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Lost in Translation

Quantitative Easing, Finance and Household Recovery in the United States

Nicholas Peterson

Honours Thesis

Submitted as a partial requirement for the degree Bachelor of Arts (Honours), Political Economy. University Of Sydney, October 2015.
Declaration of Originality

This work contains no material which has been accepted for the award of another degree or diploma in any university, and to the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due references are made in the text of this thesis.
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## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Asset Backed Securities</td>
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<tr>
<td>DTI</td>
<td>Debt to Income Ratio</td>
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<tr>
<td>FHA</td>
<td>Federal Housing Agency</td>
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<td>FHFA</td>
<td>Federal Housing Finance Agency</td>
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<tr>
<td>GSE</td>
<td>Government Sponsored Enterprise</td>
</tr>
<tr>
<td>LTV</td>
<td>Loan to Value Ratio</td>
</tr>
<tr>
<td>MBS</td>
<td>Mortgage Backed Securities</td>
</tr>
<tr>
<td>SCF</td>
<td>Survey of Consumer Finances</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>QE</td>
<td>Quantitative Easing</td>
</tr>
</tbody>
</table>
# Table of Contents

**Introduction** 7

**Chapter One: The Minsky-Keynes Asset Pricing and Portfolio Theory:** A Conceptual Framework for Exploring Quantitative Easing 11

1.1 The Rate of Return Equation 11
1.2 Divorced from the Orthodoxy: The Total Rate of Return Equation and Prices 13
1.3 The Rate of Return Accruing to Capital Assets and Real Estate 14
1.4 The Rate of Return Accruing to Financial Assets 16
1.5 Financial Firms, Non-Financial Firms, Households and Investment 17
1.6 Profitability and Investment 21
1.7 Conclusion 23

**Chapter Two: Quantitative Easing, Finance and Household Wealth - A Tale of Two Americas** 24

2.1 Saving Finance 24
2.2 Recovery in Financial Markets and Low to Middle Income Households 27
2.3 The Housing Recovery and Low to Middle Income Households 30
2.4 Restricted Access to Financing and Weak Balance Sheets: Explaining the Stratified recovery 36
2.5 Conclusion 41
Chapter Three: Households and Financial Collateral

3.1 The Role of Collateral in the Financial System
3.2 Defining Collateral within the Minsky-Keynes Asset Pricing Framework
3.3 Mortgage Backed Securities and the Demand for Collateral Pre-Crisis
3.4 Collateral in Crisis
3.5 Quantitative Easing, Collateral and Households
3.6 Conclusion

Chapter Four: Implications - Household Wealth and the Continuing Recovery

4.1 Debt-Led Aggregate Demand Before the Crisis
4.2 American Households, Weak Balance Sheets and Consumption in Crisis
4.3 Quantitative Easing, Financial Markets and Aggregate Demand
4.4 Quantitative Easing, Consumption and Investment Since the Crisis
4.5 Speculating on the Future Positioning of Households Within American Capitalism
4.6 Conclusion

Conclusion

Bibliography
Introduction

‘We hope that as the economy improves, and as we tell our story, and as more information comes out about why we did what we did, that people will appreciate and understand, that what we did was necessary; that it was in the interest of the broader public. It was a Main Street set of actions aimed at helping the average American.’

Ben Bernanke, 2014

The term Quantitative Easing (QE) refers to a set of programmes undertaken by the Federal Reserve from 2008 to 2014. The programmes involved large scale expansion of the Federal Reserve’s balance sheet through the extension of liquidity into American financial markets. The aim of this thesis is to directly challenge the narrative about the programme put forth by Bernanke: that QE supported liquidity in financial markets in order to benefit ordinary households. Instead, it will become clear that households benefited from QE only to the extent that they were able to participate in the support of finance.

That such an understanding can follow from a study of Quantitative Easing would be surprising to those familiar only with the current orthodox literature on the subject. The orthodoxy operates from the ontological assumption that economic reality consists of markets which derive their efficiency from the population of rational agents which operate through them. From here the literature diverts in one of two ways. The first - accepting this ontological basis in full - operates with an idealised notion of the price mechanism. This leads to the conclusion that QE’s impact cannot be derived from changing the volume of certain asset types that financial agents hold. For, rational agents are only concerned with discounted future expected returns, which changes in quantity alone cannot effect. As a consequence, such theorists pose that programmes like QE work through an ‘expectations channel’ (Bauer & Rudebusch, 2014; Wallace, 1981; Woodford, 2012). For, the very action of QE implies that the federal funds rate will remain near or close to the zero bound. This fosters the rational expectation that favourable financing conditions will continue for a long period of time. Such an expectation then fuels expansive investment. While this may seem like a promising
avenue of investigation, it is stymied by the fact that such analysis takes place with reference to the expectations of perfectly informed, rational agents. The result is an explanation of QE that fails to consider the influence of uncertainty on economic decision making.

Some in the orthodoxy seek to adjust the ontological basis of efficient markets with the addition of features such as ‘imperfect information’ and ‘investor preferences’. These additions amount to underlying inefficiencies. For these theorists, Quantitative Easing works through these underlying inefficiencies to enable other markets to operate as they should (Kiyotaki & Moore, 2012). Basically, by lowering the cost of credit instruments - whether they be mortgages or corporate bonds - QE enables access to credit in an environment where, due to the financial crisis, such markets had been shut off. In an ideal world, this would allow other markets to operate efficiently, leading to wider investment, wealth and income. Of course, such an outcome is not given. There may be inefficiencies upon inefficiencies upon externalities which inhibit this path of events. But this kind of approach is essentially an attempt to compensate for the deficiencies of the underlying ontology, with the continuous addition of caveats to explain why the counterfactual - efficient markets - does not exist.

Abandoning the ontology of efficient markets opens the scope for a different approach to studying QE. Firstly, this thesis will adopt a Minsky-Keynes framework in order to understand economic and more specifically, portfolio decision making in conditions of uncertainty. Studying the link between QE, portfolio decisions and investment will allow for a better understanding of the programme’s effects. However, the insights offered by Minsky and Keynes must be supplemented with an understanding of how the current systemic imperatives of finance, also exert influence upon portfolio decisions (Lawson, 1994). Therefore, by placing the portfolio decisions of agents in a systemic context, an alternative interpretation of Quantitative Easing - and more specifically its impact upon households - will be developed.
Chapter one of this thesis will proceed to explain the Minsky-Keynes approach to portfolio decision making. This approach highlights the various factors which inform portfolio decision-making in conditions of uncertainty. It also shows that investment in the capitalist economy is the result of specific alignments that occur between the portfolio decisions of different actors. With this in mind, the second chapter of this thesis will seek to establish empirically the impact of Quantitative Easing on low to middle income households. It will begin by demonstrating that the most direct impact of the QE programme upon households was dependent upon their level of exposure to financial assets. The lack of access low to middle income households have to such assets meant that this group experienced less benefits from the programme than their high income counterparts. However, QE has also played a role in restoring the Mortgage Backed Security market and thereby establishing favourable financing conditions for households. Such favourable financing conditions can, in theory, lead to increased investment in real estate and rising house prices. As low to middle income households have a high degree of exposure to real estate, this group had a higher chance of benefitting from this process. Nevertheless, it will be shown that the recovery in property prices has disproportionately favoured high income household wealth.

Chapter Three attempts to account for the inequitable distribution of wealth benefits accruing from the housing recovery. It will do so by exploring how QE supported portfolio decision making that, in turn, worked to restore two important aspects of the financial system: the schema of competitive calculation and wholesale funding markets. The first of these refers to the process by which finance determines asset prices, while the second is at the heart of credit distribution within financial markets. Both of these operations require collateral to function. Quantitative Easing, in partnership with other government programmes, worked to support finance’s capacity to create collateral from household liabilities. However, it will be shown that the portfolio decisions of financial agents taken in response, failed to result in eased financing conditions for low to middle income households. This is because these households had a limited capacity to support the creation of collateral assets, due to the weakness of their balance sheets. Such
restricted financing can account for the lack of investment in the real estate market which has resulted in depressed low to middle income household wealth.

The last Chapter of this thesis will then assess the implications of QE’s impact on low to middle income households for the wider recovery of American capitalism. It will argue that in the years since the crisis, restoring households’ capacity to provide collateral has come at the expense of facilitating the capacity of this group to consume out of increases in wealth. The result has been a demand gap leading to weak levels of investment in the early recovery. The chapter will end by speculating on how the tension between households’ dual role may be resolved in the immediate future, arguing that the changing imperatives of the financial system may lead to a resumption of the debt-led consumption regime. This argument will therefore align with the general contention of this thesis: that Quantitative Easing has instigated a recovery that includes low to middle income households only in so far as this group have the capacity to support finance.
Chapter One


Quantitative Easing’s effect can be understood as a product of the portfolio decisions that it helped to facilitate. These portfolio decisions have led to investment paths which have disproportionately favoured high income households over their low to middle income counterparts. To give such an investigation conceptual grounding is the purpose of this chapter. It will therefore begin by outlining the Minsky-Keynes asset pricing theory. The total rate of return equation developed in this analysis will be applied to explain which factors go towards determining the expected rate of return accruing to different types of assets. From here, the chapter will detail how the portfolio decisions of agents interact to influence investment. This points toward the key contention of this chapter: that some kind of positive alignment of expectations between firms or households and finance is necessary to bring forth the portfolio decisions which induce high rates of investment. After this argument is detailed in full, a conceptual framework will be in place that can be utilised to understand how households were impacted by the QE programme. For, placing the portfolio decisions of agents in a systemic context will facilitate an understanding of the paths of investment that led to QE’s effect upon this group.

1.1 The Rate of Return Equation

Capital and financial assets are expected to produce a yield over a period of time. This is an explicit yield; the cash flow that accrues as the asset is used in production or as the issuer makes payments to the asset holder. In such a context, Keynes stated that it was puzzling why non or low yield bearing assets, such as money, are valued as a store of wealth (Keynes, 1937: 216). However, he recognised that these assets yield a return as protection against contingencies in a world of uncertainty (Wells, 1983: 524). The yields which attach to other assets are liable to revision, and in such an environment liquid
assets offer a store of wealth which is relatively certain (Minsky, 2008a: 71; Minsky, 2008b: 87). This then, is an implicit yield, representative of the amount of explicit return a holder is willing to sacrifice for liquidity services. We shall name the explicit yield $y$ and the implicit yield $l$ respectively. In addition to this, the return of an asset will be affected by its expected appreciation over a period of time, $a$, and its carrying costs, $c$.¹ Keynes used the term ‘carrying costs’ to refer to an asset’s ‘wastage… through the passage of time’ and its warehousing costs (1936: 225). Minsky, meanwhile, used the term with reference to the financing costs associated with holding an asset (2008a: 82-83).

Given these elements, we can create an equation describing the elements which go towards establishing the expected net rate of return for an asset.² It should be noted that this rate is a proportion of the existing price. If the rate of any asset is high, then increased interest in that asset is likely to drive up its price until the proportions are similar across all asset classes, creating a stock equilibrium.³

$$ R = y + l - c + a $$

At this point, Keynes sought to combine this theory with his notion of liquidity preference to account for investment in capital assets. Keynes stated that each capital asset has its ‘own’ rate of interest stated in terms of money. Investment would proceed only if the ‘own rates’ of assets available were above that of money (Keynes, 1936: 222-225). As Wray and Tymoigne note, this schema has the implicit assumption that financing for such investment is always accessible (2008: 7). Minsky’s great innovation

1 Both of these figures are expressed as a proportion of the asset’s current value

2 The equation has been summarised and expressed in its above form by (Wray & Tymoigne, 2008).

3 Equilibrium in this context has no link to the neoclassical definition. Rather, it represents a situation where no agent has an incentive to change their behaviour in regards to shifting their interest out of one asset class into another (Wray & Tymoigne, 2008: 7). This is because the expected rate of return as a proportion of the price will be the same across all asset classes. Of course, changing expectations regarding factors in the equation will induce such changes, shifting the equilibrium as a consequence.
was to analyse how the dynamics of finance feed into and influence the decision to invest in capital assets (Wray & Tymoigne, 2008). This innovation will be elaborated upon later in the chapter. But first, it is necessary to consider how this framework is divorced from the orthodoxy.

1.2 Divorced from the Orthodoxy: The Total Rate of Return Equation and Prices

The above schema will apply differentially, depending on the situation and judgment of each agent in the economy. It is therefore necessary to make clear how this rate of return equation relates to prices as they appear in markets. This will make explicit the divorce between the Minsky-Keynes approach to asset pricing and the orthodoxy. For, it seems that the total rate of return equation outlined could be integrated into an orthodox understanding of the price mechanism within efficient markets. This is because the factors within the equation ($q, c, l$ and $a$) could all reflect the determination of agents being guided by fundamentals (Wray & Tymoigne, 2008: 14). This rational judgment could then be reflected within prices. Furthermore, within this framework we can integrate the notion of potential derivations from expected returns through pricing volatility. Thus, to divorce this schema from orthodox theory, we must introduce an ontology defined by uncertainty. In such a context, even anticipated risk or volatility is subjective and therefore open to revision. Due to the presence of uncertainty, Minsky and Keynes both emphasised that prices within financial markets were established by convention. The implications of this have been well expressed by Wray and Tymoigne:

*In order to reduce ignorance about an unknowable future, fundamentals are created through social interactions in order to provide a vision of the future that justifies current decisions.* (Wray & Tymoigne, 2008: 15)  

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4 It is interesting to note the similarity of this ‘convention’ viewpoint to the recent literature on performativity. See, in particular (Esposito, 2013).
This does not necessarily mean that every agent operates with the same defined expectations when it comes to the factors embodied in the equation. Rather, financial markets function to synthesise all these individual judgements into prices that agents then have reference to. Agents may accept the truth of these prices, and therefore the judgments embodied within them (as they tend to do in crisis or in boom conditions) or challenge them through undertaking contrasting strategies. For example, let us say that the price of a relatively illiquid bond is low. An agent could accept that the expected rate of return is embodied in that price. Alternatively, they could expect the explicit yield to be a very high proportion of that price. If this agent has little willingness to sacrifice explicit yield for liquidity, they may then purchase the asset. If enough agents make the same decision, then the price of the asset will change. The key point here, is that there is nothing pre-determined or technical about this determination. Prices will be a product of agents’ own subjective judgements regarding the factors embodied in the equation as they seek to manage their wealth in a context of uncertainty.

