STRATEGIES DEPLOYED TO DEAL WITH BLACK SWAN EVENTS: A QUALITATIVE ASSESSMENT OF QUANTITATIVE EASING AND THE AUSTRALIAN HOUSING MARKET

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Abstract

Black Swan Events (BSEs) are those unplanned events that significantly and negatively impact various aspects of human life. The COVID-19 pandemic and the Global Financial Crisis (GFC) in 2008 have been considered by many as BSE in recent times. During these events, governments usually implement policies to assuage the impact on various sectors of the economy and the populace. This paper identified some strategies and policies adopted by the Australian government during the COVID-19 pandemic, especially the QE monetary policy and their impact on the housing market from the perspective of stakeholders in the industry. A qualitative research method was used to solicit information from respondents. A thematic analysis was employed to unravel the government's fiscal policies and the QE monetary policy as responsible for mitigating the effects of BSE. These policies sought to, among other reasons, keep interest rates low and keep money in the economy to revive the ailing economy. The findings revealed that the BSEs affected the Australian economy in multiple ways. We also found that the conventional and unconventional policy strategies deployed in response to the BSEs in Australia were impacting the Australian housing market in varying significance manner.

Keywords: Black Swan Events, Quantitative Easing, Housing Market, Australia.

1. INTRODUCTION

In recent times, the world has experienced unexpected events that have caused governments and countries to adopt different policies to mitigate the impact of these events, such as the recent COVID-19 pandemic. Such events affect several aspects of human life, thus making the effectiveness and efficacy of such policies crucial. The Australian housing market, as an important integral part of the economy, was significantly impacted by some of the unprecedent rescue policies implemented during such times. For instance, house prices were affected during the Global Financial Crisis (GFC) in 2008 and the COVID-19 pandemic and were predicted to fall as much as 10-30% by various experts to the media (Koulizos, 2020; Oliver, 2020).

Aven (2013) defines Black Swan Events (BSEs) as surprisingly extreme events relative to one's belief and knowledge. Therefore, events such as the GFC and the COVID-19 pandemic may be considered BSEs as they are surprising events relative to the beliefs and understanding of the world when they happened. Such unexpected events will likely negatively impact various economic sectors, including the housing market. These impacts may be in housing prices, policies, and supply and demand.

At the height of COVID-19 pandemic, Australian Gross domestic product (GDP) was greatly affected by an estimated cumulative loss of $158 billion compared to its pre-pandemic economy growth (ABS, 2022). Australian population growth was simultaneously impacted by the slowed down international migration (Guan et al., 2024), It was not surprising that many economists and market commentators had naturally projected a downturn in the Australian housing market during the COVID-19 pandemic. Defying the market projections, Australian housing values rose 24.6% between the end of March 2020 and February 2022 (Corelogic, 2022).

Unconventional monetary policy such as quantitative easing (QE), has emerged as the latest approach governments worldwide adopt to deal with the economic and social impact of significant BSEs. There is, admittedly, a lack of evidence on the effects of BSEs and the attendant use of QE on house prices in Australia. Consequently, this paper qualitatively evaluates the strategies adopted to deal with BSEs and the impact of the QE on the Australian housing market. This study is essential because the expected effect of certain fundamental drivers of house prices is changing in the face of BSEs.

In the decade following the GFC, Australian house prices continued trending upwards. Wong et al. (2020) uncovered that the first downturn in the Australian housing market after the GFC was mainly due to the credit squeeze as a result of the infamous Royal Banking Commission enquiry 2018. Figure 1 provides an update on the Australian housing market performance, demonstrating the monthly house price index from January 2010 to February 2024. The PropTrack dataset provides the monthly house prices for Australian capital cities Sydney, and Melbourne.

Figure 1: Australia House Price Index 2010 to 2024
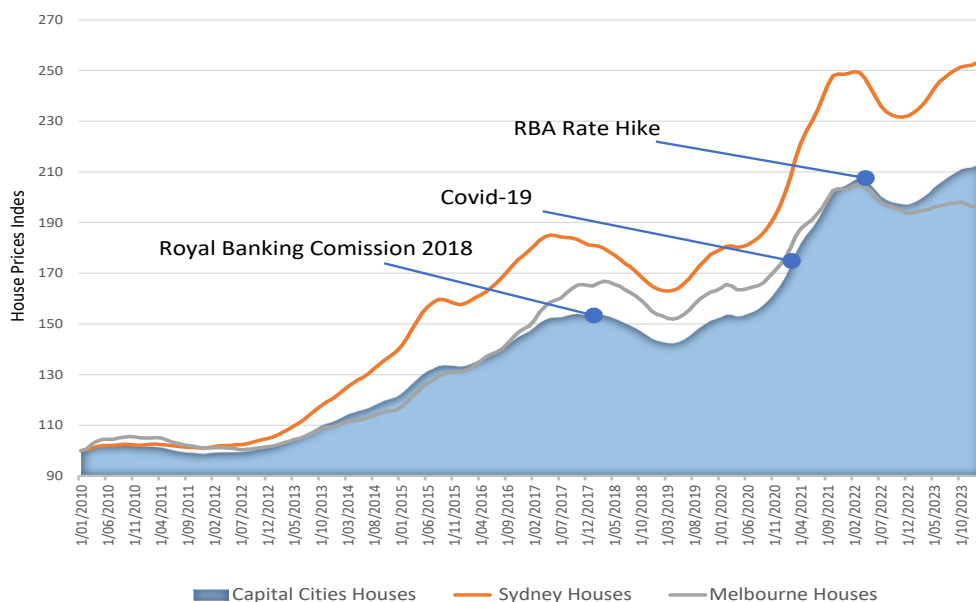
Author (2024) Culled from PropTrack Data

House prices for Australian capital cities experienced the first major downturn since GFC in 2018. The capital cities' house prices declined from a peak of 153.42 in February 2018 to the low of 142.37 in April 2019, representing a drop of 7.20% from peak to trough, resultant of the credit tightening in lieu of the findings from the Royal Banking Commission inquiry in 2018 (Wong et al., 2019). This short and sharp downturn lasted over a year ended quite soon towards the middle of 2019. Australian house prices have proven resilient. Instead of trending downwards as predicted by many market commentators and economist, it bucked the Covid-19 negative predictions to trend upwards again towards 2021. The house index of the capital cities climbed further to reach 207.32 in March 2022, representing a rise of 45.62% from April 2019. The Australian housing market are into their second significant downturn towards the middle of 2022, subsequent to the Reserve Bank of Australia (RBA) cash rate hike announcement in May 2022. Again, this downturn did not last long. The Australian housing market rebounded towards at the beginning of 2023. Interestingly, this increase coincides with a series of cash rate hike announcements that aimed to tame the stubborn inflation the country is currently facing as a result a series contingency rescue measures implemented during the Covid-29 pandemic. Summarily, the housing market in Australia had successfully defied the market projections since the Royal Banking Commission Enquiry in 2018 and swung upwards in the midst of pandemic and unfavourable conditions such as high mortgage rate. A quick snapshot on the latest housing market condition reveals that the media value of the Australian capital cities rose to $823,000 in February 2024, represents a 33.70% hike from March 2020 (PropTrack, 2024).

