THE HIERARCHY OF MONEY AND INHERENT INSTABILITY OF CREDIT

Reconceptualizing the debt crises of Greece and Italy and the measures of the ECB

Supervisor: Ole Risager

Number of characters (including spaces): 172.603

Rasmus Bang Kristensen – Master's Thesis
Copenhagen Business School, MSc. Business Administration & Philosophy

Table of contents

Abstract:

Recurrently, we see periods of instability or crises in the global financial system, which typically lead to severe consequences in our economies, calling for monetary accommodation from the central banks. We have recently seen examples of this not being enough to solve the economic challenges of the aftermath, as monetary stimulus sometimes mainly is absorbed by the financial markets and not resulting in a recovery of the private sector. This can leave governments in significant debt issues and can result in serious economic recessions.

The aim of this study is partly to examine different conceptual approaches that often are left out of mainstream economic debate about the issues above and combine these into a theoretical framework, much of it revolving around the nature and function of money and credit in some form or another. It is thus more philosophically inclined in its approach than most studies on this topic. Examined topics include the idea of our monetary system as 'hierarchical', financial markets being 'inherently unstable', economies going through periods of 'balance sheet recessions', and also thoughts about central bank policies, specifically the increasing importance of 'collateral frameworks'. The concepts will then be applied to the debt crises of Greece and Italy in order to understand the causes and primarily the ongoing challenges of solving them, but also as using the empirical case as a point of iteration and further understanding of the theory. From this, a discussion of likely scenarios from the approaching withdrawal of quantitative easing by the European Central Bank will be discussed, as well as how its future policy framework might look like. Finally, the thesis discusses the domain, or limits, or central banks and why sometimes monetary stimulus is not enough on its own right. In short, my main research question is:

Research question: *Using a hierarchical money view to help reconceptualize the causes of financial instability and its connection to economic recessions, how can we rethink policy responses to more appropriately deal with these challenges? What can this theoretical framework tell us about the ongoing debt challenges of Greece and Italy, as well as the measures of the ECB?*

The main method for answering this is through conceptual analysis and comparison of the theories mentioned, along with a few others, and then using the resulting framework to analyse the debt crises and the measures taken to handle them, including empirical data such as inflation rates in Greece and Italy, the balance sheet of the ECB, debt levels, and yield responses to measures of the ECB. The approach is qualitatively analytical and aimed at broader conceptual discussions of

financial and economic theory, rather than a precise quantitative study and modelling of the debt crises.

On this basis the main conclusions on the case are that the slow economic recovery of Greece and Italy lie in the focus of monetary accommodation, while little fiscal stimulus has been provided in times of austerity. Since much of the private sector in these countries are undergoing a balance sheet recession, characterized by debt minimization, the monetary policies do not translate into increased borrowing, because of a lack of demand for additional credit. From a lender's perspective, many of the banks in Greece and Italy are crippled by large amounts of non-performing loans, increasing their liquidity preference and to some degree sterilizing the efforts of the ECB. This in turn leads to a financialization of the economy, where the upswing mainly lies in liquid assets, compared to long-term investments in capital goods for example. While the immense monetary support from the ECB did translate into lower yields of the debt-ridden countries, the solution lies in increased fiscal stimulus as long as investments in the private sector is lacking; thus, the study does not see austerity in the countries as a solution to improving their debt sustainability in the longer run. Finally, in terms of monetary policy in the future, specifically of the ECB's collateral framework, a model as 'a pawnbroker for all seasons' is presented as an alternative – knowing that with the inherent instability of credit, it will be called upon at some point again.

Introduction:

The aim of the thesis is to bring a different perspective on our understanding of the causes and driver of financial instability, and how it can relate to economic recessions, thus also providing ideas about more effective policy measures to deal with these challenges. Because the underlying logic and concepts of our understanding of finance and economics drive very important decisions, it is often to debate and reconceptualize them. My approach to this research is eloquently captured in the following quote by Keynes:

"The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slave of some defunct economist" (Keynes: 383)

For example, the workings of money and liquidity in financial markets are often overlooked in mainstream economic thinking, which is something that will figure in some form or another in most of the literature I will examine. This will be important for understanding the inherent instability of financial markets, and later for it can relate to economic challenges and monetary policy responses.

In doing so, the goal is also to offer a complimentary explanation to conventional textbook economics, which typically sees markets as seeking towards equilibriums, only becoming unstable when external shocks occur. Much mainstream academia has also neglected the workings of money, seeing it as a 'veil' that does not have any significant influence on the workings of the economy.

The first section will focus on the conceptual analysis of different thinkers, such as Perry Mehrling and 'the hierarchy of money' and his view on the functioning of money markets, supplemented by remarks on shadow banking by Gabor and Vestergaard. Mervyn King's concept of 'the alchemy of banking' will also be examined, along with Keynesian 'liquidity preference', as well as Minsky's and Kindleberger's ideas on the drivers of financial instability. Further, theories on more macroeconomic issues will also be included, for example debt sustainability as laid out by Ole Risager, as well as ideas on 'balance sheet recessions' by Richard Koo and 'debt deflation' by Irving Fisher. The macroeconomic factors will be supplemented by a brief look at political instability and how it relates to economic growth and recovery, as presented by Mohamed A. El-Erian and a paper by the IMF on this subject. Finally, a few notions on central banking, especially their 'collateral frameworks, as described by Kjell Nyborg, will be examined, along with the role of central banks in modern times, as presented by Perry Mehrling and Mervyn King. A few other thinkers will supplement these ideas.