1.3 The Rate of Return Accruing to Capital Assets and Real Estate

The next section proceeds on the basis that there are particularities involved in the rate of return accruing to financial, capital and real estate assets that must be highlighted. Through this analysis, elements of the relationship between the expected rate of return accruing to capital assets, housing and the decisions of financial agents will necessarily be highlighted. Let us begin by presuming that we are operating with a given value placed on the insurance provided by liquidity. With this assumption in place, the main

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5 This does not mean that agents purely have reference to third party judgment, as in Keynes’ ‘beauty contest’ (Keynes, 1936: 156-157). Rather, prices can be reflective of integral judgements agents have made as to the profitability of a project. Financial markets are complex, and prices reflect outcomes of contrasting subjective judgements that agents have acted upon for a variety of reasons.

6 The mechanisms through which finance mediates the expectations of individual agents to form asset prices will be considered in Chapter Three.

7 Agents will value liquidity differently according to the context in which they operate. Confidence will see the value of implicit yield become negligible, while in crisis conditions it becomes the dominating factor.
factor behind the decision to purchase capital assets (those used within the production process), by a non-financial firm is the explicit yield that the asset in question offers (Keynes, 1936: 226). The reason behind this can be accounted for by considering how the other figures in the above equation apply to the pricing of capital assets. Firstly, over the course of its life a capital asset depreciates, meaning that $a$ will be negative and predictable. Secondly, once purchased, a capital asset is not particularly marketable when compared to say, a financial asset. The market for the asset in question may be narrow and furthermore, its marketability will decline as depreciation begins. This means that $l$ will be negligible. Therefore, the main relationship that must be analysed when it comes to purchasing capital assets, is that between the expected explicit yield ($y$) and carrying costs ($c$). Minsky, puts particular emphasis on the component of $c$ which comes from the cost of financing a capital good (2008a: 82-83). This cost will obviously depend on the situation of a firm. If operating from existing cash balances, the financing cost represents that which is associated with parting with money as a form of insurance. Thus, in such a circumstance, a judgment to invest will be made solely on the basis of the expected explicit yield when compared to the implicit liquidity return ($l$) attaching to money (2008a: 85-86). However, if debt financing is needed to expand a firm’s portfolio into capital assets then the price of credit will be an issue of concern. As Minsky puts it: “A decision to invest is a decision to emit liabilities or decrease liquidity” (Minsky, 2008a: 86). Thus, the decision of financial agents in distributing credit liabilities must be considered in order to understand the expected rate of return accruing to a capital asset.

Behind all portfolios is a balance sheet, in which agents take on liabilities in order to fund the acquisition of assets. In this sense, a balance sheet represents expected relative cash outflows and inflows set over a period of time (Minsky, 2008a: 85). A firm will be

---

8 This is obviously an abstraction, as non-financial firms have portfolios made up of financial and capital assets (Minsky, 2008a: 85-86). However, the differentiation is made on the basis that it is only these firms that usually take direct ownership of capital assets.

9 Liquidity or marketability is obviously more relevant to those who may be involved in creating investment goods for purchase or ownership by others.
reliant on income from the assets it holds in order to meet the liabilities it owes, particularly to financial agents. Every time a firm borrows to invest in a capital asset, it will have to engage with the liability side of its balance sheet and therefore the terms of credit \((c)\) offered by finance. It is this comparison between the terms offered by finance \((c)\) and the explicit yield \((y)\) (net of depreciation) that informs the total rate of return accruing to an asset. However, finance’s influence extended beyond the determination of \(c\). For, Minsky envisaged that finance played a role in determining the total rate of return in a positive sense, through its influence on a firms’ share price. Minsky makes clear that in making the decision to purchase a capital asset, firms will also have reference to how such an action may increase this value, for the benefit of shareholders (2008a: 87). If the value is expected to increase, then this will encourage the firm in question to take ownership of the asset in question. Thus, it is clear that finance has influence over the expected rate of return accruing to a capital asset, both in terms of its influence on the share price of firms and \(c\).

In comparison, the two main factors informing the rate of return for housing will be the expected appreciation of the asset, \((a)\), and financing terms, \((c)\), on which it is available. In addition, real estate also carries an explicit yield, which represents savings in rent costs. Given this yield, finance sets the terms of credit that households then compare with expected appreciation to establish the anticipated rate of return for the asset. However, the role of the implicit yield in this process is complex. For, households’ willingness to buy and sell real estate may lie exterior from the value placed on liquidity. This will be important to keep in mind when this thesis discusses low to middle income household portfolio choices in chapter two.

1.4 The Rate of Return Accruing to Financial Assets

Financial assets are more flexible than capital and real estate assets. As well as offering an explicit yield, financial assets can also be relatively liquid and appreciate over time. However, financial assets are not homogenous. For example, a treasury bond is a highly liquid asset with a clear, definable yield. A share, meanwhile, may be less liquid, with
an uncertain yield, but will probably appreciate more over a defined time period. Both of course, are financial assets. A financial portfolio then, will be constructed according to an agent’s preferences surrounding the extent to which they prioritise - relatively speaking - the different constituent elements of the total rate of return equation. Understanding this will become particularly important when this thesis comes to consider the nature of collateral assets in chapter three.

1.5 Financial Firms, Non-Financial Firms, Households and Investment

In this framework, a shift in the stock equilibrium of portfolio assets results in flows of investment. In simpler terms, the changing portfolio decisions of agents will affect how funds flow to different investment projects (Minsky, 2008a: 31, 134). The task of this chapter is to consider how these portfolio decisions interact to determine both capital and real estate investment. This is important to understand. For, investment patterns in capital assets and the real estate market have been key to establishing the effect of QE on low to middle income households.

Let us begin, by exploring capital investment. When making the decision to invest in capital assets, firms have reference to the supply price, which is the price of labour and production inputs. This represents the total cost of the asset. They then compare this to a demand price which reflects the expected return embodied in an asset given a value for the insurance offered by money (Minsky, 2008a: 91-98). Only if the demand price is above the prevailing supply price will investment proceed. We already have the elements in place to decipher how finance relates to the establishment of the demand price. Firstly, Minsky envisages the demand price as being reflected within financial markets (Minsky, 2008a: 99). One must be careful to understand what this implies. Indeed, it should not be taken to mean that there is an automatic abrogation of firms’ agency regarding the prospective profitability of a project to financial agents. Minsky

10 The term financial portfolio may be misleading because, as Minsky highlights, all portfolios are essentially financial in the sense that they embody assets which are expected to result in some type of yield denominated in money (Minsky, 2008a: 68-71).
makes clear that a firm’s role is to make decisions for themselves that will induce an increase in its share price due to the expected explicit yield a capital asset is expected to offer (Minsky, 2008a: 86). We can posit here the existence of a reflexive relationship between such judgments and financial evaluation. Firms’ decisions will inform financial evaluation, but such financial evaluation can then impact on the demand price of firms. This is because increasing their own share price is of increasing priority for firms, as it satisfies shareholders. If they believe that an increase in share price is likely following investment in an asset, then this may improve the demand price at which they are willing to purchase it. Thus, there is a reflexive relationship between the judgment of firms and finance which establishes the demand price.

The cost of credit - determined by financial agents - is also likely to be a telling factor in establishing the demand price. This is referred to by Minsky as ‘lenders’ risk’ (2008a: 111). A financial agent will judge the expected rate of return that will accrue from holding a firm’s liability according to the likelihood that the firm will be able to service the instrument in question. Thus, if financial agents do not perceive the project to be profitable, then the price of credit may either be high, or supply withdrawn completely.11 Either way, the demand price will increase, potentially beyond the supply price the firm has reference to. However, if the financial agent believes that the project is likely to be profitable, then credit may well be distributed at a favourable rate. It is clear then, that the alignment of expectations between finance and firms - surrounding the profitability of a project - creates the conditions necessary for the perpetuation of investment in capital assets. If the agents’ views misalign with each other, then this may be enough to inhibit capital investment by pushing the demand price beyond that of the supply.

One last point should be made here. Financial agents, like their non-financial counterparts, also place value on the insurance offered by money. If this value increases - as it tends to do in times of crisis - then this could inhibit their willingness to lend to

11 There may be circumstances where the strength of the firm’s balance sheet convinces finance to distribute liabilities to it on the basis that even if the project fails, the firm will be able to service the liability.
firms. However, as will be shown in Chapters Two and Four, one of the main achievements of Quantitative Easing has been to ensure that demand for liquidity on the part of financial institutions has been satisfied. This provides further evidence to support the notion that depressed investment since the crisis has more to do with these agents’ assessment of the prospective profitability of investment rather than an increased liquidity preference. Indeed, while finance must be ready and willing to distribute credit at favourable rates - especially coming out of crisis - this is never enough for investment to occur (Keynes, 1936: 158). A firm must also be willing to make the associated portfolio decision to purchase the capital asset on the basis of the returns it is expected to offer.

Despite the above analysis, the path towards investment does not necessarily have to derive from the portfolio decisions of agents who share the same expectation. Things get more complicated when we consider the influence of financial valuation on investment as it occurs within the real estate market. Here, investment can be defined as the allocation of funds to the purchase of residential property. In this setting, the expected rate of return accruing to financial assets can become influenced by other factors separate to the performance of the underlying asset in question. This is due to the development of securitisation practices (Wray & Tymoigne, 2008: 17-21). Securitisation refers to the process whereby financial institutions - instead of holding debt on their books - package it into another form and sell it to other agents (Lavoie, 2012: 12-14). In this context, the marketability of these instruments may be the primary factor informing a financial agent’s decision to extend the original liability to households and at what terms. Furthermore, these processes actually feed back into the portfolio decisions of households, cheapening the cost of credit and driving expansive investment in housing. This increased investment has a reciprocal impact on the expected appreciation of real estate, supporting a cycle of asset price inflation and investment.

The above analysis does not render nugatory the contention that there must be a positive alignment of expectations between agents for investment to occur. It does, however, mean that the necessary dimensions of such expectation alignment may encompass
different combinations of factors surrounding the assets involved. From the above explanation, it is clear that a household will invest in real estate primarily due to the expected appreciation of the asset, while finance may distribute the mortgage liability on the basis of its marketability. There is still an alignment of expectations here that has resulted in investment. But it is not an alignment around the same expectation. The household does not spend any time paying attention to the marketability of the security based upon its liability. Finance, meanwhile, does not have to pay as much attention to the expected appreciation of the asset nor the actual capacity of households to finance the loan, due to the fact that it can be sold easily. Nevertheless, positive expectations surrounding each factor have aligned to allow portfolio decisions which have facilitated investment.

However, there is also vulnerability here. For, the portfolio decisions which lead to investment are made regarding factors which are isolated from each other. This means that the different priorities of the agents involved could come to compromise investment. For example, it will be shown in Chapter Three that changing expectations surrounding the marketability of mortgage-backed securities have shifted the portfolio decisions of finance in a way that has restricted access to credit for low to middle income households. As such, households have been unable to make the portfolio decisions necessary to facilitate investment in the real estate market and therefore enable asset price inflation in this sector. This will be shown to have important implications for low to middle income household wealth.

So far, this section has established that some kind of alignment of expectations between finance and firms or households is necessary to bring forth portfolio decisions which lead to investment. However, this process of aligning expectations also sows the seeds for crisis. This is on the basis that positive expectations surrounding the rate of return accruing to assets feed unstable liability structures (Minsky, 2008b: 234). Minsky sought to demonstrate this with reference to non-financial firms. In a context of aligning expectations, finance becomes willing to facilitate wide access to credit. In addition, non-financial firms become leveraged as they take on liabilities based upon the
increasing expected rate of return accruing from the assets they take ownership of (Minsky, 2008b: 234). This leaves non-financial firms reliant on the phenomenon of increasing returns continuing into perpetuity. If this expectation is contravened, firms are left with liabilities they cannot meet. Importantly, this notion of unstable liability structures can easily be applied to other agents such as households. In Chapter Four, we will consider the implications and importance of leveraged household balance sheets in both the crisis and most recent recovery.

This section has shown that investment is a product of portfolio decisions which result in the flow of funds towards different investment projects. Firstly, both finance and firms must expect a project to offer a satisfactory rate of return in order to draw forth the necessary portfolio decisions which allow capital investment to occur. However, the dynamics of financial valuation means that agents do not necessarily need to share the same expectation to configure a set of portfolio decisions that leads to investment. This became clear when considering the process of investment in the real estate market. Finally, it was shown that such positive expectation alignment can foster unstable liability structures. Thus, the process of investment in capitalism is inherently unstable and uncertain. Firstly, it relies on a particular configurations of aligning expectations always susceptible to revision. Secondly, when such expectations do align, unstable liability structures are eventually the result. This chapter will now end, by considering how profit derives from the investment processes described.

1.6 Profitability and Investment

Minsky, following on from Kalecki, believed that the investment of firms in the aggregate creates the conditions for their own profitability (1980: 516). Let us say agent A in sector one, decides to invest in creating consumption goods for households. A pays their factors of production and is left with a profit yet to be realised. For this to occur, there must be demand for the good in question. Consequently, B must invest,

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12 This is on the assumption of a closed economy without a government sector. Minsky envisaged a role for the state’s balance sheet in ensuring the profitability of firms. However, we can consider the dynamics of profitability without the state.
enabling households with the income to purchase the goods that A has produced. Without the decision of B, A would be left without profit (Kalecki, 1971: 80-81). The key point here, is that no single firm or sector can invest its way towards profit. However, at this juncture it seems that it is only investment of non-financial firms that matters. There has been some confusion in interpreting Minsky on this basis. For, it has been claimed that this notion of profitability ignores the importance of consumption. More specifically, Ivanova claims that his theory is less useful in the current context, where debt fuelled household spending seems to be driving profitability, replacing wages and therefore investment (2012: 69-71).