Our focus on Australia is novel because it has recently experienced some of the world's worst BSEs, including floods, bushfires, and COVID-19. We contribute to the existing literature on housing policies that have been evolving and changing in line with the changing economic environment due to BSEs. Secondly, a qualitative study with the stakeholders in the housing market considering the efficacy of policies deployed to mitigate the impact of BSEs is yet to be investigated. Furthermore, the paper provides evidence to either support or debase the use of specific policies that are usually deployed to deal with similar emergencies in the Australian housing market. Finally, we suggest some policy implications of our study that may be useful for policymakers in Australia and other countries similarly situated.

The rest of the paper is structured as follows: section two details a thorough review of the literature on BSEs, government monetary and fiscal policies, and their impact on the housing market. In section three, the methodology is presented. The findings and discussion are presented in section four. Section five discusses the practical and policy implications of the findings, and section six concludes the study.

2. LITERATURE REVIEW

2.1 Black Swan Events

The sighting of the first black swan in Australia illustrates the fragility of knowledge, as everywhere else in the world believed all swans were white. The black swan metaphor has gained increased attention in the risk management field following the publication of 'The Black Swan – the Impact of the Highly Improbable' by Nassim Nicholas Taleb. Black Swan describes random events with three key characteristics:

> "*First, it is an outlier, as it lies outside the realm of regular expectations because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, despite its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable*" (Taleb, 2008, p. xvii).

These characteristics of BSEs can be summarised as rarity, extreme impact, and retrospective predictability. There is a growing significance of BSEs around the world. BSEs can be grouped into three types: (i) natural, (ii) artificial, and (iii) hybrid disasters. Natural disasters are catastrophic events resulting from natural forces, unplanned and socially disruptive events with sudden and severe effects. These are often termed 'Acts of God' where there is no human control. Examples include Hurricane Katrina, the Ebola outbreak, and the Nepal earthquake of 2015 (Gorkha earthquake). By contrast, unnatural disasters are those catastrophic events that result from human decisions (Ibrahim, 2007; Turner & Pidgeon, 1997). These can be sudden or occur over a more extended period and include socio-technical disasters due to accumulated unnoticed

facts generated from the interaction between internal and external factors. Examples include Chernobyl, Long Term Capital Management (LTCM) Fund collapse and the GFC (Higgins & Perera, 2020). On the other hand, hybrid disasters result from human error and natural forces. These could include deforestation resulting in soil erosion and subsequent heavy rain causing landslides; floods ravaging communities built on a known floodplain, locating residential premises and factories at the foot of an active volcano or in an avalanche area (Ibrahim, 2007). Therefore, BSEs lead to risks for all sectors, including the residential property markets in different countries. These risks are downside risks because they cause significant adverse impacts on an economy and, by extension, the housing market of a specific country.

Low predictability and significant impact have made understanding BSEs a great puzzle. However, what is more surprising is not the magnitude of the forecast errors of the effect but the absence of awareness of such events. There are two possible ways to study the phenomena of rare and extreme events using two mutually exclusive types of randomness. The first is to rule out the extraordinary events as outliers and focus on the standard, mild, or Gaussian approach. The second approach considers the extremes, mainly if they carry a tremendous cumulative effect, recognised as the wild, fractal, or scalable power-law approach (Mandelbrot & Taleb, 2010; Taleb, 2005, 2008).

2.2 Government Fiscal and Monetary Policy and House Prices

Australian families consider homeownership integral to stability and wealth creation (Rahman, 2010). In reality, for many households in Australia, their home is their most valuable investment asset. As such, changes in house prices will inevitably impact household wealth in the manner that house price appreciation will directly be translated into their most significant asset value improvement. Whilst from a negative perspective, house price improvement may result in housing affordability issues leading to the inability of many households to enter the homeownership tenure; decreased house prices cause a decline in household wealth and, at the same time, pose a risk to the financial system's stability. Negative house price changes, therefore, potentially threaten households' wealth and, by extension, the broader Australian economy when left unattended (Wang et al., 2019). Unsurprisingly, in media and scholarly articles, house price changes and trends have gained significant attention in the Australian public space. Studies on house prices affected by changes in population (Chen et al., 2012; Day, 2018; Filipa, 2015; Gonzalez & Ortega, 2013), interest rate dynamics (Demary, 2010; Miles & Monro, 2021), unemployment (Abelson et al., 2005; Simo-Kengne, 2019), economic activity (Gimeno & Martinez-Carrascal, 2010; Zhou & Zhang, 2021), housing supply (Hilber & Vermeulen, 2016; Li & Chand, 2013; Wong et al., 2019), stock prices (Ali & Zaman, 2017; Batayneh & Al-Malki, 2015; Ibrahim, 2010; Wong et al., 2022), and income levels (Chen et al., 2007; Özmen et al., 2019; Xu, 2017; Wong et al., 2022).

In the last several decades, monetary policy has been employed across the globe to sustain economic growth. However, with near-zero interest rates and stagnating growth across multiple

economies, the traditional monetary policy tools that aim to promote economic growth remained ineffective. As a result, advanced economies resorted to unconventional means involving the purchase of financial instruments through open market operations to stimulate monetary growth further (João et al. 2016). However, there is no consensus on the impact of these asset purchase initiatives. Some believe that, while generally effective in lowering interest rates due to elevated levels of capital mobility across borders combined with growing financial integration between economies, these non-traditional expansionary monetary policies can lead to an explosive increase in asset prices (João et al. 2016). Since the global financial crisis (GFC) of 2007-08, the risk of possible spillovers to the housing market from these QE programs has become an increasing concern for economists and policymakers alike (Blanchard et al., 2010).