Next, the second section revolves around the case of the debt crises of Greece and Italy, as well as the measures of the ECB. The different concepts from section one will be applied in order to analyse what led to the debt crises of Greece and Italy, as well as understand what the challenges have been in resolving them, the focus being on the latter. I will look at what measures the ECB has taken and to what degree the expansionary monetary policy has been effective, while also examining fiscal policy and the implications of austerity. A few remarks on the political instability in Greece and Italy and its influence on economic recovery will be made. The empirical data I will look at includes the balance sheet of the ECB, debt levels, growth rates and inflation rates of Greece and Italy, use of collateral at the ECB and more.

Third section is a discussion of the analysis and its results, talking about when monetary policies are effective, and when fiscal policy would be more helpful. Further, I will discuss potential outcomes of the coming withdrawal of QE by the ECB, as well as the future outlook for the ECB, building upon what we have learnt from the past decade of crises but looking ahead for times of normality. Particularly the collateral framework will be discussed here.

The fourth and final section will round off by talking about implications and limitations of the present study as well as further perspectives, before going to the conclusion of the thesis.

Summing up, the research question of my thesis is:

Research question: *Using a hierarchical money view to help reconceptualize the causes of financial instability and its connection to economic recessions, how can we rethink policy responses to more appropriately deal with these challenges? What can this theoretical framework tell us about the ongoing debt challenges of Greece and Italy, as well as the measures of the ECB?*

The following sub-questions serve as further guidance on the approach of the thesis:

- What role does the creation of money and credit play in financial markets, and how does it affect liquidity in normal and stressed times? What policies could enhance it?

- How can instability in financial markets adversely affect the private sector and economies at large? How can we reduce or prevent this?

- Broadly, in what economic conditions is monetary policies most effective and when will it be more advantageous to implement fiscal measures?

- How does political instability feed into financial and economic variables (and vice versa)?

Methodology:

My aim is to generate new financial and economic thinking and perspectives by identifying and describing conceptual themes that can help give original meaning to challenges of the field. In other words, my method to answer my research question of will be qualitative in nature and the approach inductive, attempting to find new aspects and applications of the theories in empirical phenomena. This supports my choice of focusing on less mainstream economic thinkers. My specific strategy for this research is the case study of the debt crises and monetary policy responses. The procedure for building up the case study is data collection from official sources, such as the ECB, national statistics departments, and papers such as the Financial Times, all of which I have chosen because of their credibility. As mentioned, this data collection and case study is meant largely for iterative purposes, allowing deeper exploration of the concepts and broader themes through real examples.

One general thing to consider when using a case study as a way of exploring concepts and ideas further is that I am the sole 'research instrument', which makes biases inevitable when choosing empirical data and how to focus the interpretation thereof. The way to maintain the integrity of these kind of studies is first of all to choose data that the broader audience find reliable and credible, which I think this case contains. Further, it requires clear argumentation in the connection between the theory and the empirical material.

Advantages of case studies are of course that they are very flexible and can be used in conjunction with a lot of different traditions, as well as containing both qualitative and quantitative elements, to produce valid research. Specifically for my research question, it allows me to answer the 'how' and the 'what' by combining conceptual analysis with classically financial and economic data, thus helping to rethink appropriate monetary or fiscal responses to economic recessions and finding new ways of interpreting the challenges of the debt crises of Greece and Italy. Conversely, the disadvantage of applying broad concepts and general themes to this kind of data is that it lacks the precision of rigorous quantitative analysis, so I will not be able to account for relationship of the phenomena in mathematical detail. Nor will my study measure, quantify or predict the outcome of financial and economic variables. The same exact data I use in this study could have been used in this way and produced vastly different results and perspectives, generally giving much clearer answers about magnitude and specific relationships between different variables and financial and economic phenomena. This is for another study.

The goal is to challenge the underlying logic of mainstream economic thinking, and this methodology helps do so by combining traditional financial and economic empirical data with conceptual analysis. For the most part, mathematization of economics has incredible benefits, because it adds rigorousness and sharpness to the answers. When it comes to economics, it gives the underlying economic logic a quantitative expression and thus more immediate practical policy-guidance, for example. However, it can also obscure any faulty logic or presuppositions on which it is built, as the mathematics itself will be logically intact. In other words, just because math forces logical integrity does not mean that the logic of the underlying theory is not faulty. This is not just true for economics, but for other sciences that use mathematics as a tool (only math itself can be said to be exempt from this). The silver lining of financial crises and economic depressions is that they challenge us to remove the layer of mathematics and look directly at our fundamental understanding of the working of economics and financial markets. It is up to academics and policy makers to heed that challenge.

Delimitations:

As the debt crises in the Eurozone are tremendously complex, there are of course a lot of perspectives that will be outside the scope of this thesis. First off, though the majority of fiscal stimulus has been provided through the so called 'Troika', consisting of the IMF, the European Commission, and the ECB, I will exclusively focus on the impact and workings of the latter's policy tools, as one of the aims is to understand how monetary policy works in times of debt crises.