As such, now is an appropriate juncture to address this criticism and justify the use of Minsky in analysis of modern capitalism. Two things must be clarified here. Firstly, it is true that Minsky presumed that households’ capacity to consume derived from wages and therefore investment by firms (in a basic model). In present times, paths of investment have changed such that this consumption does not only derive from wages. But it is surely a step too far to divorce it from investment of all kinds. For, it must not be forgotten that the extension of credit to a household is a type of investment for the agent distributing the instrument. It seems then, that the Minsky-Kalecki notion of profitability is still clearly relevant. For, the spending of agents in one sector (finance) may clearly inhibit the profitability of others (non-financial firms) by restricting the distribution of liabilities necessary for households to consume. Indeed, this very path of events will be analysed and extended upon in Chapter Four of this thesis.

Before we conclude this section it is necessary to clarify one issue left outstanding. Minsky adopted the Kaleckian assumption that workers spend what they earn (Kalecki, 1971: 78-92; Minsky, 1980: 515). It is therefore necessary to introduce household agency into this model. This is particularly important in the context of this thesis. As will be shown in Chapter Four, before the crisis, households were increasingly consuming out of expected increases to the equity contained on their balance sheets. Consequent upon huge declines in net worth, households have attempted to repair their balance sheets by deleveraging, thereby foregoing consumption and rendering some
investment decisions unprofitable. It will therefore be demonstrated that the decisions households make with regards to consumption and their balance sheets, is also determinative of profitability.

1.7 Conclusion

This thesis will proceed on the basis that QE’s impact will be informed by the effect it has had upon portfolio decision making and therefore investment. It will seek to prove this by placing elements of the conceptual framework outlined here in a systemic context. Such a framework has at its heart the total rate of return equation that represents the factors which influence portfolio decisions. This chapter began by establishing how these factors apply differentially depending on the type of asset being considered. However, within that discussion, the clear relationship between the total rate of return expected to accrue to these assets and the decisions of financial agents was established. This chapter then proceeded to develop a theory of how interacting portfolio decisions are behind investment in capitalism. More specifically, it showed that a particular configuration of expectations must align for types of investment to occur. From here, it showed that the profitability of such investment derives from the aggregate spending decisions of all agents. This thesis will now continue by analysing how the portfolio decisions of different agents have interacted to produce investment outcomes which directly account for households’ experience of QE. Before it does so, however, the empirical evidence surrounding QE’s impact on low to middle income household wealth must be be considered, in order to highlight the phenomena that are in need of explaining.
Chapter Two

Quantitative Easing, Finance and Household Wealth: A Tale of Two Americas

The aim of this chapter is to establish Quantitative Easing’s impact on low to middle income household wealth. This chapter’s focus on wealth - as distinct from income - can be justified on the basis that QE’s most direct impact was always going to be upon the value of assets rather than income flows. Quantitative Easing took place within financial markets and its most observable effects relate to financial asset prices. We need to trace the secondary effects to consider how the recovery in financial asset prices may have affected low to middle income households. Additionally, Quantitative Easing specifically targeted Mortgage Backed Securities, which eased financing conditions in the housing market. This may have worked to impact upon household wealth in two ways. Firstly, such conditions encourage investment in the real estate market which improves house prices and therefore household wealth. Alternatively, eased financing conditions instigated by QE may have worked to help households refinance their mortgage, increasing their wealth by reducing the burden of debt on the liability side of their balance sheets. Despite this, it will be shown that, at the very least, the benefits of recovery in the housing market have had an inequitable impact, favouring high income households. This will add validity to the central contention of this chapter; that the Quantitative Easing programme has disproportionately benefitted high income households.

2.1 Saving Finance

The aim of this section is to highlight the role of Quantitative Easing in ensuring a recovery in asset prices within financial markets. We begin our story in November 2008 when the Federal Reserve announced plans to purchase $500 billion of government
sponsored Mortgage Backed Securities.\textsuperscript{13} This was followed in March of the following year with further purchases of Treasury securities and MBS (Fawley & Neely, 2013: 60). The programme itself continued with purchases of a similar nature until October 2014. The mechanics of this process involved mainly non-banks (those who do not hold deposits) who sold the aforementioned assets to the Federal Reserve (Carpenter, Demiralp, Ihrig, & Klee, 2015: 31).\textsuperscript{14} The banks non-bank institutions deposited with ended up with central-bank liabilities, resulting in an expansion of the monetary base (Keister & McAndrews, 2009: 6).

The Minsky-Keynes asset pricing framework can be used to understand the impact of this intervention by the Federal Reserve. Firstly, however, we need to appreciate the context in which such an intervention took place. The crisis derived from the collapse of wholesale funding markets which were at the heart of credit distribution within the financial system (Gorton, 2010: 45-52). These markets functioned through repurchase agreements where collateral (a group of assets) would be held in exchange for cash (Gorton, 2010: 44). As fears surrounding the quality of MBS began to develop, questions started to arise surrounding both the quality of the assets being used as collateral and the balance sheets of the agents who were seeking funding (Gorton, 2010: 47-51). As a consequence, lenders in the repo market demanded a haircut: they offered less money for holding the asset than its stated value. This left financial institutions with a funding gap that was akin to a bank run, as the cash deposited through the repo market was suddenly withdrawn. In an effort to compensate, there was a fire sale of MBS as financial agents sought to both meet their funding commitments and remove the assets from their balance sheets (Gorton, 2010: 49-50). However, as a sufficient number of buyers could not be found for the assets investors wanted to pass off, their prices ended up collapsing (Mehrling, 2010: 130-131). This further compromised financial agents’

\textsuperscript{13} This means securities sponsored by the government sponsored enterprises: Fannie Mae, Freddie Mac and Ginnie Mae (U.S. Federal Housing Finance Agency, 2014: 10-13).

\textsuperscript{14} It should be noted that the actual asset purchase the Federal Reserve partakes in, are done with the primary dealers as counter parties. The task of the above study which is cited, is to discover the ultimate counter-parties to the transaction. In other words, who the primary dealers purchased securities from in order to sell them to the Federal Reserve.
willingness to lend to each other as the preference of agents for liquidity rose in the context of collapsing asset prices and declining marketability.

Thus, the Federal Reserve was confronted with a two-dimensional liquidity problem, with the marketability of financial assets \((l)\) declining just as the demand for liquidity increased. To solve this issue, the Fed acted as a market maker of last resort, ensuring the general marketability of MBS (Mehrling, 2010: 132-135). Importantly, this allowed financial agents to dispense with the instruments whose declining value had been responsible for the liquidity issues described above. Furthermore, the central bank liabilities distributed to non-depository institutions ended up with depository banks, as highlighted above. This then helped meet the increased demand for liquidity by agents in the financial system, encouraging them to seek yield-bearing assets.¹⁵ There has been particular scholarly interest in recent years surrounding which yield-bearing assets have been of interest to agents following the QE programme. Some have claimed that QE’s focus on the purchase of long-term assets encouraged agents to seek long dated instruments, on the basis of their preference for maturity balance in their portfolios (Gagnon, Raskin, Remache & Sack, 2011: 6-10; Joyce, Miles, Scott & Vayanos, 2012: 279-281). Whatever the case, it is clear that declining corporate-bond yields has been a prevalent feature of the programme’s impact, decreasing the financing costs for firms with access to this market (Joyce et al, 2012: 279-281). However, these lower yields have not necessarily been used to undertake expansive capital investment. Rather, the investment has been internalised to financial markets. Commenting on the period 2009-2014, Rixtel and Villegas state that:

\[...when\text{deb}t\text{financing}\text{costs}\text{are}\text{favourable}\text{and}\text{equity}\text{markets}\text{are}\text{rallying},\text{US}\text{non-financial}\text{corporations}\text{issue}\text{bonds}\text{heavily}\text{and}\text{use}\text{some}\text{of}\text{the}\text{proceeds}\text{to}\text{finance}\text{stock}\text{repurchases}. During 2009-14, the average quarterly amount of net bond issuance was almost twice that during the previous boom. US non-financial corporations repurchased}\$2.1\text{trillion in shares and raised}\$1.8\text{trillion in cash.}\]

¹⁵ This should have lead to an increased willingness on the part of banks to lend to small businesses directly or to the smaller financial institutions which more actively do so. Why such a process may not have occurred will be considered in Chapter Four.
In other words, cheapening credit costs have been used to further stoke increases in share prices. This is evidence that firms are actively pursuing strategies which are increasing the valuation of their companies within the stock market. This in itself is not surprising, as the last chapter showed that such a goal is an imperative of firms. However, it seems that in the years since the crisis, firms have not attempted to create this outcome through stocking their portfolios with capital assets which have expected high rates of return. Instead, large firms are actively increasing the price of their own shares by utilising cheap credit to participate in buy-back schemes. The results are reflected in Figure One.

**Figure One: The S&P 500 (2007-2015)**


### 2.2 Recovery in Financial Markets and Low to Middle Income Households

It is time to consider the wider effects of the programme upon low to middle income households. This thesis defines low to middle income households as those within the 0-60 percentiles of income distribution as determined by the Federal Reserve’s Survey
of Consumer Finances. The median income for those in the 0-19.9 quintile was $13,800 as of 2013. For households located in the 20-39.9 range, the figure sat at $28,400, while for those in the 40-59.9 quintile it was $46,700 (The Federal Reserve, 2014: 7). The overall median income for all households in the United States was also $46,700 (The Federal Reserve, 2014: 4). To study the effect of the programme upon these households it is necessary to isolate whether this group had any opportunity to directly benefit from increasing financial asset prices. In order to determine this, household exposure to financial assets within the United States must be considered. Figure Two

seems, at first glance, to indicate a widespread access to financial assets.

Figure Two: Percentage of Households With Direct and Indirect Stock Holdings

<table>
<thead>
<tr>
<th>Stock Holdings</th>
<th>Income Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>0-19.9</td>
</tr>
<tr>
<td>2010</td>
<td>12.5</td>
</tr>
<tr>
<td>2013</td>
<td>11.4</td>
</tr>
</tbody>
</table>


16 The term used in the survey is families, rather than households. Ostensibly, there is little relevant difference for the purpose of this thesis. The survey operates through the identification of a PEU (primary economic unit) which is intended to be the economically dominant single person or couple and all other persons who are financially interdependent on that unit. The ‘family’ therefore, represents a particular configuration of a household.

17 All are values presented in 2013 US dollars.

18 It should be noted that there is a discrepancy between the figures relevant to the income quintiles published in the SCF Chartbook (2014), and in the summary written by Bricker et al (2014). However, the trends identified are the same. Bricker et al, write that:

“...all but the highest income quintile saw declines in median income between 2010 and 2013” (Bricker et al, 2014: 6).

This same trend is revealed by the Chartbook, albeit with different figures (The Federal Reserve, 2014: 7). The nationwide median figure is the same in both the Chartbook and the Summary.

19 Households may indirectly own stock through participation in a pension fund or directly, by holding such assets themselves.
While the lowest quintile has some access to financial assets, the next two quintiles seem to have relatively high degrees of exposure. However, ownership of financial assets does not equate to ownership of an extensive portfolio. When looking closely at the mean value of such stock holdings we see in fact, quite low numbers for the first three quintiles ($71 000; $51 000; and $63 000 respectively). In comparison, the stock holdings of the highest income households (those in the top decile) have a mean value of $975 000. Just one decile down, the mean value of such holdings drops to $199 000 (The Federal Reserve, 2014: 511-513). This is indicative of the inequitable distribution of financial assets between the income quintiles, which disproportionately favours those at the very top of income distribution. According to Janet Yellen, Chair of the Federal Reserve, the bottom half of families grouped by income collectively own 8 per cent of all financial assets held by American households (Yellen, 2014). The implications of this inequitable distribution have been recognised by the Federal Reserve in its summary of the 2010-2013 Survey of Consumer Finances:

Consistent with income trends and differential holdings of housing and corporate equities, families at the bottom of the income distribution saw continued substantial declines in real net worth between 2010 and 2013, while those in the top half saw, on average, modest gains (Bricker et al., 2014a: 2).

Here, Bricker, et al, are making an important point: differential holdings of assets between households have shaped their experience of the recovery. As high income households have disproportionately greater ownership of financial assets, Quantitative Easing was always going to be more beneficial for this group. Such analysis aligns with the existing literature which coalesces around the notion that while Quantitative Easing promotes recovery within the financial sphere, it generally has inequitable distributional effects. This is because only high income households benefit from the capital gains and

---

20 All values are presented as 2013 American dollars
increased returns that result from recovering financial asset prices (Saiki & Frost, 2014: 2; The Bank of England, 2012).

2.3 The Housing Market Recovery and Low to Middle Income Households

QE’s ability to lower MBS yields should have had reciprocal benefits for financing conditions in the housing market. The Federal Reserve was able to lower these yields through two pathways. Firstly, it acted as a source of demand for MBS, increasing the price of these assets. Secondly, by ensuring MBS’ marketability, QE encouraged active trading in the instrument on the basis of the assets’ restored liquidity (Hancock & Passmore, 2011: 498-499). Lower yields were then translated into favourable financing rates on the basis that an overwhelming majority of originations following the crisis were securitised by a government sponsored enterprise (Financial Stability Oversight Council, 2014: 8; Hancock & Passmore, 2011: 501). Consequently, most mortgage rates in the post-crisis period constituted a ‘mark-up’ on government sponsored MBS (Hancock & Passmore, 2011: 509). Thus, by lowering the starting point on which that mark-up was made, declining MBS yields were able to have a positive impact on financing conditions. The importance of such financing conditions for instigating a recovery in house prices - especially in a depressed market - can be appreciated by applying the Minsky-Keynes Asset pricing framework.

As was stated in the last chapter, a primary residence offers an explicit rental yield. Arguably, however, the two main factors informing the expected rate of return for such an asset will be the perceived future appreciation \(a\) of the asset and the financing terms \(c\) on which it is available. On consideration of these factors, the rate of return as a proportion of the price of the property will be determined, informing the ultimate purchase decision. In the aftermath of crisis, with expected appreciation low, favourable financing conditions are needed to induce investment in housing. If households are cut off from financing or the terms place \(c\) above \(a\) then households will

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21 As of 2014 80 per cent of newly originated mortgages were still backed by a government enterprise (Financial Stability Oversight Council, 2014: 8)
not make the portfolio choice to either sell or buy property. This means that investment in the real estate market will remain depressed. Here, we can adjust and apply the Kaleckian notion of profitability to appreciate the outcome. Without sufficient aggregate spending by households in the real estate market, house prices will not appreciate and the wealth recovery will remain stagnant.