According to Lastrapes (2002), changes in money supply transmit to housing prices in two essential ways. First, through the cost of mortgage borrowing, the unanticipated increase in liquidity lowers mortgage rates relative to the cost of alternative assets, thus reducing the after-tax mortgage payment and increasing housing demand. The second channel involves the real rate of return on the property; as the real rate falls in the face of an increase in money supply, the present value of the property increases, lowering the cost to the investor and causing housing demand to increase. Mishkin (2007) further expands on the transmission mechanism to include direct modes (cost of capital to user, expectations regarding future price movements, house supply) and indirect modes (house valuation changes, impact of credit rates on consumption and house demand) of transmission.

House prices remain an essential intermediary between monetary growth and consumer price inflation (Meltzer, 1995). This role has been a subject of tremendous debate in recent literature. The reasoning stems from its relevance to the regulatory authorities due to the key role of housing and the associated credit environment in explaining the dynamics of the 2007 subprime crisis. Elbourne (2008) confirms the housing market's role in monetary policy transmission by examining the impact of monetary shocks on the UK's economy. It is observed that a positive 100 basis point shock to the short-term interest rate is followed by a 0.75% reduction in house prices, leading to a decline in consumption and an increase in the consumer price level.

Similarly, Leamer (2015) argues that the real estate sector remains essential to boom-and-bust cycles. According to Leamer (2015), 9 out of the 11 recessions in the US were preceded by collapses in the housing sector. Adalid and Detken (2007), Bernanke et al. (1999), Bordo and Haubrich (2010), Borio and Lowe (2004), Gerdesmeier et al. (2010), and Gunn (2018) show that shocks to monetary growth before and during a boom play an essential role in explaining the extent of the recession in the bust phase. Moreover, they assert that excess liquidity and supply of credit often lead to booms in house prices. Ferrero (2015) provides further evidence that excess credit can create explosive growth in house prices. Jordà et al. (2015) also support this assertion and report a strong association between rapid monetary growth and sharp changes in asset prices. On the other hand, some studies report reverse causality between these indicators. Ramcharan and Crowe (2013) report that asset price fluctuations may adjust credit conditions and transmit

macroeconomic shocks. Baharumshah and Soon (2015) show that local house prices significantly and sizeably influence Singapore's demand for broad money. This emphasises that the housing market is vital in transmitting monetary policy innovations to financial markets and the economy.

2.3 An Overview of Monetary Policy – Conventional and Unconventional

Conventional monetary policy in recent years has involved decreasing or increasing short-term interest rates in line with inflation and unemployment targets. However, during the GFC (a black swan event) in 2007, the usual response of lowering the interest rates remained inadequate for sufficiently boosting spending and reviving economic growth. With interest rates being lower bound by zero, some central banks resorted to unconventional monetary policy to manage economic activity. These policy measures, to date, remain predominant tools for managing shocks to aggregate output.

Unconventional monetary policy involves implementing measures other than changing the policy interest rates. The US Federal Reserve primarily employed QE and forward guidance as part of the unconventional monetary policy. Under forward guidance, the central banks influence the long-term interest rates by guiding the market regarding expected short-term interest rates. Monetary authorities implement forward guidance to lower expectations regarding future short-term interest rates, reduce long-term bond yields and ease lending conditions. Providing forward guidance can also decrease interest rate volatility, reduce risk, and lower term premiums, further easing financial market conditions. During crises such as the GFC and COVID-19, central banks in various economies have been actively providing forward guidance to communicate the central bank's intention regarding future interest rates. Moreover, forward guidance helps convey how central banks may act to stabilise financial markets in response to unanticipated economic shocks. While not costless, forward guidance remains a vital policy measure for managing future interest rates (Rudebusch and Williams, 2008).

Often used in conjunction with forward guidance, QE involves purchases of bonds from the private sector using newly created reserves. The QE impact is transmitted to the financial markets through demand-supply changes - the bond purchase pushes the bond prices, driving down the yield. QE can also influence interest rates through the portfolio balancing channel by reducing the liquidity premium on long-term bonds (assuming imperfect substitutability between financial assets). Additionally, QE may signal future adjustments in interest rates, reducing the bond yield expectation component (Bauer and Rudebusch, 2014).

QE has been a critical feature of central operations post-GFC and during the COVID-19 crisis. Central banks purchase a wide variety of assets (as opposed to typically buying only government bonds), leading to significant growth in the bank balance sheet. However, the expansion of the balance sheet alone is not necessarily indicative of the effectiveness of QE for several reasons. Firstly, the impact of QE will be determined by the size of the bond purchase relative to the

aggregate economy or the overall bond market. Secondly, the effects on the term structure will likely determine the maturity of the assets purchased during the QE program.

Typically, central banks can undertake a bond purchase by setting a target for the number of bonds (QE) it will purchase, irrespective of the bond's price and the number of bonds needed to achieve that price. While the precise objective of asset purchases has varied across countries, the common goal of these programs has been to lower interest rates across the term structure. The GFC and prolonged periods of deflation prompted various countries to adopt an unconventional monetary policy as the conventional monetary policy of setting the policy rate had already been exhausted due to near-zero interest rates. Japan was the first country to embark on the path of unconventional monetary policy to stimulate its stagnating economy. Similar monetary policy programs were then implemented in other advanced economies such as the USA, UK and Euro area to reduce unemployment and stabilise the financial markets (see Ito and Mishkin, 2006; Greenwood, 2017; FOMC Statement, 2008, 2011, 2014; Smith, 2020; European Central Bank, 2021; Bank of England, 2020).

2.4 Exploring the Relationship between Monetary Policy and House Prices – The Empirical Evidence

There have been a vast number of studies examining the efficacy of monetary policy in driving house prices in various regions. Changes in the monetary mechanism and resulting shocks to credit market variables are typically identified using vector autoregressive (VAR) models. Using this approach, Lastrapes (2002) examines the impact of money supply shocks on housing market variables (new houses sold, median sales price of new houses sold, existing single-family home sales and median sales price of existing single-family homes) using monthly US data from February 1964 to August 1999.[1] He finds that a positive money supply shock is followed by a rise of 0.7% in the median house prices with a much higher short-run response (3.5%) in the new houses sold. The estimated responses support the simple notion that an increase in money supply reduces interest rates, leading to a rise in housing demand.

