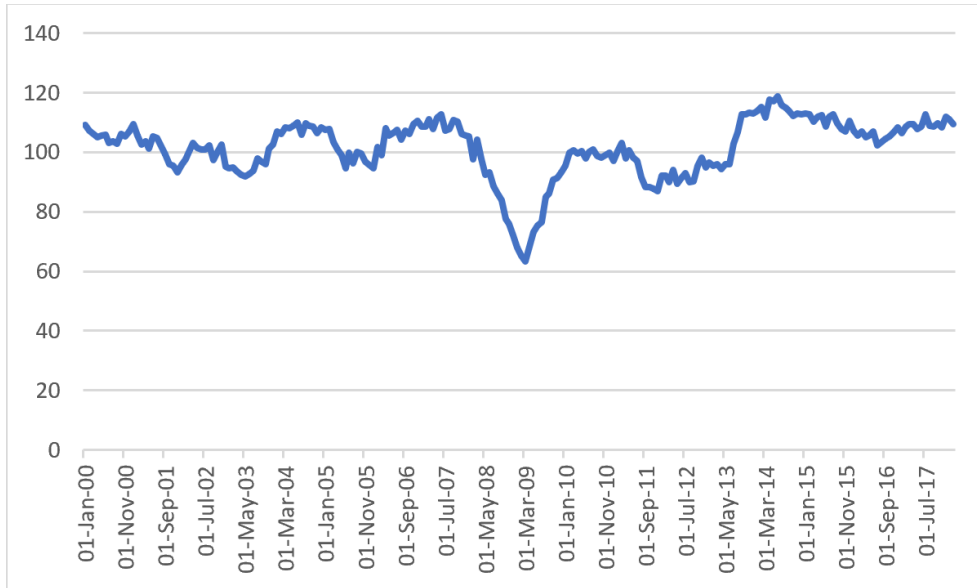
Figure 1: Economic Sentiment Index in the UK
Source: European Commission Surveys

Figure 2: Consumer Sentiment Index in the UK
Source: European Commission Surveys
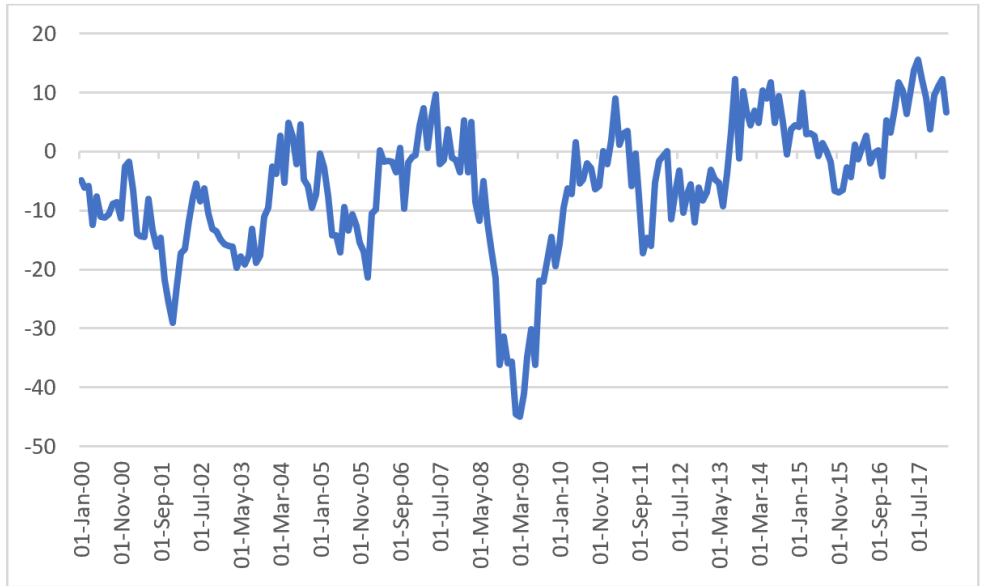
Figure 3: Managerial Sentiment Index in the UK
Source: European Commission Surveys
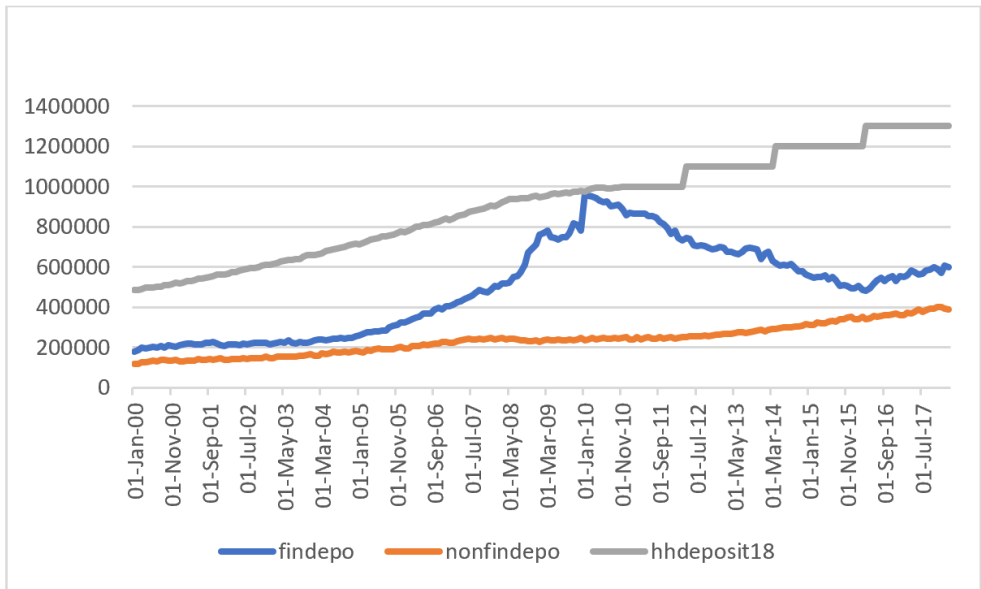
Figure 4: Different Deposit Levels in the UK Economy
Source: European Commission Surveys