In addition, low financing costs are important for wealth recovery because they may draw households into refinancing decisions. This can lower the burden of households’ liabilities and therefore positively impact their balance sheets. However, there is a limit to the extent that refinancing can improve household balance sheets. Firstly, in the current context, homeowners who do not have a loan backed by a government sponsored enterprise cannot access the refinancing programmes that have been put in place (Hancock & Passmore, 2011: 502). Secondly, reducing interest payments may stop the deterioration of a household balance sheet, but it cannot singularly lead to its recovery. Thus, the key to QE’s potential impact upon low to middle income household wealth, lies within within the possibility of improving house prices instigated by eased financing conditions. That such an event could have implicated low to middle income households is shown by the percentage of this group that own their primary residence.

**Figure Three: Primary Residence Ownership (%)**

<table>
<thead>
<tr>
<th>Income Percentile</th>
<th>Year</th>
<th>0-20</th>
<th>20-39.9</th>
<th>40-59.9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
<td>41.4</td>
<td>55.2</td>
<td>69.3</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>37.2</td>
<td>55.9</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>37</td>
<td>53.8</td>
<td>63</td>
</tr>
</tbody>
</table>

*Source: SCF Chartbook 2014, p. 582.*

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22 The programme referred to is the Home Affordable Refinance Program (HARP). This allowed households who had a GSE mortgage to reduce their interest rate payments, even if they had almost no equity on their balance sheet (Fannie Mae, 2015b).
However, the favourable financing conditions seen within the mortgage market do not seem to have resulted in rising asset prices for low to middle income households. Indeed, Figure Four shows that median house prices declined for low to middle income households in the period 2010-2013.

**Figure Four: Median Value of Primary Residences (Thousands of 2013 Dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>0-20</th>
<th>20-39.9</th>
<th>40-59.9</th>
<th>60-79.9</th>
<th>80-89.9</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>95.4</td>
<td>117.9</td>
<td>144.7</td>
<td>187.5</td>
<td>267.9</td>
<td>509.1</td>
</tr>
<tr>
<td>2013</td>
<td>80</td>
<td>105.9</td>
<td>125.0</td>
<td>170.0</td>
<td>250.0</td>
<td>475.0</td>
</tr>
<tr>
<td>% Change</td>
<td>-16.1</td>
<td>-10.2</td>
<td>-13.6</td>
<td>-9.3</td>
<td>-6.7</td>
<td>-6.7</td>
</tr>
</tbody>
</table>

Source: SCF Chartbook 2014, p. 583.

This has driven a decline in the wealth of low to middle income households. From 2010 to 2013, median net worth declined by 7.6 per cent, 18.2 per cent and 12.6 per cent for the bottom three income quintiles respectively (The Federal Reserve, 2014: 43). There are, however, complications associated with relying on these results. From 2012 onwards, the housing prices have improved in the United States, as shown by Figure Five. In its summary of the survey, the Federal Reserve notes this complication, implying that the results my not be reflective of the actual experience of households.

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23 For purposes of clarification, this is a measurement of the median house price of those in the relevant quintile, who own their primary residence.

24 The same discrepancy mentioned in footnote 17, is evident again here. However, the trends identified in these sources are the same. Both the Summary and the Chartbook reveal net worth declines for the bottom three income quintiles, with only the fourth quintile making substantial gains (The Federal Reserve, 2014: 43; Bricker et al., 2014: 8-9).
Ultimately, the extent to which these households have been positively included in the recovery in housing markets will not be fully known until the survey is updated in 2016. In the interim, there has been a contention posed in both the popular and academic literature, that the housing recovery has been inequitable, disproportionally favouring high income households (Emmons & Noeth, 2013a, 2013b; Gerrity, 2015; Hughes-Cromwick, 2013; Light, 2015).

*Figure Five: All Transactions House Price Index*  

![All Transactions House Price Index](source: US Federal Housing Finance Agency (FHFA), 2015a.

Empirical support for such a contention can be given by comparing how different states have experienced the recent recovery. This methodology has been used in particular by...

25 In its summary of the survey, the Federal Reserve seeks to explain away the decline in house prices experienced by households from 2010-2013:

*In addition, the divergence in house price trends is well within empirical estimates of homeowner reporting bias in house values, and it may reflect a correction in perceived values following the housing boom period, during which houses may have been overvalued by respondents. It is also worth noting that since the 2013 survey was administered, house price indexes have increased substantially (Bricker et al, 2014:19).*

However, these results - particularly in the lower income quintiles - may be more reflective of the inequitable nature of house price recovery, rather than the bias of survey respondents.

26 This measure includes newly purchased houses and those that have been refinanced. It has been chosen primarily because it is an equally weighted index. This means that the measure itself seeks to capture the trend in house prices across the board (Noeth & Sengupta, 2011a).
Emmons and Noeth in an article written for the Federal Reserve of St. Louis (2013a). These scholars begin by identifying representative high price and low price states. This categorisation refers to states which have a relatively large proportion of high value houses and low value houses respectively. This analysis will proceed by adopting the chosen high price representative states of Emmons and Noeth, on the basis that these states are also populated by a relatively high proportion of high income households. As of 2013, the median household income in California was $61,094, while the recorded figure applicable to the District of Columbia is $65,830 (United States Census Bureau, 2013). As the median income in these states is significantly higher than nationwide - as defined by the Survey and the Census - we can assume that higher income households are disproportionately represented in these states. The house price index in these states will be compared with those of Mississippi and West Virginia. According to data from the U.S Census, the median household income for Mississippi as of 2013 was $31,031, while for West Virginia it was $41,300 (United States Census Bureau, 2013). In these states the median income is substantially lower than nationwide, meaning that we can assume that low to middle income households will be disproportionately represented in these states.

Thus, comparing the house price indexes of these ‘low price’ and ‘high price’ states should help to establish whether the recovery within the housing market has been inequitable or not. We can see from the indexes below, that the ‘low price states’ began the crisis from a lower base, and the initial decline in prices within the housing market was not large. However, the recovery of prices in these states since 2012 pales in comparison to the experience of high price states. These states - beginning from a higher base - experienced a steep decline in house prices during the crisis. Since 2012, however, there has been a steep rise in the index applicable to the markets in these areas. This seems to support the aforementioned contention that the housing recovery...

27 The U.S. Census measurement of household income uses a different methodology from that of the Survey of Consumer Finances. However, as the summary of the survey states, the calculation of median household income has resulted in broadly commensurate outcomes for both surveys (Bricker et al, 2014: 31). This justifies the contention that the states mentioned are likely to be populated disproportionately by low to middle income households as defined by the survey.
within the United States has been stratified, with most of the gains accruing to high income households.

**Figure Six: All Transactions House Price Index: California vs Mississippi**

![Graph showing the All Transactions House Price Index for California and Mississippi](image)


**Figure Seven: All Transactions House Price Index: Washington D.C. vs West Virginia**

![Graph showing the All Transactions House Price Index for Washington D.C. and West Virginia](image)

2.4 Restricted Access to Financing and Weak Balance Sheets: Explaining the Stratified Recovery

The rest of this thesis will attempt to account for and discuss the implications of Quantitative Easing’s impact on low to middle income household wealth. The last section of this chapter will establish the empirical basis on which such an investigation will proceed. Firstly, it will show the weakness of low to middle income household balance sheets in the aftermath of the crisis. Secondly, it will demonstrate that conditions in household financing since the crisis remain less than optimal for the same group. The next chapter will proceed to show how these two phenomena together, account for the inequitable impact of Quantitative Easing.

Turning first to the weakness of household balance sheets. It can be seen from Figure Eight that low to middle income households carried disproportionately high debt burdens leading into the crisis (Foster, 2006). Through this particular measure - debt service payments to income - there is an inverse relationship between the extent of household leverage and income. While in 2007 26.9 per cent of households in the bottom quintile had a debt service income ratio of above 40 per cent, only 3.8 per cent of families in the top income decile suffered from the same problem (Bricker, Kennickell, Moore, & Sabelhaus, 2012: 72).

**Figure Eight: Percentage of Indebted Families Whose Debt Service Payments are Above 40 per cent of Family Income**

<table>
<thead>
<tr>
<th>Year</th>
<th>0-20</th>
<th>20-39.9</th>
<th>40-59.9</th>
<th>60-79.9</th>
<th>80-89.9</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>29.3</td>
<td>16.6</td>
<td>12.3</td>
<td>6.5</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td>2004</td>
<td>26.8</td>
<td>18.6</td>
<td>13.8</td>
<td>7.3</td>
<td>2.6</td>
<td>1.5</td>
</tr>
<tr>
<td>2007</td>
<td>26.9</td>
<td>19.5</td>
<td>14.5</td>
<td>12.9</td>
<td>8.2</td>
<td>3.8</td>
</tr>
<tr>
<td>2010</td>
<td>26.1</td>
<td>18.6</td>
<td>15.4</td>
<td>11.0</td>
<td>5.3</td>
<td>2.9</td>
</tr>
</tbody>
</table>

*Source: Bricker et al 2012, p. 72.*
In addition, this chapter has shown that low to middle income households have a high exposure to the real estate market through home ownership and a low exposure to financial assets. As a consequence, the wealth of this group is largely dependent on prices in the housing market. Therefore in 2007, household balance sheets were in a precarious position, but they were not necessarily weak. For, as long as house prices rose, so would net wealth. But the debt positions of households meant that their balance sheets were particularly susceptible to declining house prices. This can be demonstrated with an example.

Let us say that a household has a mortgage of $60,000 on a property worth $100,000. This is the household’s sole asset. In addition, the household has consumer credit and an auto loan worth $10,000. This means that it has $30,000 worth of equity in the property itself, which represents its total net worth. Now, if the price of that property falls by 20 per cent, then suddenly that household has lost around 66 per cent of the equity contained on its balance sheet. As such, changes in the price level of real estate for highly leveraged households can have a huge impact on their net worth. Thus, the decline in house prices seen after the crisis was always going to have a disproportionate impact on those with leveraged balance sheets. This is shown by the Survey of Consumer Finances which demonstrates that the bottom five quintiles - constituting 80 per cent of all households - experienced large declines in median net worth between 2007-2010 (The Federal Reserve, 2014: 83).  

These households were also those most likely to be highly leveraged. In comparison, the top decile of American households - of whom only 3.8 per cent were highly leveraged - actually experienced an increase of 1.9 per cent in their median net worth during the same period (The Federal Reserve, 2014: 83). Thus, through a combination of reliance on house prices and leverage, the crisis pushed low to middle and the lower range of high income household balance sheets into a state of weakness.

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28 Indeed, it should be noted that although leverage was concentrated in low to middle income quintiles, households in the 60-80 percentiles - although not low to middle income - also experienced large declines in their net wealth from 2007-10.
One of the ways these balance sheets can be repaired is through increasing house prices and therefore recovery in net wealth. As was shown earlier in this thesis, such a recovery relies on eased financing conditions for households. However, access to the favourable financing conditions instigated by Quantitative Easing remains restricted for low to middle income households. On face value, this does not make much sense when considering that government agencies still guarantee around 80 per cent of new loans originated in the market by private actors (Financial Stability Oversight Council, 2014: 8; Oliner, 2015). One would therefore presume that these agencies would be in a position to ensure wide accessibility to the market for low and middle income households.

The first relevant agency which seems to offer particular support to low and middle incomes is the Federal Housing Agency (FHA). This organisation offers an insurance scheme that provides coverage for mortgages distributed to households which have a credit score of 580 and above (U.S. Department of Housing and Urban Development, 2015: 5) The agency which securitises FHA loans is Ginnie Mae. Importantly, however, to qualify for an FHA loan households have to pay a premium into an MMI fund which backs up all FHA insured loans (U.S. Department of Housing and Urban Development, 2015c). The two other government sponsored enterprises (GSEs) which provide guarantees to the mortgage market are Fannie Mae and Freddie Mac. Instead of insuring loans, these organisations purchase them to create Mortgage Backed Securities which are then sold to other agents. The terms on which these agencies will buy such loans are stricter than those proposed by the FHA. Up until recently, the required deposit has been 5 per cent with a credit score of 620 or higher (Fannie Mae, 2015c). Recently, however, these agencies reduced their deposit requirement to 3 per cent (Puzzanghera 2014). The financing trends applicable to FHA loans is shown in figure nine.

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29 The 80 per cent figure derives from the 2014 FSOC report. The most recent report, released in 2015, stated that:

*The GSEs remain in conservatorship, subject to FHFA supervision, with the vast majority of newly originated mortgages carrying a federal government backing either through the GSEs, the Federal Housing Administration (FHA), or other government-backed programs.*

(Financial Stability Oversight Council, 2015:16).
While eased financing conditions for FHA loans is evident, they still remain restricted for those at the bottom end of the eligibility range defined by credit score. Furthermore, this group is most likely to consist of low to middle income households (Perry, 2008: 18; Hayashi & Stevens, 2012: 1,13; Edmonton, 2013: 50). In 2014, the average credit score for a closed FHA purchase loan was 684, while the average credit score for a denied FHA purchase loan was 663. With regards to refinancing, the average successful score was 673, while the rejected average came to 635 (Ellie Mae, 2015: 8-9). Seeing that up to 22 per cent of households have a credit score less than the average acceptance scores, it is clear that a relatively large section of households are potentially being locked out of the housing market (Dornhelm 2015). Meanwhile, 74 per cent of loans supported by Fannie Mae and Freddie Mac for a fixed rate 30 year mortgage for both purchase and refinancing purposes, were distributed to households who had a credit

<table>
<thead>
<tr>
<th>Year</th>
<th>Purchase Credit Score</th>
<th>Refinance Credit Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>700</td>
<td>718</td>
</tr>
<tr>
<td>2013</td>
<td>695</td>
<td>698</td>
</tr>
<tr>
<td>2014</td>
<td>684</td>
<td>673</td>
</tr>
</tbody>
</table>

Despite the above contention, it should be noted that the link between credit scores and income has been empirically difficult to establish, as such a score does not have any particular reference to ‘income’ and relies rather, on the extent of debt obligations and the capacity of households to meet such obligations on time. Intuitively, however, it is possible to appreciate why low credit scores may tend to apply more prominently to low to middle income households. Firstly, this thesis has already established that such households have high debt-to-income ratios which tend to result in low credit scores. Furthermore, scholars have worked to provide a direct correlation between the distribution of credit scores and size of income from the 1990s onwards. Of particular note is the work done by Edmiston, who analyses the distribution of credit scores between high income per-capital counties and low income per-capita counties. She finds that “...individuals with the lowest credit scores tend to live in counties with the lowest per-capita incomes”. (Edmiston, 2013:50). Although Edmiston uses Equifax risk scores rather than FICO scores (those used above), the two are closely correlated (Hyashi & Stevens, 2012: 3). This analysis operates on the assumption that this historical trend is unlikely to have shifted. However, further research beyond the scope of this thesis is needed to clarify the scope of this correlation as it holds in the context of the modern recovery.