Cesa-Bianchi et al. (2015) employ the instrumental variable approach of Stock and Watson (2012) and Mertens and Ravn (2013) in a panel VAR to identify the impact of global liquidity shocks on house prices in emerging and advanced economies from 1995Q4 to 2012Q4.[2] They find that while peak responses of house prices to an increase in liquidity supply are more robust in emerging economies, they tend to be twice as large in advanced economies. These findings are reinforced in the study of Goodhart and Hoffman (2008), who use a fixed effects panel VAR for an extensive sample period (1970Q1 to 2006Q4) involving 17 industrialised countries and demonstrate that shocks to broad money supply and credit have a substantial impact on house prices when house prices are surging. Musso et al. (2011) use the impulse response from a structural VAR model for

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[1] Existing home sales and prices data is only available from January 1968 to April 1999
[2] Global liquidity shocks are identified using Cholesky decomposition of the country specific VAR residuals.

housing prices in the US and Euro areas. They find that monetary policy shocks substantially impact US house prices more than in the Euro area. Similarly, using a structural VAR, Bjørnland and Jacobsen (2010) and Robstad (2018) build upon previous studies by allowing house prices to react instantaneously to monetary policy changes. They find that accurate house prices fall by 3-5% in small European economies in response to contractionary monetary policy shocks.

By contrast, Jarociński and Smets (2008) use a combination of sign restrictions and zero (Uhlig (2005)) under a Bayesian framework to identify monetary policy shocks and their impact on accurate house prices. They find that a persistent 25-basis point increase in the policy rates reduces housing investments and house prices. Similarly, Vargas-Silva (2008) and Sá and Wieladek (2015) estimate a VAR model to assess the impact of monetary policy shocks on the US market by imposing sign restrictions on output level and prices while leaving the housing market activity variable (housing starts or residential investment) unrestricted. The results show that a contractionary monetary policy negatively impacts housing starts and residential investment across various regions in the US. Kelly et al. (2018) emphasise that credit availability is essential for house prices and the money supply. They demonstrate that a 10% rise in the available credit causes the property price index in Ireland to increase by 1.5%. Ryczkowski (2019) employs the continuous wavelet transform to show that the money supply exhibits essential information for future price dynamics in the housing market. The study cautions that an overly loose monetary policy may lead to house price bubbles within the duration of the business cycle.

An alternative yet brief strand of literature notes a negative association between money supply and house price. For instance, using a VAR model, McCarthy and Peach (2002) examine the relationship between monetary policy changes and residential property prices in the US from 1975Q1 to 2000Q4. Monetary policy innovations are captured using an impulse response to a 0.5% "shock" in the federal funds rate. Cholesky decomposition is used to identify the shock, assuming that the shock in the interest rates is transmitted to the property prices through mortgage rates. In contrast to previous studies, the findings show that a contractionary monetary policy shock increases house prices. The authors associate this observation with a credit flow reduction in the housing sector.

While conventional monetary policy has been effective in driving house prices, as evidenced by the literature reviewed just above, the role of unconventional monetary policy remains a subject of considerable research interest. In this regard, several studies have examined the efficacy of unconventional monetary policy tools in influencing house prices where policy rates are constrained by zero lower bound (ZLB). Using a panel VAR specification, Rahal (2016) examines the housing market's response to unconventional monetary policy involving changes in central bank assets and monetary base in eight OECD countries, including Australia. The findings show that a favourable monetary policy shock (characterised by increased central bank assets) increases house prices, residential supply, and mortgage markets. The study also reports that house prices respond more strongly in countries with more developed mortgage markets.

While unconventional monetary policy emerged as a response to the GFC in various countries, Australia remained largely unaffected by the crisis and managed the GFC's impact principally through adjustments in the cash rate. However, in response to the effects of the COVID-19 pandemic, the Reserve Bank of Australia (RBA) implemented unconventional monetary policy measures for the first time in March 2020 to support the Australian economy (RBA, 2021). As part of the unconventional monetary policy in Australia, the cash rate target was set to 0.1%. This necessitated a change to the interest rates "corridor" system RBA had employed to implement monetary policy.

Therefore, we seek to consider the impact of BSEs and various strategies, including an unconventional monetary policy deployed by the Australian government to mitigate their effects. These strategies are assessed qualitatively from the perspective of industry professionals.

3. METHODOLOGY

In achieving the objectives of this research, the study employed qualitative research methods and concepts (Creswell, 2014; Johnson & Onwuegbuzie, 2004). The research is exploratory and aimed at understanding the strategies deployed during BSEs. It is argued that interviews are the optimal method for obtaining information from industry experts. Interviews are a rich source of knowledge when attempting to comprehend a phenomenon from the perspective of those who have experienced it. Interviewing is a strategy for obtaining qualitative data by eliciting information from interviewees on multiple topics, themes, and questions through open-ended questions (O'Leary, 2014). An interview is the principal method for obtaining primary data for this study. The interview method was fluid to ensure interviewees felt involved and contributed information freely. According to Yin (2003), a researcher in an interviewing process must stay in the line of study and simultaneously ask conversational-style questions impartially. The interview was accompanied by an interview guide with a pre-set list of questions that served as a reference point for the data collection.

Robson (2002) indicates three types of research interviews: fully structured, semi-structured, and unstructured, and this research utilised a face-to-face semi-structured interview approach. However, some respondents preferred using a digital platform for face-to-face semi-structured interviews. Consequently, some interviews were conducted using Microsoft Teams as the digital platform. Thus, researchers could conduct face-to-face interviews at respondents' places of employment, where possible, and use digital channels where face-to-face was impossible. Despite the availability of an interview guide, this form of interviewing enabled us to ask respondents more in-depth questions depending on their earlier responses. Face-to-face semi-structured interviews allowed for a comprehensive examination of the drivers of house prices, BSEs, their impacts, and the deployment of strategic measures to deal with the effects of BSEs.

Interviews with 14 respondents, including senior government officials, senior industry professionals and industry experts, were conducted for the research. In qualitative research, there are no specific sample size criteria (O'Leary, 2014). However, it is expected to encounter small sample sizes when employing purposive sampling (Teddlie and Tashakkori, 2009). Due to this, the sample size of 14 is enough for this investigation, and comparable sample sizes have been used in other studies (Mintah et al., 2020; 2021; Otchere et al., 2023). Furthermore, the saturation strategy was used to decide the suitability of the number of interviews conducted. The respondents were chosen based on their expertise, experience, and knowledge.