Further, as the main area of research is about the significance of financial and economic ideas for the architecture of markets and policy decisions in relation to avoiding financial instability and pursuing economic recovery, the study will not investigate the debt crises from the point of view of investors, although the significance of the ECB's measures also has a lot of interesting consequences for asset valuation, for example. Further, specific political and regulatory developments in Greece and Italy, as well as the Eurozone at large, will be kept at a minimum, although a few remarks will be made about the development of the Banking Union, as it ties to the ECB. I have chosen not to focus on all countries that are involved in the European Sovereign Debt Crisis, as it would simply be outside the scope of this study. My reasoning behind choosing Greece and Italy is that they currently are the two countries that are struggling the most with their debt burdens (although there are also significant challenges in other periphery countries).

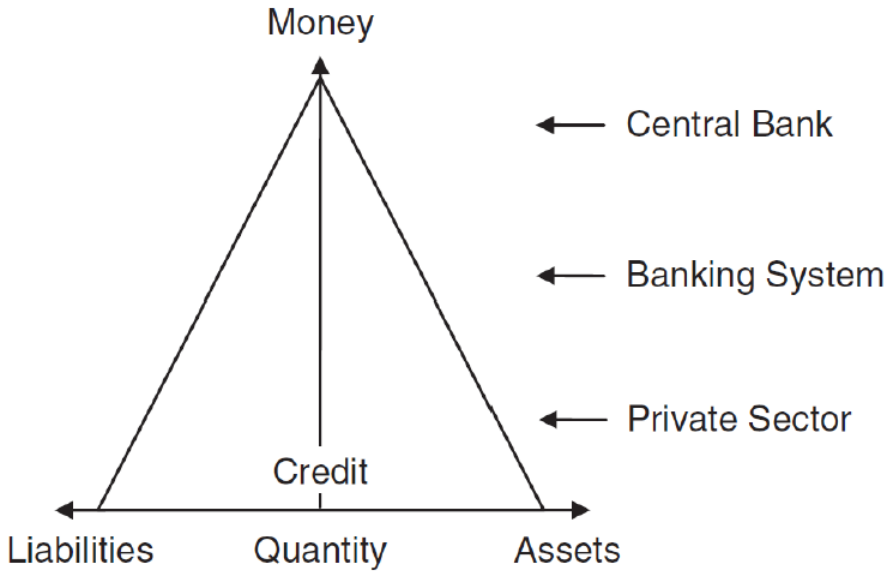
As mentioned in my methodology, this is not a quantitative analysis of the debt crises of Greece and Italy, but rather an attempt at reconceptualizing how we view crises like these with using economic theory that lies outside the mainstream. It is up to other studies to engage with the case and empirical data in a more mathematical manner, focusing more on extracting specific numerical dynamics.

Section 1 - The Theoretical Framework

The hierarchy of money

Building upon the initial thoughts on money, an important foundation to lay out is the *hierarchical* nature of our global monetary system, more specifically what counts as means of final settlement and what is merely credit (a promise to pay money). This helps both rethink what constitutes money, but also gives a helpful blueprint for the dynamics between central banks, private banks, as well as other actors such as governments and private companies. At first glance, the difference between money and credit may seem like a banal question, but delving a bit deeper shows some

interesting dynamics about financial markets: what counts as money and credit, respectively, is contextual and evolves dynamically. This idea is best introduced by a simplified visual representation:



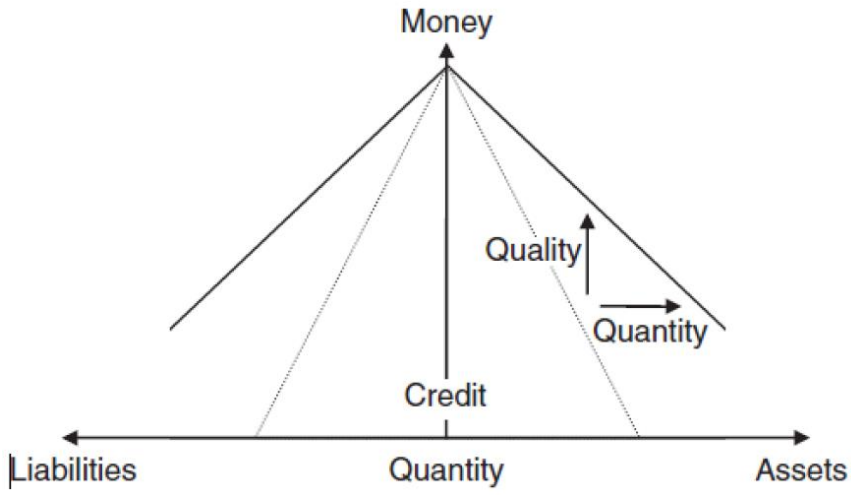
(Mehrling 2012: 8)