30 Despite the above contention, it should be noted that the link between credit scores and income has been empirically difficult to establish, as such a score does not have any particular reference to ‘income’ and relies rather, on the extent of debt obligations and the capacity of households to meet such obligations on time. Intuitively, however, it is possible to appreciate why low credit scores may tend to apply more prominently to low to middle income households. Firstly, this thesis has already established that such households have high debt-to-income ratios which tend to result in low credit scores. Furthermore, scholars have worked to provide a direct correlation between the distribution of credit scores and size of income from the 1990s onwards. Of particular note is the work done by Edmiston, who analyses the distribution of credit scores between high income per-capital counties and low income per-capita counties. She finds that “...individuals with the lowest credit scores tend to live in counties with the lowest per-capita incomes”. (Edmiston, 2013:50). Although Edmiston uses Equifax risk scores rather than FICO scores (those used above), the two are closely correlated (Hyashi & Stevens, 2012: 3). This analysis operates on the assumption that this historical trend is unlikely to have shifted. However, further research beyond the scope of this thesis is needed to clarify the scope of this correlation as it holds in the context of the modern recovery.
score above 720 in 2014 (U.S. Federal Housing Finance Agency, 2015f: 12-13). This is above the national average which sat at 694 in October 2014 (Dornhelm 2015). In comparison, just 22 per cent of loans guaranteed by these enterprises were distributed to those who scored 660-719. The implications of this process have been summed up quite nicely by Reckard, writing in the *Los Angeles Times*. It is worth quoting the summation from the article in full:

> The trends amount to a two-tiered mortgage market that heavily favours the affluent over the masses of workaday borrowers, experts and advocates said. “Older, wealthier, white borrowers will be able to get loans all day long,”… For lower-income borrowers, lenders are “pulling up the gangplank,” (Reckard 2015).

Such restricted financing conditions have worked to inhibit expansive investment in the real estate market - as shown in Figure Ten - and therefore dampen the possibility of improving house prices for low to middle income households. Given the dominant place real estate assets hold on the balance sheets of this group, the consequences have been a limited wealth recovery for low to middle income households. As such, accounting for the phenomenon of restrictive financing must be central to any explanation of Quantitative Easing’s impact. The next chapter of this thesis will argue that this trend can be explained by considering how Quantitative Easing - in partnership with the agencies highlighted above - supported recovery in the mortgage market. Within this broader exploration it will become clear that the weak balance sheets of low to middle income households have in large part led to restrictive financing conditions for this group.

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31 In 2012 the figure was 86 per cent and in 2013 it was 81 per cent. So while some kind of easing is evident here as well, conditions still remain restrictive.
2.5 Conclusion

This chapter has established that Quantitative Easing had an inequitable impact on the wealth of American households. Firstly, low to middle income households did not have exposure to the kind of financial assets that recovered their value in the wake of the QE programme. As a consequence, most of the benefits of the recovery in financial asset prices accrued to high income households. However, in targeting MBS, Quantitative Easing did, on the face of it, create favourable financing conditions on the mortgage market. Furthermore, it is clear that such eased financing conditions have played a role in the recovery of the U.S. housing market seen since 2012. However, once again, the benefits of increasing house prices seem to have been distributed inequitably. Thus, the available evidence supports the contention that, at the very least, the benefits of the Quantitative Easing programme have accrued disproportionately to higher income American households. This chapter has also established the empirical basis upon which

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32 Although residential investment remains higher than in previous recoveries, it still lacks strength. This is particularly problematic in the context of the current recovery, where high net-worth losses make residential investment of increasing import. Without high levels of investment, a recovery in house prices becomes unlikely and household net worth remains depressed.
the next chapter will proceed. Firstly, it showed that the crisis left low to middle income household balance sheets in a weak position. In addition, it demonstrated that financing conditions for this group remain largely restrictive, thereby compromising investment in the real estate market. From here, this thesis will proceed to explain how these phenomena relate to each other by exploring QE’s support of mortgage markets since the crisis. In doing so, it will account for the existence of the two-tiered financing regime which has inhibited the investment necessary in real estate to expand low to middle income household wealth.
Chapter Three

Households and Financial Collateral

This chapter will show that low to middle income household wealth has benefited from Quantitative Easing, according to the extent that this group were able to support finance’s search for collateralisable assets. Such assets are critical to credit distribution and therefore the functioning of the financial system. After demonstrating collateral’s import in this respect, the chapter will move to analyse what defines a collateralisable asset from a perspective informed by the Minsky-Keynes asset pricing framework. It will be shown that collateralisable assets must be able to act as a safe store of value through time. This requires an alignment of expectations between market agents as to the marketability, appreciation and explicit yield of the asset in question. From this point, households’ role as providers of collateral before the crisis will be illustrated. Analysis will then focus on how QE and other U.S. governmental action, has ensured the collateral-like qualities of agency mortgage backed securities following the crisis. However, facilitating households’ capacity to provide the source material for these assets may have precluded low-to middle income households’ access to eased financing conditions. This is on the basis that collateralisable assets can no longer easily derive from the liabilities of households with weak or precarious balance sheets.

3.1 The Role of Collateral in the Financial System

This section will analyse how two elements of the financial system created an additional imperative for financial portfolio decision making external from the rate of return equation. The first element considered, will be wholesale funding markets. The second, will be the process of competitive calculation and asset price formation. It will be shown that for both elements of this system to function, finance must have the capacity to create a steady stream of collateral assets. Ultimately, this chapter will prove that Quantitative Easing’s support of the MBS market provided the basis upon which financial portfolio decisions were able to meet this imperative of collateral supply.
Before we reach this point however, we must first analyse the importance of collateral with reference to both wholesale funding markets and competitive calculation.

Wholesale funding markets involve banking-like relations, with investors placing funds in short-term or liquid instruments and borrowers who use this short-term funding to finance holdings of longer-term, less liquid assets. However, these agents do not meet through the balance sheet of a depository institution, and instead are paired directly in the market through repurchase agreements (Gorton, 2010: 6-7). The tri-party repo market can be used to give a basic example. A tri-party repurchase agreement involves the two actors party to the transaction and a mediator (Rosengren, 2014). The first exchanging party is usually a Money Market Fund. These funds agree to supply a certain amount of cash to an investment bank or another institution. For example, the Money Market Fund may have $500 million it wishes to deposit. It agrees to distribute this money to the investment bank at an agreed rate of interest in return for collateral, which usually amounts to a designated section of the institution’s portfolio. The agreed transaction is then managed by an intermediator (International Capital Market Association, 2015). At the end of each day, this intermediator unwinds the transaction, passing the collateral back to the investor and cash to the lender. Often, however, the agreement is rolled over, meaning that the parties agree to the same transaction occurring again the next day. It is clear from this elucidation, that the key element in facilitating repo agreements is the presence of high quality collateral which can be exchanged for cash.

Collateral is also the basis upon which the process of asset pricing occurs within financial markets. In order to understand this, the nature and importance of this process must be understood. According to Bryan and Rafferty, financial markets are the spatial setting in which individual, subjective judgements as to the expected return of an asset compete to form the price of the asset in question; a process that can be referred to as competitive calculation (2006: 74-76, 131). Thus, Bryan and Rafferty’s notion of the valuation or price formation process, aligns well with the conceptual framework outlined in Chapter Two. For, these scholars demonstrate that it is the judgement of
financial actors, and their analysis of the factors embodied in the rate of return equation, that determine the formation of asset prices. As such, this process of competitive calculation is a key influence over portfolio decisions in the capitalist economy as a whole. This is because, as was shown in Chapter Two, a portfolio decision to purchase an asset is the culmination of a comparison between such asset prices and an agent’s own conception of the rate of return expressed as a proportion of that price. However, such a process of competitive calculation needs an anchor; assets which can be held as security against the uncertainties of this process. This is clearly understandable when operating from a Minskyan perspective. Agents - aware of the uncertainties surrounding asset yields and values - need a safe store of value for contingency purposes. Of course, for Minsky, this notion of the need for safe assets is generalised and explained with reference to uncertainty. In comparison, Bryan and Rafferty show its importance in facilitating the capacity of finance to execute its crucial functions.

That liquidity crisis and the state’s response can be understood as a sign that an anchoring conception of fundamental value needs to be re-established for the commensuration of capital to be a sustainable project (Bryan & Rafferty, 2013: 147).

Bryan and Rafferty argue that such an anchor is provided by the Federal Reserve operating to ensure a rate of return by acting as market marker of last resort (Bryan & Rafferty, 2013: 149). This chapter will attempt to take this argument one step further and argue that this ‘anchoring conception of fundamental value’ is physically embodied in the U.S. government helping to facilitate the creation of collateralisable assets. Such collateral then acts as the ‘safe store of value’ or ‘anchor’ which agents need within financial markets. Indeed, collateral provides security for counter parties who - through their transactions with each other - engage in the process of competitive calculation. In over the counter derivative markets - a setting in which competitive calculation occurs - collateral is often held by a third party. The idea is that in the event that a counter-party fails, the other party will have access to such collateral (Gorton, 2010: 24-25). At the end of 2013, 91 per cent of over-the-counter derivatives were subject to a collateral
agreement (International Swaps and Derivatives Association, 2014: 3). The extensive use of collateral in ‘anchoring’ both the flow of credit and competitive valuation in the modern capitalist system puts pressure on its supply.\(^{33}\) While it is true that such assets can be reused or rehypothecated for use in other transactions, the depth of these markets from which assets can be drawn has become a relevant concern (Bank for International Settlements: Committee on the Global Financial System, 2001: 2-3; Caballero, 2006: 2).

3.2 Defining Collateral within a Minsky-Keynes Asset Pricing Framework

Recent interest in the supply of financial collateral has sparked debate amongst scholars as to the characteristics of these assets (Capel, 2011: 16; Hill, 2014: 7-8). This chapter will apply the Minsky-Keynes asset pricing framework in order to provide an alternative definition. Recall that the expected total rate of return attaching to an asset can be described using the following notation:

\[
R = y + a + l - c
\]

To apply this schema, one must determine how the relevant factors in the equation apply to the creation of collateral. A starting point for such an exploration has been given by Hill who - when reporting for the the International Capital Market Association European Repo Council - stated that:

“In many ways, collateral has become the new cash, underpinning the smooth functioning of funding and capital markets and in turn, providing the basis for economic growth” (Hill, 2014: 3).

Underpinning this statement is a recognition that collateral can be converted quickly into cash for those seeking to borrow. The question that therefore must be posed then, is what makes lenders confident and willing to distribute liquidity on the basis of such

\(^{33}\) Indeed, demand for collateralisable assets does not relate solely to their potential use as collateral. Agents can choose to hold such assets because of the qualities they embody.
collateral? It is clear from the outset that lenders do not want exposure to the specific asset form the collateral happens to be in. Rather, they hold it as a guarantee that given the transaction’s failure, they will have recourse to an asset which will allow them the scope to transfer their wealth into another form. From this point then, we can determine how the factors in the equation apply when it comes to defining collateral. Firstly, the asset must be sufficiently liquid. That is, it must be easily marketable with little sacrifice to its prevailing market price. Secondly, the asset’s expected appreciation must have attached to it, relatively little volatility. In addition, the asset’s explicit yield - if it is associated with one - must be stable. Combined, these elements amount to the defining characteristic of collateral-like assets: their perceived safety as a store of value. Indeed, this elucidation makes clear why cash is often used as collateral in derivative markets. While $a$ is not static due to inflation, it is stable enough through time to enable cash to act as collateral for a certain time period. The asset is also highly liquid and has no explicit yield, the change of which could compromise stable expectations surrounding the two aforementioned factors.

Much of the above analysis is a ‘snap-shot’ view of what defines an asset as collateral-like. Crucially, for an asset to practically act as collateral, it must continue to hold these qualities in the eyes of market actors through time. This of course, then involves the influence of expectations formed in uncertainty. For assets to be considered collateralisable, both actors party to the transaction must expect that the asset will retain collateral-like qualities in the future. In a context of uncertainty, this relies on the application of current expectations to the future (Minsky, 2008a: 64-65; Keynes, 1937: 213-214). If such expectations are invalidated by the unfolding of time, then assets that were previously considered good collateral can suddenly lose their capacity to be characterised as such. This is something which has been recognised by Capel who writes:

34 There are market based mechanisms by which lenders can compensate for the risk which attaches to collateral. For example, a lender may attach a ‘haircut’ to a repo transaction (Gorton, 2010: 16-17). This means that the cash offered is less than the stated market value of the asset that is being used as collateral.
...there is a continuum of different collateral options available and - moreover
- the market perceptions of these options change continuously (Capel, 2011: 16).

Thus, the Kaleckian principle - of capitalist agents creating the means of their own success - can be applied to schemas of collateral. Any asset can take form as collateral if there is an alignment of expectations surrounding the collateral-like qualities of such assets. This is a key point, because it indicates the possibility of financial agents creating high quality collateral separately from any state authority. The next section of this chapter will contend that such private creation took place with particular reference to the Mortgage Backed Security market.