Experienced practitioners and academics in various sectors of the property industry in Australia were interviewed. The interviewees had an average experience of over 20 years in the industry, geographically working in multiple states in Australia and with international experience in countries such as the UK and the USA (see Table 1). This indicates that the respondents for the study are knowledgeable about the issues discussed and experienced in dealing with such issues as they happen in their respective organisations.

Table 1: Profile of Interview Participants

Position	Experience	Category	Code
Valuer in NSW	Over 15 years	Regulators	R1
RBA	Over 15 years	Regulators	R2
Treasury NSW	Over 20 years	Regulators	R3
Treasury NSW	Over 15 years	Regulators	R4
Fund Management	Over 30 years	Financial Institutions	F1
Mortgage broker	Over 10 years	Financial Institution	F2
Property valuer	6 years	Industry	I1
Senior sales consultant and Auctioneer	19 years	Industry	I2
Financial services consultant	Over 22 years	Industry	I3
Property data analyst	10 years	Industry	I4
Professor in Property	25 years	Academia/Industry	A1
Deputy director for construction management and property	Over 13 years	Academia/Industry	A2
Professor of real estate		Academia/Industry	A3

The semi-structured interviews were conducted between 4th May 2022 and 30th June 2022. The researchers visited some of the respondents' workplaces to conduct face-to-face interviews while others were conducted online through teleconferencing. The interviews were recorded on audio devices and transcribed into Word document files, and the responses were coded for analysis

with ethics approval from RMIT University. As required by the RMIT ethics guidelines, codes such as R1, F1, I1, and A1 representing regulators, financial institutions, industry experts, and academics were used to represent the participants in the analysis and study for anonymity and confidentiality.

The transcripts were thematically analysed (Leech and Onwuegbuzie 2007). Thematic analysis is primarily described as a method for identifying, analysing, and reporting patterns (themes) within data (Braun & Clarke, 2006). Such themes are determined based on the interview questions and other emerging headings from responses from interviewees, and for this paper, themes were generated based on both the interview questions and responses from interviewees. Quotes were used to discuss the tenure and processes mentioned by interview respondents. As the paper was thematically analysed, comments that were common knowledge, similar to the other or deem insignificant will not be quoted.

In the paper, researchers selected compelling text extracts that captured interviewees' views on particular issues under discussion for inclusion. Discussions based on researchers' previous knowledge of those compelling text extracts provided extra clarification and contextualised the new knowledge added to the literature. Regarding the reliability of findings, interceding is deemed to improve the reliability of the results of qualitative research and thematic analysis (Gibbs, 2007; Guest et., 2012). Intercoding refers to the extent to which more than one coder independently classifies material in the same way as peer researchers (Miles and Huberman, 1994; Vaismoradi et al., 2013). In this paper, all the researchers reviewed the generated codes independently, the names given to the codes and the compelling text extracts associated with specific themes. Since there was concurrence among the researchers, the intercoder check was achieved. Hence the findings are reliable.

Regarding the validity and quality of findings, one way to judge is whether new insights have been provided into the studied phenomenon (Creswell, 2014). The current study has provided significant insights into understanding the strategies deployed during BSE and QE, thereby fulfilling the validity of the findings of the research. Lastly, unlike quantitative research, qualitative research does not rely on statistical generalisations. However, it is premised on analytical generalisations. Through analysis of text data and context factors, the research argues that the findings are relevant for property, housing, and policy experts in other countries similarly situated to Australia. To this end, the findings of this study could be adopted and contextualised for use by property and other relevant stakeholders in other countries.

4.   RESULTS AND FINDINGS

As stated in the literature review, unconventional monetary policy was first used in Australia in response to the COVID-19 pandemic. To address the objectives of this study, this section discusses the impact of BSEs on the Australian economy and some policies rolled out by the

government to mitigate the effect and considers the impact of the QE policy on the housing market from the perspective of the industry stakeholders. Two key questions were addressed during our interviews: what was the impact of BSEs on the Australian economy and housing market, and what strategies were deployed to address this impact? Specifically, what QE measures were deployed? The transcripts from the interviews were thematically coded using the analysis software NVivo. From the analysis of the interview data, themes relevant to the study objectives were generated and the results presented in section 4.1 to 4.2. The relevant findings are discussed below supported by the relevant significant quotes from the respective interviewees.

4.1 The Impact of COVID-19 on Australia

Considering the definitions of BSEs (see Taleb, 2008; Aven, 2013), the unpredictability and rarity of these events make their impact largely negative and significant. The unexpected nature of BSEs mostly leads to panic in the economy and changes in human behaviour and response to situations. Additionally, it causes people to be interested in economic issues they would typically not be concerned about. Governments also develop temporary policies to control and reduce the impact of these BSEs.

4.1.1   Finding: Potential Long-term COVID-19 Impact

The magnitude of the impact of BSEs on the economy is not a straightforward process because the magnitude of impact on an economy may depend on myriad factors such as the economy's robustness, the duration of the BSE and geographical location. The interviewees also indicated that the magnitude of COVID-19 cannot be holistically considered yet because the impacts of BSEs are mostly felt years after they happen. This led to examples of some European countries going into recession years after the GFC. Therefore, even though COVID-19 seems to have been controlled, stakeholders must wait to see how the economy performs in the coming years.

Quotes	Interviewee
"From what I can see from my sort of localised impact, and you know Australian context, I think it was significant, but I also think it changed the way that we operate, and you know in the short term, I think it's a huge impact in terms of just the headline economy. But I think in the long term, it might sort of open up opportunities for you know, bring manufacturing back. It may change the way that economies seen and measured in the country. But I think you know tourism and migration; you know net migration from international and even into state was a massive impact on local economies closing of retail businesses was a huge impact there to be propped up by the government and other…."	*I1*
"….You know, some of the stuff that you know, particularly with inflation and the ongoing supply stuff and that kind of the other disruptions that are happening because of COVID, it's got a long way to flow through it. I'm more worried about what happens this time next year than I am kind of worried about what's happening through this year."	*R3*

4.1.2   Finding: Broader Social COVID-19 Impact

With the GFC causing a change in how financial markets and sectors operate, COVID-19 has caused a change in both the social and economic lives of people in the economy. From the interview data, the impact of COVID-19 is primarily multifaceted and contextual. It was identified that COVID-19 significantly impacted the economic, social, and financial aspects of human life. COVID-19's social and economic significant impacts could also be identified in the closure of borders and reduction in human interactions.