Perry Mehrling, who is a central figure behind rethinking monetary economics, introduces the figure above in his paper "*A Money View of Credit and Debt*", in which he talks about several important – yet to him often omitted – features of money and credit and how it fits into the financial system at large. The first observations to make is that central bank money is at the top of the hierarchy, followed by private deposits in the banking system, while the private sector sits at the bottom**.** All these institutions have to settle their debts with money that originates from higher up in the hierarchy: private banks settle debt with their accounts at the central bank, which serves as a disciplinary force, also called the "reserve constraint". To Mehrling, this daily requirement of settling net payments on the book of the central bank serves as "the ultimate discipline for the entire system" (Mehrling 2011: 13). Likewise, to the private sector, bank deposits have the appearance of money, and functions as means of settlement, whether it be a the local supermarket or in a billion-dollar construction deal. In other words, what count as money depends on where in the hierarchy you stand. In general, institutions can affect the supply of money (liquidity) in the levels below, but not influence the supplies above, which count as their own means of settlement. This means that (private) liabilities are issued lower in the hierarchy in order to circumvent the survival constraint, set higher up in the hierarchy.

To some, the idea that currency and bank deposits are not the same might seem odd. In normal times, central bank currency and private bank deposits function equally as means of settlement and trade at par, of course. But this is not a given, and there are several historical examples of this parity breaking down. It is something the central bank and state has worked hard to establish over decades, for example by introducing deposit insurance and the idea of lender of last resort, ensuring the banking sector – in theory – always can meet its liquidity needs (more on latter later).

While banks and central banks of course are the essential financial institutions in capitalist markets, to Mehrling the entire economy - households, businesses, and governments - can also be seen as 'financial institutions', because their daily cash flows, specifically their level of indebtedness, significantly affect the financial system at large: *"The seductive allure of present credit and the crushing burden of future debt are two faces of the same creature*" (Mehrling 2011: 11).

This ties closely to the concept of the 'inherent instability of credit': *"[…] the inherent instability of credit has its origin in the way that credit-financed spending by some creates income for others, not only directly but also indirectly by pushing up the price of the goods being purchased, thus producing an upward revaluation of existing inventories of the good"* (Mehrling 2011: 15). This is true both on the micro level in terms of cash flows from individual entities, but also aggregates to the economy and financial markets at large. The feedback loop between expansion of credit and rising asset prices lies behind the inherent instability of credit.



(Mehrling 2012: 8)

What the picture above alludes to, is that the dynamism of the money hierarchy is twofold: first of all, the *quantity* of money and credit expands and contracts cyclically. This means that in booms, credit is much more readily available, often to less worthy borrowers, and, conversely, when

financial instability creeps into markets, it becomes more expensive to borrow and rolling over debt becomes much more difficult. Less intuitively, the *quality* of money, i.e. the "moneyness" (ability to readily trade at par with central bank currency), of different assets also change throughout business cycles. When confidence in financial markets are high, private credit that would normally seem far from being a means of settlement, suddenly gets the characteristics of money. When financial markets experience a downturn, the hierarchy of money reasserts itself and tests the promise to deliver at par payments from lower quality credit, and there is a rush towards asset higher up in the pyramid. When the confidence in any given asset diminishes, it falls towards the bottom of the hierarchy, becomes more illiquid and falls in value (Mehrling 2011: 7).

With his hierarchical money view, Mehrling dismisses the notion that, whether taken as a normative or positive statement, debt relations can be reduced to an equilibrium of "optimal intertemporal allocation for a representative agent". There is simply too large a degree of fundamental uncertainty in economic life, which should not be abstracted from:

"The web of interlocking debt commitments, each one a more or less rash promise about an uncertain future, is like a bridge that we collectively spin out into the unknown future toward shores not yet visible. As a banker's bank, the [central bank] watches over the construction of that bridge at the point where it is most vulnerable, right at the leading edge between present and future. Here failure to make a promised payment can undermine any number of other promised payments, causing the entire web to unravel" (Mehrling 2011: 3-4)

This is also why the survival constraint can become a crushing burden: Debt commitments are not just money travelling between two points in time. They are filled with uncertainty and risk, and the very *moneyness* of private credit can quickly come into doubt. Nevertheless, as Mehrling puts it, today "The essence of banking is a swap of IOUs" (Mehrling 2011: 72), in other words financial markets are filled with mechanisms that circumvent the scarcity of central bank money. One of the most important institutional characteristics of today's global financial system, and very fitting in terms of swaps of IOUs, is *shadow banking.*

Shadow Banking and the expansion of credit:

In order to understand the institutional framework of modern banking, we must take a closer look at the concept of *shadow banking*; the role it plays play in the financial system, and how shadow banking fits together with traditional banking. My goal here is to explain it from an institutional point of view so as to examine how it fits into the bigger picture of the global hierarchical money system, although I will have to introduce what exactly it entails in more technical terms as well.