3.3 Mortgage Backed Securities and the Demand for Collateral Pre-Crisis

In 2001, the Bank of International Settlements reported that:

...securities markets - for fixed income instruments as well as for
equities - continue to grow strongly worldwide, thereby increasing the pool of assets available as collateral


Fixed income securities are loans which are packaged as financial instruments and sold to investors who are then able to access the income stream associated with the underlying asset (Noeth & Sengupta, 2011bb: 8-9). The innovation was arguably one made by the government sponsored enterprises - Fannie Mae and Freddie Mac - who dominated the securitisation market from the 1970s. In the early 2000s, however, private label securitisation of mortgages began to grow and eventually dominate issuance (Simkovic, 2013: 235-240). As of 2006, a year before the crisis, 56 per cent of MBS issued was private label, meaning that it did not attract the explicit or implicit guarantee of a government sponsored enterprise (Freddie Mac, 2015b). In attempting to account for the rise of securitisation, a popular interpretation has been to argue that
MBS offered a store of wealth for the capital flowing into the United States at an attractive yield (Rajan, 2005). As a consequence, demand for such instruments rose. This, however, is only one side of the story. Many financial assets are expected to offer investors a high yield. What was behind the demand for MBS specifically, was its transformation into an asset class with collateral-like qualities.

If we think about a mortgage from a perspective informed by the Minsky-Keynes asset pricing framework, it is clear that its capacity to act as collateral is limited. Firstly, such assets are not readily marketable as they cannot be sold quickly and with little sacrifice to market price. This is because before an agent purchases such an asset, they will need information about the borrower and their capacity to meet payments on time. Such information gathering takes time and therefore makes the asset fairly illiquid. Furthermore, the expected explicit yield will fluctuate depending on the changing circumstances of the borrower in question and their ability to guarantee the explicit yield. Therefore, mortgage loans do not represent a stable source of value. To become collateralisable, such loans went through an intermediation process. Prior to the crisis, this involved the originator of the mortgage selling the loan to a Special Purpose Vehicle, which is a conduit of a dealer-bank (large investment banks, permitted to trade directly with the Federal Reserve). It is here that the cashflows from these loans were packaged into tranches. Tranches are essentially varying claims to an income stream associated with a pool of loans. It is this innovation of tranching that added stability to the explicit yield associated with holding claims to a mortgage loan. In holding title to the income stream associated with a senior tranch (or AAA rated tranch), investors were aware that any losses that accrued to the pool of loans as a result of default would be borne by those who had secondary claims to the collection of assets (Pozsar, 2008: 13-14; Noeth & Sengupta: 10-12; Pozsar, Adrian, Ashcrat & Bosky, 2013: 3-10).

It was this perceived certainty around the explicit yield of MBS that drove an increase in the marketability of these assets. Stable expectations surrounding \( y \) gave agents the confidence to trade the asset in ever increasing numbers, improving \( l \). Expected stability surrounding \( y \) and \( l \) then informed an expectation amongst market actors that the
volatility associated with a also remained low. Thus, through tranching, MBS as an asset class became collateral-like in the eyes of market actors. This then resulted in an expansion of demand for MBS, because - as noted above - collateralisable assets can be used in a variety of ways by financial agents. This ended up driving increased demand for the source material of MBS; the underlying loans themselves. As has been well expressed by many scholars, originators responded to this demand by seeking to expand the mortgage market on the basis of eased financing conditions (Pozsar, 2008: 15; Simkovic, 2013: 237-242). The consequent increase in mortgage originations can be attributed in part to these favourable financing conditions, but also to the fact that house prices were widely expected to appreciate. The expected rate of return from exposure to real estate was therefore high, inducing households into the relevant portfolio decisions needed to both provide MBS source material and ensure the continued appreciation of real estate.

3.4 Collateral in Crisis

Chapter Two provided an account of the collapse in the MBS market that took place in the crisis. As such, only a brief overview will be given here. At the outset of the crisis, only sub-prime securities were failing to deliver an explicit yield. The tranching system for the wider MBS market therefore may have protected investors and ensured that the expected explicit yield of the assets were realised. The tranching system was never fully tested, however, because the marketability of the asset class as a whole collapsed. This is because the extent to which firms were exposed to the deterioration of sub-prime securities was unknown (Gorton & Metrick, 2012: 447). This led to an expectation amongst repo investors that borrowers would be undertaking fires sales of securities in light of the losses that were accruing from sub-prime (Gorton, 2010: 132-134). As a consequence, these investors anticipated a potential decline in the marketability of MBS as a whole, due to the sudden increase in sellers in comparison to buyers. Changing expectations regarding the marketability of these assets drove an increase in haircuts. This then lead to a complete collapse in the marketability of MBS as an asset class and therefore the price of these assets trended dramatically downwards. This was in part due
to the fact that - in a context of collapsing market liquidity - marketability became the dominant factor informing the expected rate of return of financial assets. As soon as this was seen to be compromised, interest in the asset class as a whole collapsed, leading to the imbalance of buyers over sellers that informed the precipitous decline in prices. In this sense, it was an alignment of expectations surrounding both the importance and absence of marketability that was behind the fall of MBS in the crisis.

Once the perceived qualities of an asset class have transformed in such a way, it is extremely unlikely that expectations will re-align to restore its collateral-like qualities. Part of the problem lies with the nature of expectation formation. As we know from Minsky, expectations differ from agent to agent and are likely to change. Due to the added pressures of competitive valuation, such changes are mediated day to day and are immediately reflected in market prices. As a consequence, the market - left to its own devices - is often unable to align expectations surrounding the marketability, appreciation and explicit yield of specific asset classes. Given these difficulties, U.S government action was needed to guide and support the capacity of financial markets to create collateralisable assets.

3.5 Quantitative Easing, Collateral and Households

Restoring the financial system’s capacity to create collateralisable assets from the mortgage market has derived from a partnership between governmental regulation and private portfolio decision making. Through this partnership, stable expectations surrounding the collateral-like qualities of MBS has been restored. The importance of a governmental presence in the MBS market is immediately evident when considering the depressed private-label securitisation market.
As is shown above, MBS has been reinvigorated as an asset class through the expansion of the GSE and Ginnie Mae securities market. The reason for this is that the eligibility matrix for these loans was a good basis upon which to rebuild expectations regarding the collateral-like qualities of MBS. This is because of the traditionally higher underwriting standards applied to these loans which ensured that during the crisis, GSE loans performed significantly better than non-GSE loans (Simkovic, 2013: 242-244). This may seem to contradict the last chapter which showed that GSEs can facilitate the

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35 This is akin to a governmental presence, considering that Ginnie Mae is directly controlled by the government and both Fannie Mae and Freddie Mac are under governmental conservatorship (U.S. Federal Housing Finance Agency, 2015g).
distribution of loans to households with quite low credit scores. While this is true, in reality there are mechanisms in place to restrict loan distribution. For example, with a debt-to-income (DTI) ratio of 45 per cent, the required credit score for a Fannie Mae backed loan can move up to 700 if the Loan-to-Value ratio (LTV), is greater than 75 per cent (Fannie Mae, 2015a). Thus, the very eligibility matrix for these loans works to partially restrict financing for some low to middle income households.

Firstly, as was shown in chapter two, high debt to income ratios are disproportionately found with low and middle income households. In addition, at the end of 2014, at least 35.49 per cent of American households had an LTV above 75 per cent (Gudell, 2015). As Guddell notes, such LTV ratios are not distributed evenly amongst the American public and are most likely to be held by those with homes on the low to mid range of the price scale (2015). However, it is arguable that the FHA programme and therefore Ginnie Mae, will support households with higher LTV and DTI ratios. But as was mentioned in chapter three, borrowers of FHA loans have to pay a premium into the fund from which insurance payments are made by the U.S. government (U.S. Department of Housing and Urban Development, 2015c). The key point here, is that GSE and even Ginnie Mae backed loans, are not social welfare programmes. Rather, these loans are distributed on the basis of households’ capacity to support the governmental guarantees that attach to MBS either explicitly - by providing the funds that go towards insurance payments - or by means of the underlying quality of the loans themselves. Because of this, the underwriting standards for such loans are relatively strict and therefore a good basis upon which to re-establish stable expectations surrounding the explicit yield of MBS.

36 A debt to income ratio is the percentage of the borrower’s income that goes towards payment of all debt obligations, including the mortgage that is being applied for. A loan to value ratio is the price of the mortgage divided by the value of the property.

37 Because low to middle income households that have not experienced extensive house price gains, they will bear a larger proportion of LTV scores above 75 per cent. If house prices increase, then household LTV’s decrease.

38 It would be amiss not to highlight that the U.S. administration has sought to confront this issue by lowering insurance premiums which attach to new FHA loans (Soergel, 2015).
In the post-crisis world then, the private guarantees of explicit yield offered by the tranching system have been supplanted by governmental regulation and guarantees surrounding the mortgage market. This has become the basis upon which private originators have been able to take portfolio decisions which facilitate the creation of collateralisable assets. Indeed, that 74 per cent of Fannie and Freddie loans are going to households with credit scores of over 720 cannot be explained singularly by virtue of the eligibility matrix construct (U.S. Federal Housing Finance Agency, 2015f: 12-13). Rather, it is this matrix in combination with the conservative attitudes of financial agents that has created such financing conditions, in order to induce stable expectations surrounding the expected explicit yield of MBS. However, this kind of government supported portfolio decision making has come at the expense of facilitating low to middle income household access to the mortgage market. For, distributing loans to households with weak balance sheets means accepting the possibility that they will not be able to service the loan. Such practices are unsuited to a context where stable expectations surrounding \( y \) are being rebuilt. This lends support to the argument that household access to financing in the recovery has become a function of the capacity of this group to help facilitate the creation of collateralisable assets.

With expectations surrounding the explicit yield of MBS in place, the Federal Reserve has acted to guarantee the marketability of agency MBS, thereby ensuring the asset’s collateral-like qualities. This contention conflicts with analysis which suggests that the Quantitative Easing programme has played a role in depriving finance of collateral-like assets through its large scale purchase of Treasury securities (Singh, 2013). However, by acting as the primary market maker for the asset class as a whole, Quantitative Easing has actively supported the capacity for MBS to act as collateral. Thus, while the regulation of the U.S. mortgage market has helped to restore expectations regarding the expected yield of agency MBS, Quantitative Easing has crucially ensured the marketability of such assets.

Therefore, on the basis of governmental support of both \( y \) and \( l \), there has been an alignment of expectations surrounding the collateral quality of agency MBS. Evidence
for this can be found in the consequent use of such assets in the repo market. Current estimates put the size of the repo market at approximately $3.0 trillion (Copeland, Davis, LeSueur, & Martin, 2014)\(^{39}\). Triparty repo agreements, which make up the majority of this market, use agency backed MBS for 32 per cent of the collateral posted (Toomey, Podziemska, & Pallotta, 2015: 1). It is clear then, that agency MBS are contributing to the depth of collateral-like assets within the financial system. These assets have therefore become part of the solution to the search for an ‘anchor of value’ that Bryan and Rafferty discuss. This has required the participation of the U.S. government, which has placed itself as the ultimate arbiter of inducing stable expectations surrounding these assets through time. It is upon this basis that financial agents have taken the portfolio decisions which have enabled the creation of collateral, thereby helping to ensure its continued supply.

### 3.6 Conclusion

Now is an apt time to return to the quote by Ben Bernanke detailed in the introduction of this work. In this quote, Bernanke argued that by supporting finance, one of the aims of Quantitative Easing was to support households. The point of this chapter has not been to question the sincerity of that belief. It has, however, demonstrated that in reality, the relationship Bernanke highlights has operated inversely. For, Quantitative Easing helped enable households to directly support finance. In partnership with other government programmes, Quantitative Easing established the basis upon which financial agents could make portfolio decisions which created collateralisable assets from household liabilities. This was achieved through guaranteeing the explicit yield and marketability of agency backed MBS. This has helped to restore finance’s capacity to undertake credit distribution and participate in asset price formation, thereby supporting the recovery of the system as a whole. However, it has also nurtured a relationship between finance and households, based upon the capacity of households to provide finance with the basis of collateral assets. It therefore has made household

\(^{39}\) Such estimates remain conservative as only the activities of primary dealers are considered (Copeland, Davis, LeSueur, & Martin, 2014).
wealth recovery subservient to the imperatives of finance. The nature of this relationship accounts for the limited impact QE has had on low to middle income household wealth. Because this group often cannot provide the source material for collateral-like assets, there has been limited attempts to improve their access to financing. As has been shown in previous chapters, such restricted financing impacts negatively on investment and therefore the appreciation in housing assets that these households rely on for wealth gains. The next chapter of this thesis will seek to draw out the effect of limited household wealth recovery on other aspects of the prevailing system. In doing so, this chapter will facilitate a better understanding of the wider implications associated with QE’s impact on American households.
Chapter Four

Implications: Household Wealth and the Continuing Recovery

This last chapter will consider the wider implications of Quantitative Easing’s impact for the wider recovery of the American capitalist system. It will do so by firstly demonstrating that the increasing wealth of households has an important impact on aggregate demand conditions. For, through wealth gains, households become more willing to spend a greater proportion of their income and take on liabilities to facilitate consumption. Following on from this, it will be shown that debt-led consumption was inhibited by falling household wealth during the crisis. Furthermore, Quantitative Easing has not succeeded in enabling the recovery of debt-led consumption in the years following the crisis. This is because it has not impacted sufficiently upon the wealth of households most likely to consume out of gains to net worth. As a consequence, demand conditions have not been conducive to a recovery in capital investment to pre-crisis levels. This analysis will be used as a basis upon which this chapter will make its key contention: that the roles households have been expected to occupy in the recovery lie in tension with each other. In short, it will be shown that households’ capacity to act as a source of collateral for finance has come at the expense of their capacity to engage in debt-led consumption. From this point, the chapter will move to consider how this tension may be resolved.

4.1 Debt-Led Aggregate Demand Before the Crisis

The first section of this thesis will show how rising house prices have historically related to the consumption of American households. We can gain a glimpse of what has happened to house prices through the SCF. According to the Survey, between 1989 and 2007 the median price of the primary residence for households in the lowest quintile rose by 80 percent, the second saw an increase of 44.5 per cent and the third 50.8 per
cent (The Federal Reserve, 2014: 583). Such high increases occurred through all income quintiles. Rising house prices consequently drove an overall increase in wealth. This is not surprising when considering that such assets make up the lions share of most households’ net worth (Yellen, 2014).