Quote	Interviewee
"..And the GFC would have impacted almost all not everyone, but almost all. And COVID-19 would have impacted everyone, so it nobody escaped either of those events really."	I3
"…if you look at the pandemic COVID, you know totally had all the consequences that came out of that was totally unknown that it was coming…"	F1
"… it means people are going to take control of their lives and make decisions, and therefore spending behaviours change. People's habitation behaviours change… people have just saved a lot of money and I don't think there is cautious in their spending behaviour as what they would have been previously because will, you know who gives a crap now."	I2

4.1.3   Finding: Australian COVID-19 Economy Impact

Interviewees were asked to express their views on the impact and magnitude COVID-19 on a country's economy, specifically Australia. Due to the unexpected nature of COVID-19 the impact is primarily significant and negative. Again, it was identified that while GFC mainly affected the financial sector of economy, the COVID-19's impact on the economy is multifaceted affecting several sectors such as health, tourism, tourism, migration, financial and commerce. One obvious observation was that the closure of borders and import and export of commodities in Australia, giving rise to the supply chain disruption caused by COVID-19 and the sustained price shock on goods and services importation observed during the period of the pandemic. The COVID-19 pandemic has also increased the patronage of online services (e-commerce) and decreased in-person transactions.

Quotes	Interviewee
"The impact of it is going to be negative rather than positive. An unexpected negative event on the market that is not expecting anything. Is likely to have a more significant effect than an expected negative event."	R1
""So, in the GFC, I think a lot of people had no confidence in the (financial) system… whereas COVID, I think it was a bit of that because it was a lot of uncertainty in the	I1

market, and people didn't know where to invest and where to keep their money, but there was a lot of actual, you know, supply chain, you know, global cut-offs that affected the economy, global trade, even local trade, tourism, those sort of aspects came in a lot more this time around as well."	
"There was significant impact, which was on the supplies of foreign economy like Australia, where the international linkages are quite important one, both from the consumption of its material good as well as import of its consumer goods. So many of these supply chains got disrupted during COVID-19 and what it meant that it has the price shock because when there are shortages"	*A1*
"So, Australia exports a lot of goods overseas and essentially what happens around the world affects us because we exposed a lot of, I know being in the mining industry in here, and plus we do import items from China and India. So essentially affects our GDP, affects our Australian dollar."	*F2*

4.2 Strategies Deployed to Deal with COVID-19

The impact of BSE in COVID-19 on the Australian economy led to various government policies which sought to assuage the effects on the populace. Policies were implemented in various sectors of the economy to help sustain the supply and demand sectors of the market. These policies included fiscal and unconventional monetary policies.

4.2.1 Fiscal Policy Approach

The Australian government, in response to the economic crisis eventuated by COVID-19, enacted fiscal policy measures by committing a total of A$291 billion as of May 2021 as Government support to alleviate the challenges presented by the pandemic (Treasury of Australia, 2021). Overall, the Australian government introduced several emergency rental measures necessitated by the pandemic and designed to assist people in staying in their homes. They include 1) Job Keeper payment, which is an income assistance package, 2) moratoriums on evictions, 3) land tax relief, which reduces a landlord's expenses and is expected to reduce rents; 4) direct financial assistance to tenants in hardship, through the existing Commonwealth Rent Assist mechanism, 5) deferral of mortgage repayments for landlords, thus providing an opportunity for landlords to reduce rents, 6) rent control, and 7) a call for 'mediation' between landlords and tenants (AHURI, 2020; Leishman et al., 2022). These measures indirectly affect house prices as they increase or decrease the ability of prospective homeowners to access mortgages. According to the stakeholders interviewed, most of the fiscal policies sought to keep money flowing throughout the economy. This is seen in the quote below.

Quotes	*Interviewee*
"… Australia seems to have done really well in terms of how quickly we managed to mobilise responses and how effective they have been. Uh, so you know It's always a relative statement. But I think Australia has done a whole lot better than Let's say the average of governments you know about as well as you might have hoped ahead of time."	*R2*

The Home Builder Grant, Job Seeker and Job Keeper policies and their impact are discussed below, considering the views of the professionals in the industry sampled.

Home Builder Grant: The anticipated impact of COVID-19 on the housing market was that as jobs are lost and savings fall, demand for housing would tumble, with many experts predicting an up to 10% reduction in house prices (Heath, 2020). Coupled with the fact that the residential construction sector has forward linkages to job creation in the construction sector (CHIA 2020; SGS Economics and Planning, 2020), addressing this anticipated negative impact was of significant relevance to the economic recovery of Australia. Consequently, the Australian government launched the $680 million Homebuilders Grant program in June 2020 in response to the COVID-19 pandemic. The goal of the policy was to "support confidence in the residential construction sector" and "encourage purchases or renovations (of homes delayed due to) COVID-19" (Treasury of Australia, 2021). The stimulus package provided eligible applicants with up to a $25,000 grant for their residential build or renovation. The grant ended on 31st March 2021, with Treasury Data showing 121,363 total applications across the country as of 9th April 2021. This outcome dwarfs the initial government's expectation of supporting 27,000 homeowners and home builders (Prime Minister of Australia, 2020). The expected impact on house prices is clear.

Job Keeper Policy: As COVID-19 loomed and businesses were affected by lockdowns, the Australian federal government launched the Jobkeeper Payment to help keep Australians employed and support impacted businesses (Treasury of Australia, 2021). In the first two phases, eligible businesses, and not-for-profits (NFPs) received $1500 pre-tax per fortnight per employee to cover the cost of salaries. In the second phase, businesses and NFPs received between $650 and $1200 per fortnight per employee. As a result, individuals who would otherwise have lost income from employment could remain financially buoyant and, by extension, seek out mortgages to pay for homes or keep servicing mortgage repayments, keeping upward pressure on house prices. A stakeholder's quote demonstrates the policy's impact on the industry.

Job Seeker Policy: The Job Seeker Policy, which replaced the Newstart Allowance upon the latter's end in March 2020, was a government initiative aimed at providing financial support to residents who would have otherwise been unemployed and unsupported by providing them fortnightly payments for the period they are unemployed, among other circumstances, subject to meet defined characteristics. Job seeker's support for their beneficiaries enables them to keep renting, contributing to the housing market stability and potentially applying for a mortgage (see Services Australia, 2022).