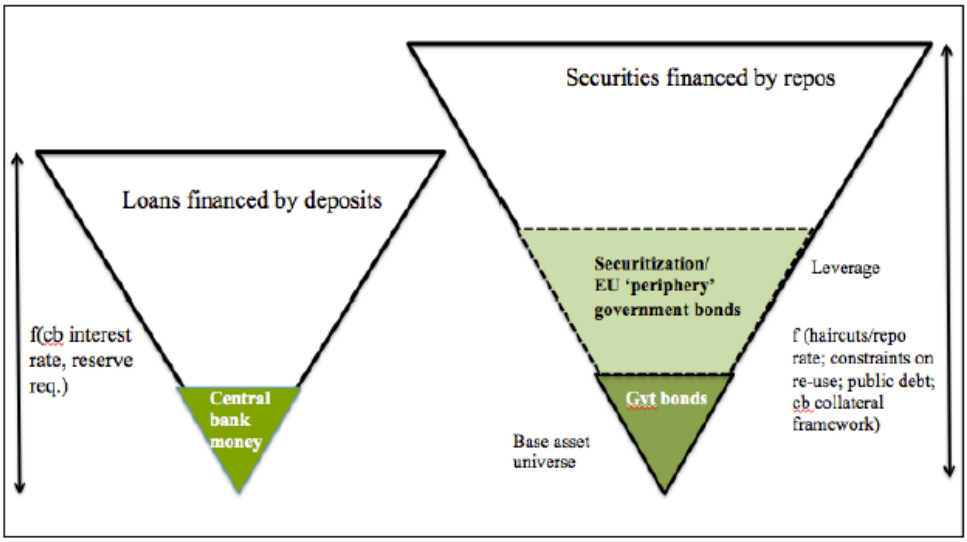
Shadow banking is a collateral-based credit system and thus shadow money can be defined as "repo liabilities, promises backed by tradable collateral" (Gabor & Vestergaard: 2). These repo claims are mostly short-term, and *tradable* is key here (as collateralized lending in general is nothing new); shadow money is accepted because of the promise to trade at par on demand with (central) bank money (Gabor & Vestergaard: 22). They are typically traded at a *haircut*, which functions as an "exchange rate" between the collateral and cash, and serves as a buffer against volatility in collateral markets. This is what makes government debt attractive as collateral, since low haircuts make for cheaper leverage (the cost of financing securities for shadow banks depend on the associated haircuts) (Gabor & Vestergaard: 23).

Gabor and Vestergaard have four main points about shadow banking/shadow money (Gabor & Vestergaard: 10):

a) In modern money hierarchies, repo claims are nearest to settlement money, stronger in their 'moneyness' than ABCPs or MMF shares.
b) Banks issue shadow money. The incentives to issue repos are incentives to economize on bank deposits and bank reserves.
c) Shadow money, like bank money, relies on sovereign structures of authority and creditworthiness. The state offers a tradable claim that constitutes the base asset supporting the issuance of shadow claims.
d) Repos create (and destroy) liquidity at lower levels in the hierarchy of credit claims.

One of Gabor and Vestergaard's points about shadow banking is that there is no clear dichotomy between shadow banking and the traditional banking system; rather, private banks often engage in a dual role (Gabor & Vestergaard: 3). As mentioned, the central mechanism that shadow banks use is collateralized repurchase agreements (or repos), which play an important role in the hierarchy of money and credit, as they are a private way of creating – and destroying – liquidity at lower levels in the hierarchy (Gabor & Vestergaard: 10).

To the left on the figure below, we see what most people associate with banking, the traditional way of extending central bank reserves to deposit-financed loans in a fractional reserve system, while the right side shows how short-term repo lending (typically done with government bonds or something very close in terms of liquidity and perceived riskless qualities) can finance longer-term securities with higher returns.



There are four main constraints when it comes to issuing repo liabilities: haircuts, public debt issuance, barriers on reuse, and collateral frameworks of central banks' (Gabor & Vestergaard: 23).

Shadow money is an important mediator between money markets and securities/derivatives markets. When the hierarchical layer of shadow money expands, the liquidity in securities markets likewise improves as there are more credit to roll over short-termdebt with (Gabor & Vestergaard: 21).Yet, here lies also one of the fundamental fragilities of modern financial markets: In financial booms, where the hierarchy flattens and repos become increasingly acceptable as (shadow) money, the huge amount of private liquidity also causes a similar appetite for leverage, making the hierarchy of money more fragile in a Minskyan sense (Gabor & Vestergaard: 21). I will return to Minsky in the next section about ideas about financial bubbles and instability. Here, Gabor and Vestergaard also refer to Keynes, who was concerned about too much liquidity in financial markets, as it gives investors a false sense of security, thinking they can profit before the inherent instability of credit shows the other side of its coin.

"But it is precisely this convertibility regime that subjects repos to radical uncertainty: the moneyness of repo claims depends on collateral valuations. Uncertainty in the shadow layer of money hierarchies means uncertainty about the collateral qualities of securities. Keynesian uncertainty bites harder and faster as market liquidity becomes systemic, so that the criteria for formulating expectations about asset liquidity may unhinge from issuer's credibility altogether. Loss of confidence in expectations about near-term collateral price movements translates into loss of confidence in the moneyness of repo claims backed by those assets (Gabor & Vestergaard: 22).

Combining fundamental uncertainty with excess liquidity is likely to lead to greater risk in financial markets over time, and repos are key in generation the latter in securities market. As previously

mentioned about money hierarchies, in financial busts, there typically is a flight towards assets at the top of the pyramid.