**Figure Thirteen: Median Value of Net Worth (Thousands of 2013 US Dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Income Quintile</th>
<th>0-19.9</th>
<th>20-39.9</th>
<th>40-59.9</th>
<th>60-79.9</th>
<th>80-89.9</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td></td>
<td>3.3</td>
<td>43.6</td>
<td>75.3</td>
<td>120.2</td>
<td>238.6</td>
<td>702.2</td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td>6.4</td>
<td>45.1</td>
<td>64.3</td>
<td>123.0</td>
<td>188.0</td>
<td>590.9</td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td>9.1</td>
<td>50.9</td>
<td>70.5</td>
<td>115.5</td>
<td>194.4</td>
<td>539.7</td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td>8.3</td>
<td>47.4</td>
<td>76.3</td>
<td>160.5</td>
<td>269.4</td>
<td>646.6</td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>10.3</td>
<td>49.1</td>
<td>83.6</td>
<td>189.5</td>
<td>345.6</td>
<td>1094.7</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td>9.2</td>
<td>41.6</td>
<td>88.7</td>
<td>197.2</td>
<td>386.8</td>
<td>1146.4</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td>9.1</td>
<td>42.4</td>
<td>98.9</td>
<td>231.1</td>
<td>399.9</td>
<td>1256.4</td>
</tr>
</tbody>
</table>

% Change from 1989-2007: +139.6, -0.4, +30.4, + 40.4, + 74.6, +72.8

*Source: SCF Chartbook 2014, p. 43.*

Yet, households in the second income quintile experienced almost no growth in net worth from 1989-2007. Thus, a disclaimer must be made. The following analysis will not contend that the ‘wealth effect’ can totally account for consumption trends in the pre-crisis period. It will, however, argue that it was an important factor. In attempting to configure the impact of wealth on consumption, it is important to recognise that from the 1970s wages departed from productivity. As a consequence, incomes have been stagnant for the vast majority of American households (Palley, 2015: 6-7; Setterfield, 2013: 158-166). The trend since 1989 is revealed by Figure 14.
According to standard Kaleckian assumptions, stagnant incomes within the United States should have resulted in declining consumption. The relevant question, therefore, is how in the face of this trend, consumption by American households was maintained and even extended (Cynamon & Fazzari, 2013: 132-133; Foster & Magdoff, 2009: 36). The answer lies in the development of a debt-led consumption regime characterised by extended levels of debt and the declining savings of households (Cynamon & Fazzari, 2008: 12-18; 2013: 142-149; Foster & Magdoff, 2009: 33-38; Palley, 2015: 17). Both trends are captured below in Figures 15 and 16.

**Figure Fifteen: Household Debt and Disposable Income (Billions of Dollars, Quarterly): 1989-2014**


**Figure Sixteen: Personal Saving as a Percentage of Disposable Personal Income: 1989-2007**


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40 In the above measure, disposable income refers to the after-tax income of persons and non-profit corporations. Readers will note the discrepancy between this graph which shows rising disposable income, and the last which showed stagnation in before tax income for all but the top two quintiles. However, the upward trend in the second graph reflects the gains made by the top two income quintiles and in no way conflicts with the first.
Let us analyse the rising debt trend first. When seeking to breakdown the constituent elements of household debt, Montgomerie has demonstrated that along with an expansion of mortgage debt, revolving - or credit card debt - also increased in the United States. From 2000 to 2006, the average percentage of credit card debt to nominal GDP was 18.74 per cent. Between 1980 and 1990, it was 13.71 per cent (Montgomerie, 2007: 6). Furthermore, evidence from the SCF suggests that low to middle income households were implicated in this trend. As of 2007, 25.76 per cent of the lowest quintile had credit card liabilities, with 39.5 per cent of the second and 54.8 per cent of the third also owing (The Federal Reserve, 2014: 1158; Soederberg, 2014: 93). The mean value of these balances increased by 184.8 per cent, 97.5 per cent and 96.6 per cent for each quintile respectively in the period from 1989 to 2007 (The Federal Reserve, 2014: 1158).

With this in mind, we can apply a Minskyan understanding of liability structures in order to enable a deeper understanding of what enabled debt-led consumption to occur. In attempting to comprehend debt-led consumption, some have argued that increased consumption through debt reflects households’ willingness to keep up with social norms (Cynamon & Fazzari, 2013: 141-142). This may indeed partly explain the trend from a sociological perspective. However, in order for this desire to be met, there must be an alignment of expectations between those extending liabilities and households. Simply put, both parties must have a clear expectation that the debt will be serviced. Otherwise, the expected rate of return for extending such liabilities would presumably be compromised and households would be unwilling to take on debt in the first place. In a context where incomes are stagnant it is unclear why such expectations would be formed. The answer here is twofold. Firstly, credit card debt, like mortgage debt, was securitised in a tranching system. For the issuers then, part of the total rate of return for issuing debt lied in the capacity to sell these instruments. The implications have been well captured by Montgomerie:
In their efforts to secure investors for annual (or bi-annual) ABS issues, consumer credit portfolio managers are primarily focused on capturing, or creating, persistent revolving debtors (Montgomerie, 2007: 12).

That the rate of return attaching to such operations relied on expanding issuance may help to explain the willingness of such agents to extend debt to households in a context of stagnant incomes.

However, this does not account for households’ willingness to expand the liabilities on their own balance sheet. This can be explained - in part- by virtue of the increasing asset prices seen over the same period. For, as was made clear in chapter two, expectations surrounding the positive rate of return attaching to an asset drive a willingness to take on increased carrying costs in order to finance its acquisition. While Minsky applies this concept to explain the development of leverage in firms’ balance sheets over time, it can easily be appropriated to households (Cynamon & Fazzari, 2008: 21-24).

Due to stagnant incomes, extending consumption comes with an additional cost, which is the price of credit. This is where the appreciation of home prices is important. For, expected appreciation of assets on a household’s balance sheet can justify the taking on of additional liabilities to finance both the asset itself and further consumption. Of course, the link between household asset prices and consumer credit is indirect. A more direct causal chain can be established by analysing the trends in cash out home equity financing, where households borrow directly against the equity contained in their home to access cash. According to Freddie Mac, the peak in cash-out refinancing volume out of prime loans was $99 billion in 2006. In comparison the relevant figure sat at $6 billion 1993 (Freddie Mac, 2015a). Furthermore, Mian and Sufi show that such refinancing was used to consume, especially amongst low to middle income households (Mian & Sufi, 2014b: 1-5)41. In addition, the effect of wealth on consumption does not have to be singularly analysed with reference to household willingness to take on

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41 Mian and Sufi define low income households as those with a $50 000 income or less. These scholars attempt to link cash-out equity financing to consumption by way of increasing auto-loans in particular (2014: 1-5).
liabilities. For, in the expectation that home prices will increase, households can dedicate a greater part of their income to consumption on the basis that increasing asset prices will compensate for this decision. This in part, accounts for the decline in savings as a percentage of disposable income.\textsuperscript{42} Thus, expected increases in asset prices can clearly drive household willingness to dedicate a greater proportion of their income to consumption or to take on liabilities in order to do so. Both phenomena are constituent aspects of the debt-led aggregate demand phenomenon.

4.2 American Households, Weak Balance Sheets and Consumption in Crisis

Chapter Two demonstrated that declining house prices devastated the wealth of households who had little access to other assets and were highly leveraged. This section will now seek to analyse the relationship between declining consumption and this phenomenon. That consumption was affected by the combination of house price decline and relatively high degrees of leverage amongst households has been demonstrated by Mian and Sufi. These authors take a sample of counties in the United States. They then split this sample into deciles based on ‘...the increase in the household debt-to-income ratio from 2002 to 2006’ (Mian & Sufi, 2011). At this point they select high debt and low debt counties. They then show that when house prices fell in high debt counties, consumption fell dramatically.\textsuperscript{43} In comparison, these scholars show that consumption within low debt counties was not implicated to the same extent (Mian & Sufi, 2011; 2014a: 41-45). Thus, Mian and Sufi succeed in demonstrating that highly leveraged households were behind a large part of the decline in consumption seen post-crisis.\textsuperscript{44} A large reason for this is the collapse in wealth brought on by the extent of the decline in house prices combined with the leverage factor.

\textsuperscript{42} Of course, the decline in saving will be both a function of the need to service debt used to consume and the use of a greater proportion of income to directly facilitate such consumption.

\textsuperscript{43} Mian and Sufi focus in particular on durable consumption as represented in auto loans (2011).

\textsuperscript{44} This is something that the IMF is also beginning to accept. For example, see (International Monetary Fund, 2012: 96-98).
The effects of such a decline in wealth on consumption can be appreciated by utilising the Minskyan understanding of liability structures. Because highly leveraged households had the equity on their balance sheets wiped out, they were forced to devote a higher percentage of their income to deleveraging in an attempt to restore their balance sheets. That such deleveraging has occurred is revealed by the table below. In addition to this imperative, household access to credit - which was being used to consume - declined as credit markets collapsed (Mian & Sufi, 2013b: 1690). Thus, as finance’s willingness to distribute credit instruments dissipated and asset prices collapsed, so, too, did the sustainability of the household liability structures which had been fuelling the debt-led consumption regime.

**Figure Seventeen: Mean Value of Debt for Families with Holdings (Thousands of 2013 US Dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Income Quintile</th>
<th>0-19.9</th>
<th>20-39.9</th>
<th>40-59.9</th>
<th>60-79.9</th>
<th>80-89.9</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td></td>
<td>21.9</td>
<td>36.5</td>
<td>61.7</td>
<td>99.3</td>
<td>145.4</td>
<td>278.8</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td>30.3</td>
<td>51.6</td>
<td>86.2</td>
<td>134.3</td>
<td>192.9</td>
<td>365.6</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td>35.7</td>
<td>49.2</td>
<td>90.4</td>
<td>157.0</td>
<td>231.9</td>
<td>386.9</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td>53.3</td>
<td>55.8</td>
<td>94.0</td>
<td>138.7</td>
<td>203.7</td>
<td>405.3</td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td>37.7</td>
<td>48.8</td>
<td>70.9</td>
<td>122.9</td>
<td>201.9</td>
<td>357.5</td>
</tr>
</tbody>
</table>

% Change from 2001-2010

<table>
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<tr>
<th>% Change from 2001-2010</th>
<th>+105.5</th>
<th>+91.5</th>
<th>+48.6</th>
<th>+40.4</th>
<th>+40.7</th>
<th>+41.7</th>
</tr>
</thead>
</table>

% Change from 2010-2013

<table>
<thead>
<tr>
<th>% Change from 2010-2013</th>
<th>-29.3</th>
<th>-12.5</th>
<th>-24.6</th>
<th>-11.4</th>
<th>-0.9</th>
<th>-11.8</th>
</tr>
</thead>
</table>

*Source: SCF Chartbook 2014, p. 836.*
4.3 Quantitative Easing, Financial Markets and Aggregate Demand

QE has played a role in enabling households with the capacity to generate the basis of collateral for finance. However, this has come at the expense of facilitating households’ capacity to resume debt-led consumption. This is because, as has been shown, financial markets have only worked to support the wealth recovery of households with balance sheets which have a large exposure to financial assets or have the capacity to support collateral creation. This has had large implications for consumption because of varying marginal propensities to use increases in net wealth to consume. Indeed, Mian Sufi and Rao state that:

...the MPC out of housing net wealth is much higher for poorer households, households with higher leverage and households that are more likely to be underwater.' (Mian, Rao & Sufi, 2013b: 4).

The analysis put forth so far in this chapter makes clear why this is the case. It is low to middle income households - and even those stretching into the higher income sphere - that have relied on wealth as a basis to consume in the face of stagnating incomes. Thus, by working to disproportionately benefit the wealth of higher income households, Quantitative Easing may have inhibited a wider recovery in demand conditions within the prevailing system. For, without increasing wealth, it is clear that a large proportion of American households may lack the capacity to increase consumption. The implications for capital investment trends will now be discussed.

4.4 Quantitative Easing, Consumption and Investment Since the Crisis

The link between Quantitative Easing and investment is most directly encompassed in its impact on the borrowing costs of firms. As shown in Chapter Two, the programme has impacted on the yield of corporate bonds, easing the cost of financing for firms which have access to these markets. However, there have been questions raised in the
years since the crisis as to whether such eased financing conditions have been available to smaller firms of less than 500 employees who rely more heavily on bank credit (Firoozmand, Haxel, Jung & Suominen, 2015: 2). As was detailed in Chapter One, theoretically, Quantitative Easing should have placated banks’ liquidity preference as more central bank liabilities came to rest with them. The consequent re-emphasis on explicit yield as a factor going towards the expected rate of return on an asset, should have then led to an increased willingness on the part of banks to extend credit. Despite this, according to a report by the Federal Reserve Bank of New York cited by Firoozmand et al., smaller firms who are ‘discouraged’ or ‘debt averse’ still outweigh those who believe that their access to credit is sufficient (Firoozmand, Haxel, Jung, & Suominen, 2015: 11-12).

Figure Eighteen: SMEs’ View of Availability of Credit in 2013-14

![Graph showing SMEs' view of availability of credit in 2013-14]

Source: Firoozmand et al., 2015, p. 11-12.

Smaller firms may have reason for complaint. Recent work by the Bank of International Settlements indicates that as of 2013, there was still a wide spread difference between policy rates - set by the Federal Reserve - and those offered by banks for small business loans (Illes & Lombardi, 2013: 58-59). Given that the liquidity preference of banks has

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45 This is because the value of the implicit yield of an asset should decline as fears surrounding liquidity shortages subside.
been met, other explanations have been presented for this phenomenon. Illes and Lombardi point to banks adjusting to new regulatory and capital requirement regimes. Alternatively, they also suggest that banks could have a ‘higher premium for risk’ following the crisis (Illes & Lombardi, 2013: 64-65). However, as was revealed in Chapter One, the availability of credit and the terms on which it is offered are often a function of aligning expectation formation between finance and firms regarding the rate of return on investment. In relation to capital investment, that rate of return is in large part determined by the expected explicit yield. This in turn, depends on actualised levels of demand based on consumption. Thus, the most relevant factor among conditions surrounding the supply of credit is the extent of demand perceived to exist in the system. For, this validates both the investment project itself and the distribution of the liability to finance it.