From the interviews, an overwhelming percentage of the respondents stated policies such as job keeping, stimulus packages and reduction of interest rates were deployed. These policies sought to keep money flowing in the system. The consequential benefits from the Job Keeper strategy were stated. As noted, some households were able to keep up with their mortgage payments due to the Job Keeper policy. Reducing the cost of debt and interest rates also helped increase confidence in the housing market. However, because COVID-19 affected the country's health and migration sectors, other strategies, such as border closures and health sector incentives, were implemented to control the pandemic's negative impact. The fiscal policies show that the demand side of the market received some intervention through the first home buyer package and other supply-side interventions which sought to keep jobs and people employed.

Quotes	Interviewee
"I would think the strategies of the government employed were very simple. They were giving handouts, they were, they were funding and supporting people in order to prevent potentially a collapse of the economy and people not being able to afford their day-to-day expenses. The biggest strategy I will, I would have thought would have been obviously job things like job keeper and seeker."	I2
"So, the introduction of policies like job keeper and job seeker for example. We know at least once some way to helping people service their rents and mortgages. If you look at ABS, household surveys around the introduction of those policies, I recall it was about 16% of households were using jobkeeper to help pay their mortgage."	I4
"I think there was two main ones and I think firstly, which is probably the most publicly and well understood is the interest rate, the RBA cash rate decisions. So going through that and watching them sort of constantly decrease it till it got to point 1%, that's sort of their way of incentivising money movement from banks and you know consumer confidence, the loan off banks and increase the flow of money throughout all the institutions and end users."	I1
"If you look at … household surveys around the introduction of those policies, I recall it was about 16% of households were using JOB KEEPER to help pay their mortgage, in the June quarter of 2020; so this keeps a floor under the housing market, and it stops those potential defaults and sell offs of distressed property."	I4
"And I think they did promote confidence in the in the economy where? Yeah, so essentially they did promote confidence to large companies, to individuals that things are gonna be OK. There is a stimulus in the market. The government's helping to get through this pandemic."	F2

4.2.2 Quantitative Easing (QE) and the Australian Housing Market

Adding to the fiscal policies implemented by the Australian government, the RBA also rolled out the QE monetary policy. The QE policy is an unconventional monetary policy that the government has not implemented in previous BSE like GFC. The interviewees were asked about

their understanding of QE as a monetary policy, their views on the broader QE effectiveness and its impacts on the Australian housing market during the COVID-19 pandemic.

4.2.2.1 Finding: Understanding of Unconventional Monetary Policy QE

From the interview data, the respondents overwhelmingly understood the QE policy well. As noted in the quotes, the common features highlighted by the respondents are the RBA was using QE to ensure money liquidity is readily available in the economy. QE was used by the RBA, in conjunction with the Commenwealth's fiscal policies, to boost the confidence of the stakeholders in the market. In other word, QE monetary policy was a means the government used to keep money flowing within the system and maintain market confidence through bonds purchases and interest rates reduction.

Quotes	Interviewee
"As I understand it, it's a more aggressive, focused direct form of monetary policy intervention in the market. So rather than easing rates down, you deliberately make money cheaper to stimulate activity."	*R1*
"…actions taken to loosen monetary policy to provide you know, ensure that there's a free flow or a flow of money to keep the economy or the financial markets functioning"	*R3*
"With QE ultimately what we're doing is we're trying to kind of anchor two points on the curve rather than just the short end, so. We moved the short end and then we use QE to have some effects on other parts of the yield curve. You can also do more targeted versions where you're choosing what longer term bonds you are purchasing in order to have targeted effects on in some cases, for example, mortgage-backed securities."	*R2*

4.2.2.2 QE and the Australian Housing Market

The QE monetary policy topic was further interrogated in our interviews to identify its relationship with the Australian housing market and the magnitude of the impact of the policy on the housing market recovery during the COVID-19 pandemic.

The interview participants suggested there a direct relationship between the QE policy and the Australian Housing Market. They indicated that low-interest rates regime was translated into easier and quicker access of funds, thus increased the capacity of potential property buyers and reflected in increasing confidence in the housing market. The improved lending liquidity in the housing lending space because of QE implementation has allowed homeowners and investors easier access to funding previously not available. Some respondents stated the policy had a 'great' and 'big' impact on the housing market.

The interview participants unanimously opined that QE was both effective and impactful on the Australian housing market during the COVID-19 pandemic. They viewed that QE policy will continue to be deployed in future combatting the adversaries brought about by the future BSEs.

A respondent suggested the policy should be a common feature in the government's monetary policy after the pandemic. Others disagreed, noting that the policy was a stopgap and should end because it would not be sustainable in the long term.

Quotes	Interviewee
"I think that's a clear, well-established relationship in literature between cheap money and housing market value price movement. Your mortgage payments are vastly lower. Therefore, there is a powerful incentive for residential property buyers to borrow money at low rates and acquire properties. The impact of an increasing number of potential buyers trying to acquire properties when there's a finite supply is that price goes up."	R1
I think they say the interest rates are low. You know people borrow more, investors, first time buyers, you know everybody, and housing market price increases and … (this leads to) 20% increase in housing market. Uh, yeah, that's the direct comparison."	F1
"And so again with low interest rates, with the government pumping money to the economy, buying bonds that reduced interest rates, which meant people could borrow money where previously they may not have been, they loosened the rules slightly and essentially that has pumped up the Australian property market because lending has been easier. Because I think lending is the backbone of the housing market. If banks not willing to lend, there's not gonna be a change with property markets."	F2
"I think it had a big impact. And I think it comes back to consumer confidence and sort of. Education in the market. So, I think the interest rates are a lot more quantifiable fee for your first-time buyers or mum and Dad investors say ohh look interest rates are low. Let's get a loan, let's buy a house"	I1
"Yeah, it was great. It was great. People had confidence. People were happy to spend money. The behaviour of the consumer was very in sync with trying to be aspirational, and people were trying to achieve their dreams, and that normally starts with the family homes."	I2

5. DISCUSSION AND PRACTICAL/POLICY IMPLICATIONS

Does BSE like COVID-19 result in structural changes in the Australian economy and housing market? A structural change implies a change in the economy's structure in one or more dimensions which is primarily concerned with the distribution of output across sectors, industries, states, or regions. Since the different segments of the Australian economy are mutually interdependent, drivers of structural change that directly impact a particular sector/industry may have significant repercussions on another. In this paper, the evidence indicates that due to COVID-19, there have been significant disruptions to supply chains that have escalated the cost of supplies including but not limited to the construction costs. It has been noted that BSEs can result in recessions if governments do not devise strategies to combat the effects. Moreover, due to the new norm of working from home in Australia, there has been a major shift in the urban population to rural areas in search of larger houses that could support hybrid forms of working.