Specifically for repos, their ability to be converted at par to an asset placed higher up the pyramid, e.g. currency, depends on the underlying *collateral valuation*. This valuation comes under pressure, when the holders of the repos try to convert them to higher forms of money.

"When the shadow layer of money hierarchies contracts, the stampede up the hierarchy erodes the liquidity of tradable claims that supported its expansion. The intricate interconnections along the hierarchy of promises to pay render market liquidity complex, contingent and volatile. Keynes's 'fetish of liquidity' the increasing preference for 'liquid' securities – gains systemic proportions. Shadow moneyness is procyclical, rendering market liquidity the most important social institution in market-based finance" (Gabor & Vestergaard: 26).

Importantly, liquidity in financial markets are deemed the most important factor behind shadow money stability. Without it, the collateral value will fall drastically, and the underlying parity to central bank money will become much more problematic for debtors to uphold, resulting in funding gaps and an increase in haircuts when rolling over short-term repos. Crises in the hierarchy of shadow money are crises of collateral.

Shadow Banking and the State

Because it is cheaper to collateralize repos with liquid and less risky securities, the amount of government debt in financial markets become a key factor:

"Government bonds support shadow-money creation because state debt trades in liquid markets. Liquid collateral market experiences less price volatility, and therefore lower haircuts, less frequent margin calls, and lower costs of funding. Put differently, it is cheaper to issue repo liabilities collateralized with government debt because of its liquidity and 'risk-free' status. While banks traditionally held government bonds to ensure access to liquidity in cases of a cash drain, now they can use government bonds for balance sheet expansion. This shadow function reflects the critical role that government debt plays in market-based finance" (Gabor & Vestergaard: 18)

Put differently, sovereign bonds are no longer just a "safe haven", but are also an important tool of creating shadow money, i.e. repos backed by tradable collateral. Government bonds have "velocity"; it is a base asset that enables financial markets to expand via creating more and more collateralized claims (remember that collateral can be re-used in several different repos)**.** This means that government debt not only is relevant for raising cash, but also for supplying the financial markets with base assets that support credit expansion (Gabor & Vestergaard:18-19)

Money Markets and Dealers – Making the Financial World Go Around

Mehrling describes money markets as the "plumbing behind the walls" of financial markets, in other words what makes the system function. It is a crucial way for the financial system to expand by circumventing the reserve constraints of the central banks through interbank lending. To him, it is important to understand this part of the financial markets, because it is often here that liquidity problems arise, yet the function of dealers is also typically taken for granted by many academics and professionals who do not worry about survival constraints, hence see no liquidity risk and in turn no liquidity premium in the price of assets (Mehrling 2011: 101)

"You don't know what you've got till it's gone. Liquidity is like that. One day you've got a nice portfolio of high-yielding fixed income securities which you can easily finance by using the securities themselves as collateral to borrow in a deep and liquid wholesale money market. The next day, you can no longer borrow at any reasonable rate, and you can't sell your nice portfolio either at any reasonable price. Liquidity is gone, and it is about to take you away with it" (Mehrling 2011: 92).

In essence, when the "plumbing" fails, a financial institution can quickly find itself in the situation above. Interbank lending and borrowing in money markets is what makes the global (decentralized) banking system almost function like one big efficient bank that can offer payments elasticity and ease the reserve constraint by altering its balance sheet. Banks only hold a small fraction of reserves at the central bank, but (a functioning) money market lets them settle account by borrowing and lending reserves directly between them at any time (Mehrling 2011: 94-95).

Intervening in the money markets

Should there be any imbalances in the daily clearance system of money markets, the central bank can always intervene before it gets out of hand, by lending funds against collateral.

"This direct and immediate effect on asset prices can be contrasted with the indirect and lagged effect on the larger economy that economists usually emphasize, an effect that is supposed to operate through the incentive of banks to expand customer lending when they find themselves holding excess reserves. There can be no question which effect is the more immediate. Monetary policy works, in the first instance, by affecting the behavior of dealers, not banks, and by pushing around asset prices, not bank lending. Maybe eventually the lending mechanism kicks in but on a timescale much longer than the daily survival constraint that is at the center of a money view perspective" (Mehrling 2011: 102).

One of Mehrling's points is that it can be difficult for central banks to always achieve the desired effect of their measures, because easing conditions in money markets tend not to necessarily translate into increased lending if the underlying collateral is deemed too risky or illiquid. Central banks can provide funding elasticity, but this does not necessarily ensure market elasticity for all

assets; this is easiest to achieve for liquid assets that are easily convertible, or 'shiftable' into reserves, and can be used as collateral at the central bank (Mehrling 2011: 106):

"On the way up, ample funding liquidity in private money markets supported the extension of market liquidity into previously uncharted territory, and that extension supported collateral valuations that supported further extension of funding liquidity. On the way down, the same reinforcing cycle worked in reverse. This is the inherent instability of credit, twenty-first-century edition" (Mehrling 2011: 130).

It is important to conceptualize this connection between shadow banking and the working of dealers in money markets, since their whole funding relies on it (as they do not hold normal deposits). If liquidity in these markets break down, it can have a hugely negative effect on the system.