Therefore, that $c$ is perceived to be beyond $y$ for many small businesses is a result of both finance and firms’ dampened expectations surrounding the profitability and risk of the investment projects in question. For this informs both an increase in $c$ on the part of finance, and a decrease in $y$ on the part of firms. Together, this lowers the demand price beyond that of the supply, inhibiting investment. Thus, the notion that weak investment can be explained by virtue of supply problems facing small firms is largely mistaken. If expanded investment was associated with a high expected total rate of return, there is a strong likelihood that portfolio decisions would align to support wider access to capital for smaller firms and more expansive investment would occur (Banerjee, Kearns, & Lombardi, 2013: 71). Alternatively, larger firms could seek to take advantage of these opportunities by funding such investment out of existing cash balances or making use of the low funding costs instigated by Quantitative Easing. As it is, however, real business fixed, non-residential investment remained depressed below pre-crisis levels at the beginning of 2014.

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46 This is especially the case when considering that the U.S. government has played an ‘anti-cyclical’ role in offering loans to small business in a wide variety of capacities (Firoozmand et al., 2015: 14-20).
As can be seen from Figure 19, investment picked up at the start of the recovery, but increased at an average annual rate of only 4 per cent in 2012 and 2013. This - according to analysts at the Federal Reserve - is an unusually slow place during an expansion (Pinto & Tevlin, 2014). Furthermore, while net investment as a share of the capital stock has rebounded, it hovered at only around 1.5 per cent per year at the start of 2014 (Pinto & Tevlin, 2014). This can be explained by considering how consumption trends compare to those which have emerged out of crises in the past (Mian & Sufi, 2014c).
Services are products such as medical care and transportation that cannot be stored. Durable goods are tangible products that can be stored or inventoried. Non-Durable Goods are tangible products that can be sold or inventoried and that are usable over a short time. These definitions derive from the National Income and Product Accounts that are the source of Mian and Sufi’s calculations. See (U.S. Department of Commerce: Bureau of Economic Analysis, 2014).
It is clear then, that the low marginal propensity of high income households to consume out of wealth has resulted in a relatively muted response in consumption following the crisis. This is something which is explicitly recognised by Mian and Sufi:

Similarly, the house price recovery from 2011 onwards did not contribute as much to economic activity as the 02 to 06 housing gains. Our results suggest that this might be because the borrowing channel was effectively shut to those most responsive to house price gains. (Mian & Sufi, 2014b: 4).

As was demonstrated in Chapter Two, the shut-down of the borrowing channel limits the wealth recovery of low to middle income household, by depressing residential investment and therefore house prices. This thesis has argued that such a ‘shut-down’ was an immediate function of the need for households to once again supply finance with the raw material for the creation of collateral. Taking a step back, then, we see that the relationship between finance and household portfolios has become central in determining the demand conditions firms respond to when investing. By failing to open up the mortgage market to a wide proportion of American households, finance portfolio decisions have inhibited the expansion of household wealth. As a consequence,
households have failed to resume debt-led consumption, placing a limit on the extent demand conditions have improved. This, then, accounts for the slowdown in investment as both firms and finance respond to such demand conditions when assessing whether to shift their portfolios in a way which allows for capital investment. As such, finance has failed to create the conditions for other firms’ profitability. This chain of events derives from the Kaleckian notion of capitalists creating the conditions for their own success. While it may make sense for finance to restrict their activities in such a way, such action has inhibited the creation of profit opportunities for other firms and therefore stymied the full recovery of capital investment.

4.5 Speculating on the Future Positioning of Households Within American Capitalism

At the core of the unusually weak investment recovery lies the contradictory roles households have been expected to occupy as facilitators of both collateral creation and increased consumption. Indeed, the prioritisation of the former has ultimately come at the expense of the latter. The last part of this chapter will take some time to consider how this tension may be resolved. The first option seems to be embedded within the possibility of expanded investment. For, if this were to occur, there would be positive repercussions for household income. This may allow households to consequently repair their balance sheets. Such a ‘bottom-up’ approach would facilitate household re-engagement with credit markets without finance necessarily having to decrease lending standards. This may then lead to more expansive but stable consumption patterns on the basis of increased income and wealth. However, that this chain of events will be the path towards resolution of the aforementioned tension is unlikely.

There is no doubt that the reasons for this are extremely complex and would involve consideration of many macroeconomic and historical factors.\textsuperscript{48} As such, an attempt to

\textsuperscript{48} For explorations of the reasons behind stagnant incomes and paths of investment see (Beitel, 2009). For an explanation situated within Post-Keynesian macroeconomic theory see Palley (2013). Examples of explanations focussing on the rise of the ‘rentier class’, and its impact on investment can be found in Girón & Chapoy (2012); Lavoie (2012); Watkins (2010).
give a comprehensive explanation will not be given here. However, within the confines of this thesis, a simple point contributing towards the debate can be made. A recovery which results in expansive household income would be inconsistent with the financial system that programmes such as Quantitative Easing have worked to restore. For, it will be recalled that QE, in partnership with government programmes and private portfolio decision making, has facilitated the creation of stable sources of value. This has allowed finance to both facilitate the flow of credit and participate in the process of competitive valuation. It is the process of competitive calculation in particular which makes a high-income consumption regime unlikely.

As was mentioned in the last chapter, Bryan and Rafferty highlight how finance, in the process of competitive calculation, has come to dominate the formation of asset prices. This has large implications for the investment process. For, it will be recalled that the expected rate of return on an investment project is compared with its prevailing supply price before it is purchased. For fixed investment in particular, the supply price will include the cost of production; the labour and raw materials or assets used in the production process. However, these asset prices are not static. In reality, they are constantly being revalued on a day-to-day basis within financial markets (Bryan & Rafferty, 2006: 170-171). In this sense, expectations formed in uncertainty are mediated against each other and reflected in prices continuously. The process of competitive calculation does not therefore remove uncertainty, but makes it a more tangible reality for firms. As such, firms are expected to recalibrate their investment decisions; comparing often their own perceived rate of return to asset prices formed in financial markets. The extension of this competitive logic has come to implicate households (as labour); the other constituent element of the supply price. As such, this group is now subject to the same mode of calculation, judged according to what they are able to contribute to the overall rate of return or profit for firms (Bryan & Rafferty, 2006: 176). This has, more often than not, placed downward pressure on the income of households, something which has been reflected in the phenomenon of declining and stagnant incomes.
The above analysis is fairly abstract and, of course, this phenomenon has been allowed to occur in the context of particular historical developments which have increased the power of American finance (Konings, 2011). Nevertheless, such analysis does reveal that stagnant incomes have come to occupy a structurally important place in American capitalism, helping to facilitate the competitiveness of firms. Of course, the ultimate profitability of firms also relies on the consumption of households. This is where, over the last thirty years, finance has filled the void. No more would households derive their increased capacity to consume from the firms they directly contributed to. Rather, that role was abrogated to finance, which facilitated both increasing asset prices and the extent households were able to leverage themselves against these prices to extend consumption.

Thus, if leveraged household balance sheets were to retract or disappear, and income shares were to rise, we would clearly be dealing with an American capitalist system in transition. What appears more likely - given the nature of the recovery QE has in part engendered - is that the financial system will gradually come to facilitate the restoration of debt led consumption. This process is likely to begin in earnest as fears regarding sources of stable value in financial markets decline. This may result in the search for yield becoming once again paramount in the relationship between finance and households. Such a development could see finance become willing to engage in a broader expansion of liabilities to households - both on the consumer credit and mortgage fronts. This in itself would not be enough, however. As has been shown, households also need to be willing to take on such liabilities. This willingness could return by virtue of the wealth increases that could derive from eased financing conditions in the mortgage market. For, as has been shown repeatedly, lower financing costs can lead to wider investment and therefore increasing house prices. Given these wealth changes, households may once again become enabled with the capacity to re-engage in debt-led consumption. Thus, the resolution to the aforementioned tension is most likely to be driven by the changing imperatives of finance as concern over

49 There has been some evidence put forth in the media that this may be occurring. See for example Rennison & Nicolaou (2015)
collateral supply diminishes.\textsuperscript{50} It seems, therefore, that how households are positioned within American capitalism is unlikely to change. Rather, the tension that has appeared post-crisis will dissipate with the progressive recovery of the financial system that QE has helped to engender.

### 4.6 Conclusion

The impact of Quantitative Easing on other aspects of the recovery reveals the contradictory role households have been expected to play in post-crisis American capitalism. Firstly, this group has been expected to facilitate the creation of stable sources of collateral. At the same point in time, these households have been relied upon to undertake debt-led consumption. Such consumption relies upon households spending a greater proportion of their income or taking on additional liabilities, on the basis of expected increases in wealth. However, Quantitative Easing operated to benefit household wealth to the extent that this group could support the imperative of collateral creation. This has come to disproportionately benefit households who have a relatively low marginal propensity to consume out of wealth. As a consequence, consumption has remained relatively muted in the years since the crisis. As such, this chapter has demonstrated that the nature of the prevailing recovery in investment can in part be explained through the failure of finance to enable low to middle income households to revitalise debt-led consumption. Despite this, it has been argued that debt-led consumption is unlikely be replaced by consumption out of increasing incomes. This is on the basis that the features of the financial system - which QE and other programmes have worked to restore - directly counteract that possibility. Rather, it is more likely that as the imperatives of finance change, so will its willingness to facilitate increasing house prices and the leverage households can therefore access to consume.

\textsuperscript{50} There is a question as to whether this kind of expansion will compromise the collateral-like qualities of assets based on household liabilities. However, the likelihood of this occurring has been curtailed by the American government’s dedication to ensuring the existence of ‘stable value assets’. Any losses experienced by finance in this potential expansion back into the securities realm may therefore be more successfully localised. This is because agents now operate in the knowledge that the marketability and yield of collateral assets will be supported by the American government.
Conclusion

The purpose of this thesis has been to explain the impact of Quantitative Easing upon low to middle income households. In working towards this goal, the actual impact of Quantitative Easing upon this group was empirically established in Chapter Two. In this chapter it was shown that Quantitative Easing has had an inequitable impact on American household wealth, disproportionately favouring higher income households. In order to account for this impact, the chapter proceeded to show that despite the eased financing conditions instigated by QE, mortgage access has remained restricted for low to middle income households. Restricted financing consequently led to depressed patterns of investment in real estate which inhibited the possibility of improvements in household wealth through increasing home prices. Chapter Three sought to explain this phenomenon of restrictive financing by showing that the portfolio decisions of finance in the mortgage market - supported by QE - were directed towards the imperative of collateral provision. This collateral underpinned the recovery of finance’s capacity to re-engage with the process of asset pricing through competitive calculation and to distribute credit through wholesale funding markets. However, such portfolio decisions did not translate into positive outcomes for low to middle income households, for this precluded distributing mortgage instruments to households with weak balance sheets. As has been demonstrated throughout this thesis, those with weak balance sheets are most likely to be low to middle income households.

Thus, QE only benefitted households to the extent that this group were able to support the recovery of crucial elements of the financial system. The incapacity for some households to offer such support, has led to restrictive financing conditions, weak residential investment and therefore a lack of recovery in house prices for those reliant on this phenomenon for wealth gains. While this may not in itself be surprising, it does encompass a direct challenge to the discourse that reverses the causality of this relationship and claims that QE was undertaken for the benefit of ordinary American households. As such, this thesis has clear political implications for those seeking to challenge a political narrative which places households as the direct beneficiaries of the
recovering financial system. At the time of writing, such challenges have been made empirically, by highlighting the inequitable effect of the financial recovery. However, this thesis has gone further and provided an explanation for these empirical results. It has done so by revealing the existence of a relationship between households and finance, where benefits have been distributed to households on the basis of their capacity to facilitate financial recovery. By highlighting this relationship, the prevailing political narrative of Quantitative Easing can now be challenged on two bases. While the inequitable impact of QE undoubtedly should still be highlighted, this can now be supplemented with a critique of the relationship between households and finance which has perpetuated these inequitable outcomes.

However, the implications of this work stretch beyond the political realm and into the methodological. For, it has provided an alternative approach to the study of programmes such as Quantitative Easing. This methodology, outlined in Chapter One, involved establishing an alternative conception of economic decision making and placing this within a systemic context. Firstly, the equation set out in Chapter One described the factors which go towards establishing the expected rate of return of an asset and therefore the decision to purchase it. It was made clear that such factors are considered in conditions of uncertainty, with some preferred over others depending on the context in which the portfolio decision is being made. Ultimately the portfolio decisions of different agents, informed by the rate of return equation, interact with each other to produce a flow of funds which constitutes investment. The particular dimensions and characteristics of that investment then come to impact back upon the agents making portfolio decisions in the first place. This is because aggregate investment conditions affect conditions of profitability and therefore the actual rate of return accruing to assets. However, this process does not occur in abstraction. This framework needs to be placed in a systemic context in order to understand the imperatives impacting upon portfolio decision making which may exist externally to the rate of return equation. In the context of this thesis, the wider imperatives of the financial system demanded the creation of collateralisable assets. This imperative then informed how finance made portfolio decisions in the mortgage market. Thus, by seeking to understand these
portfolio decisions in a systemic context, this thesis has been able to account for their consequences; the paths of investment which have ultimately impacted upon households. This kind of methodological approach is one which could be appropriated by other Political Economists seeking to understand the impact of Quantitative Easing or other government programmes.

The methodology outlined has allowed this thesis to extend itself in seeking to understand the implications of Quantitative Easing’s impact upon households for the wider recovery of American capitalism. For, the lack of wealth recovery amongst low to middle income households has lead to demand conditions which have not facilitated expansive capital investment. This is on the basis that debt-led consumption - which relies on expected wealth gains - has been limited since the crisis. Thus, this thesis has shown that the story of the recovery so far has been one centred upon the tensions embedded in the relationship between finance and households. On the one hand, this relationship has helped to restore finance’s capacity to distribute credit and undertake the process of competitive calculation. On the other hand, this has come at the expense of enabling the recovery of debt-led consumption; a crucial feature of American capitalism, as it enables households to sustain higher levels of aggregate demand in the face of stagnant incomes. Thus, through exploring and explaining Quantitative Easing’s impact on households, this thesis has also achieved a supplementary purpose. For, it has highlighted the inability of Quantitative Easing to instigate a full recovery of the American capitalist system.
Bibliography


International Monetary Fund. (2012). ‘Chapter Three: Dealing With Household Debt’ in *World Economic Outlook, April 2012*, International Monetary Fund, Washington D.C.


Yellen, J. (2014). *The Importance of Asset Building for Low and Middle Income Households* (Speech at the 2014 Assets Learning Conference of the Corporation...