Existing evidence indicates that BSEs, in conjunction with compositional change across sectors, transformations of the economy related to the workforce, and the population have also experienced structural changes, and this is evident in the shift in the rural population.

As economic distress rippled outwards due to the impact of COVID-19, forced sales were likely to eventuate among the housing investors and homeowners because of the job losses and lack of income to meet mortgage repayments. The numerous policies introduced by the Australian government brought stability to the market but coupled with the QE policy as a response to the emergency, led to heightened activity in the housing market as the increased availability of mortgage finance combined with the low cash rate in Australia allowed first time home buyers to access financing earlier than in regular times in the housing market. This led to a significant increase in house prices as demand increased relative to housing supply, consequently imposing unprecedented pressure on urban and rural housing markets as a highly unresponsive housing supply has contributed to dwelling price inflation and increasing disparities in dwelling prices between regions.

It has been established through the evidence provided in this paper that QE and other related policies of government are effective in dealing with the effects of BSEs within the Australian context. Despite the expectation of analysts and media commentators that the Australian housing market would crash, the raft of policies deployed in conjunction with QE altered the predictions and caused house prices to grow. Therefore, on the policy front, QE is a valuable tool that can be used to manage housing market dynamics during unprecedented emergencies such as the pandemic. However, policymakers and the Australian government should implement it cautiously as the negative implications of QE were hitting the Australian economy at the time of writing this paper, and the Reserve Bank of Australia had begun winding down on QE and increasing interest rates to deal with elevated levels of inflation. For future research, it will be interesting to examine the extent to which QE and other related measures may be deployed during such unprecedented periods because, among industry executives (from anecdotal evidence during the interviews), there is a general belief that the level of QE deployed during the pandemic was effective and should be used in future BSEs.

6.   CONCLUSION

A decade of steady house price advances since the GFC officially ended in 2018 is attributable to the infamous Royal Banking Commission enquiry during the same period. This retreat in Australian house prices only lasted for seven quarters and rebounded towards the end of 2019. The Australian housing market has never been so volatile that it retreated when COVID-19 hit the country, only to rebounded strongly again towards the 3rd quarter of 2020 and stage one of the strongest escalations against the backdrop of pessimism stemming from the COVID-19 pandemic.

The evidence from expert interviews indicated that BSEs significantly impact an economy. It was generally agreed among the experts interviewed that BSEs are unexpected and will negatively impact an economy significantly. This indicated that the magnitude of the negative impact might not be the expected decline in economic growth but a significant negative impact such as recession and depression. Consumption behaviours of people in an economy change in the face of BSEs, which ultimately impacts the economy as spending reduces. Furthermore, the financial sector experiences instability due to BSEs because of potential defaults in loan repayments as households tend to lose their jobs through businesses collapsing.

The COVID-19 pandemic as a BSE had a broader impact that encompassed more than economic implications. Socially, the lockdowns due to isolation rules to curb COVID-19 affected the health and well-being of people. Those who lived alone had it tough mentally because there were no opportunities to bond and engage with family and friends. Whereas GFC was mainly economic and financial, COVID-19 affected probably every facet of human life. Indeed, the impact of COVID-19 is still being felt worldwide and continues to be a serious threat to the world economy.

Considering the impact of BSEs, governments are usually at the forefront of developing and deploying strategies. Similarly, the Australian government developed and deployed strategies to deal with specific BSEs, for example, the most recent COVID-19. At both the federal and state government levels, fiscal policies are developed to promote consumption by households and boost business activities. For COVID-19 specifically, the evidence pointed to Job Keeper and Job Seeker as two significant fiscal policies that aided the economy and kept it from collapsing. Other major fiscal policies, such as homebuilder, repair, and social housing maintenance, focused on the supply side by boosting the confidence of businesses to continue to operate. For example, the homebuilder grant significantly boosted the construction sector and kept a pipeline of jobs flowing through the economy.

Based on the evidence gathered from the field data, in Australia, strategies were deployed by both the independent RBA and the Government - at various levels. Through QE, the RBA invariably increases the money in circulation to increase credit access for household consumption. This is complemented by a continuous decline in the cash rate to reduce household borrowing costs. Similarly, QE allows businesses to borrow at low rates to boost business activities. The combined effect is household demand and business production to accelerate an ailing economy. The interview participants had overwhelmingly agreed that a significant correlation existed between the QE measures and the Australin house prices, due mainly to the improved liquidity and lower borrowing cost. Although some stakeholders cautioned the remnant effects of QE on the country's economy, especially when the rescue packages are due for termination, they envisaged that QE will be an effective tool combating future BSEs.

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Appendix I

Structured Interview Guide Questions

Section 1: Information on your Organisation

1. Can you share your career history and roles in your organisation with us?

2. In which sector would you classify your organisation?

3. Can you tell us the business of your organisation?

4. How is your organisation involved in the central bank and the government policy implementation

Section 2: Information on Black Swan Events

1. Do you agree that GFC 2008 and COVID-19 are black swan events?

Section 3: Impact of Black Swan Events on The Economy-Housing Market

1. Could you discuss how these black swan events are connected to the broader Australian economy? How would you describe the magnitude of such an impact?

2. Could you discuss how these black swan events are connected to the Australian housing market? How would you describe the magnitude of such an impact?

Section 4: Strategies Deployed to Deal with Black Swan Events

1. What have been your organisation's role in battling the impacts of the black swan events?

2. Can you discuss what economy strategies were deployed during the occurrence of black swan events by your organisation?

3. How would you assess the effectiveness of these strategies in economic recovery efforts?

4. How does those economic recovery efforts transmit to the housing market?

Section 5: QE and the Australian housing market

1. What is your understanding of QE as a monetary policy?

2. Could you tell us why QE was part of the Reserve Bank of Australia (RBA) monetary policy during the Covid-19 pandemic?

3. Why such measure was not in existence during the GFC 2008?

4. What is your opinion on QE and its relationship with the Australian housing market recovery?

5. How would you describe the magnitude of the impact of QE on housing market recovery during COVID-19 pandemic?

6. In your opinion will or should QE be a permanent feature in the Australian monetary policies during black swan events in future?