The Alchemy of Banking:

Mervyn King, former Governor of the Bank of England, describes banking as a type of 'alchemy', which is an important reason for instability in financial markets:

He uses the concept of alchemy in different contexts and also calls it *"The pretence that the real illiquid real assets of an economy […] can suddenly be converted into money or liquidity"* (King: 253). An important aspect of banking is what is called maturity transformation; you could say that instead of turning stone into gold, short-term is turned into long-term, and risk into safety:

"For centuries alchemy has been the basis of our system of money and banking. Governments pretended that paper money could be turned into gold even when there was more of the former than the latter. Banks pretended that short term riskless deposits could be used to finance long term risky investments. In both, cases the alchemy is the apparent transformation of risk into safety. … For a society to base its financial system on alchemy is a poor advertisement for its rationality. The key to ending the alchemy is to ensure that the risks involved in money and banking are correctly identified and borne by those who enjoy the benefits from our financial system" (King: 250-251).

More specifically, this means that a bank deposit really is a liquid claim tied to illiquid assets (typically loans and securities), often with an uncertain value. In other words, there is only liquidity to meet a fraction of a bank's liabilities. The reason for this is clear:

> "Banks and other financial intermediaries will always try to finance illiquid assets by issuing liquid liabilities because they make profits by paying less on the latter than they earn on the former. That is why, although money is a public good, the bulk of its supply is provided by commercial banks" (King: 253)

Here it is important to think about the distinction between central bank money (currency) and private bank money (deposits) in the hierarchy, which may look similar on a superficial level, but there are important differences, as explained by Perry Mehrling. Majority of what people think of as

'money' today is deposit money at private banks. Money is primarily credit at private banks which is created through the creation of loans/debt. Just like Mehrling, King also highlights a crucial element of economic life: radical uncertainty, that is "*uncertainty so profound that it is impossible to represent the future in terms of a knowable and exhaustive list of outcomes to which we can attach probabilities"* (King: 9). No agent in the economy can truly take every variable into account – some have simply not been established yet. He mentions the failure to truly take this into account in mainstream economic theories as one of the factors behind the recent financial crisis. In economics upswings and when financial markets are stable, the functioning of money and means of liquidity seem trivial, but distinctions of qualitatively different types of money really matters when there are large and unpredictable jumps in the demand for it (King: 182) Even though King does not explicitly talk about money hierarchies, it is clear that he shares Mehrling's view on qualitative difference in the moneyness of different types of assets in the way that money "in all its forms, depend on *trust* in its issuer" (King: 8).

Keynes on the banking sector's liquidity preference:

Although commonly misunderstood as just a term for "money demand" in its simplest form, Keynes' idea on liquidity preference is actually an important part of asset valuation. To Keynes, asset returns can in essence be broken down into two reward components: 1) a monetary return, e.g. income, dividends, or interest 2) a liquidity premium, represented by the implicit insurance a specific asset gives it holder in terms of easiness of disposal/convertibility. Keynes stressed the importance of uncertainty about the future of financial markets and in the economy, so-called 'unknown unknowns' which is impossible to insure oneself against, and thus it is valuable to possess liquid assets, with central bank currency having the highest liquidity premium (gaining its value entirely from the liquidity premium). Rather than low probabilities, some events have actual *unpredictability.* With varying degrees of uncertainty comes shifting liquidity preferences and, consequently, relative prices of assets (including currency) as they have varying degrees of general insurance according to their specific liquidity. Importantly, this helps explain the typical collapse of asset prices for illiquid assets in times of financial distress and high degrees of uncertainty and unpredictability, where we tend to see 'flights to liquidity' (Hirai et al: 149-150).

When considering asset accumulation and portfolio construction, an important addition to the actual monetary return is this liquidity premium. In other words, there is a 'precautionary demand' that stems from the unpredictability of adverse events happening, which generates a liquidity premium

(or implicit insurance) of certain assets. There is much value in holding assets that lets one efficiently react to new information, so investors will tend to part with liquid assets only if they are compensated for this loss in the form of higher monetary rewards. Here Keynes has an interesting view on interest rates: It is the rewards for parting with liquidity, rather than abstaining from consumption (Hirai et al: 151).

The demand for assets is explained as a combination of the expected money returns as well as the liquidity premium of said asset. The liquidity preference theory of Keynes seeks to explain the components of asset *prices* rather than *amounts* of assets, as some assets cannot readily be reproduced in the actual economy.

Reserve accumulation is not only due to a lack of willing and able borrowers, but in times of high uncertainty also very much as an insurance to banks and other financial institutions, who are willing to pay "the price" of foregone monetary returns. Keynes' has a stylized example of a bank in his "Treatise on Money"; on its balance sheet is one liability, deposits, and three types of assets, namely call loans, investments, and advances to customers. Each of these three asset classes have different returns and liquidity premia, with call loans being the most liquid, investments hold a role in between, and advances to customers being the least liquid with the highest monetary return. The challenge for a bank is to structure its asset side of the balance sheet in such a way to reach the desire liquidity premium and also reach optimal returns. With a higher degree of uncertainty in the economy, banks would tend to hold more liquid assets, for example call loans (which can be demanded repaid at any time), and extend fewer long-maturity loans to customers, of course at the cost of a smaller return. When the banking sector as a whole is under stress, the amount of credit extended to the rest of the economy can be drastically reduced (Hirai et al.: 156)

In terms of policy decisions, one important point of Keynes is that banks cannot be reduced to a neutral link between the government and central bank and the rest of the economy, i.e. the private sector and households. The banks can in a sense 'sterilize' expansive measures by the central bank, if it leans towards the insurance of highly liquid assets, at the expense of fewer loans made to businesses and households (Hirai et al.: 157-158).

Understanding liquidity preference and money hierarchies:

Since households and firms cannot create money, it is easier to understand their preference for the insurance of liquid assets, as they need to be sure they can meet future debt obligations. It might be

less obvious why banks want to hold less profitable assets, since they are in control of the creation of bank deposits, which make up for the vast majority of money supply in modern capitalist societies. The link from Keynes' notion of liquidity preference to the idea of money hierarchies are starting to appear. As previously noted, the moneyness of bank deposits originates from the easy convertibility into currency, i.e. legal tender, as upheld by various supporting structures such as deposit insurance and the central bank as lender of last resort. When we are just presented with the *price* of something on a daily basis, it is easy to overlook the important qualitative differences between currency and bank deposits (and other types of assets with their respective money/credit qualities).

The ability to create (deposit) money through the guarantee of convertibility to currency by the government is of course an immense privilege, as banks can buy earning assets from the businesses and households by issuing their own IOUs (creating deposits). Still, it is important to reiterate that within the banking layer of the hierarchy, these IOUs do not qualify as means of payment, i.e. interbank settlement, nor does it for the layer above, the central bank. Crucially, bank deposits are of course immediately redeemable, so should the general public lose confidence in the bank or the economy in general, they can demand deposits be converted into currency at a moment's notice. Here, the banking sector's need for money higher up the hierarchy (central bank money) appears.

It comes back to the previously mentioned survival constraint (in the form of reserve requirements for banks), which in times of distress in liquidity markets can put a downward pressure on some assets:

"An implication of acknowledging liquidity preferences is to consider that portfolio (or balance sheet) choices are sensitive not only to variations in the relevant interest rates but also to changes in perceived uncertainties. As uncertainty rises, low-yield assets increase in demand in detriment of less liquid assets that are forced to increase their offered money returns if they are to remain in demand. If one traces a liquidity preference schedule in the traditional interest rate/money demand space, an autonomous increase in liquidity preference of this kind is represented as a shift upwards of the whole function. Since demand for liquid assets is strengthened, demand for illiquid assets will fall below supply, reducing their prices. As some of the most illiquid assets are reproducible goods, as in the case, notably, of capital goods, excess supplies will lead to reduced production and, thus, lower output and employmen"t (Hirai et al.: 159).

The above can be understood very much as an extension of Mehrling's idea of the hierarchy of money, that a reassertion of the different asset classes take place during financial instability, which exerts a downward pressure on asset prices of less liquid assets. Further, the effect of uncertainty, or

‘unknown unknowns’ adds to the quantifiable factors of changes in interest rates and price changes in the shape of an autonomous rise in liquidity preference, further sharpening the credit risk that financial institutions face, which potentially could reduce the confidence in the solidity of their balance sheets.

The link between the contraction of the hierarchy and then what consequences the actual economy typically will endure is important: lower output and employment, because capital goods (e.g. factories and machines) are some of the most illiquid assets there are. Banks will be quick to move away from these types of investments and lean towards credit rationing, which of course create negative ripple effects in the economy, rapidly morphing a financial crisis into an economic crisis through a feedback-loop of the increasing credit risk and uncertainty and, in turn, increased liquidity preference which once again put deflationary pressure on the more illiquid asset classes. Much like Mehrling says that liquidity is not a free good, the liquidity preference helps understand why prices of liquid assets increase and tends to be harder to come by when the financial markets contract, and interbank rates for reserves tend to surge, while, conversely, market prices of illiquid assets quickly can drop dramatically in the frantic search for currency reserves of assets higher up in the hierarchy that can readily be converted at par. Even when things have stabilized, the very memory of instability and risks might keep banks’ liquidity preference higher than usual, prolonging a potential recession (Hirai et al.: 163-164).

The liquidity preference theory is often contrasted with the notion of ‘time preference’ as made prominent by Irving Fisher and used in most mainstream finance today: the idea of discounting the value of future payments based on a preference for consumption today as well as taking inflation into account. I do not see them as mutually exclusive, but rather complimentary to each other. Time preference does not fully capture why a dollar today is worth more than a dollar tomorrow, in the sense that holders of securities endure some degree of liquidity risk, which they must also take into account, especially in times of contracting liquidity. The risk of liquidity is invisible, until markets contract, the hierarchy of money reasserts itself, and illiquid assets cannot readily be traded at par.

Common drivers of financial instability

Manias, Panics, and Crashes:

The topic of market bubbles and cycles of financial instability is something that Charles Kindleberger had a lot to say about. Even though they have appeared in all kinds of different forms over the centuries, there are typically some overarching characteristics to them all. In the book

"Manias, Panics, and Crashes, a bubble is defined as "a significant increase in the price of an asset or security or a commodity that cannot be explained by the 'fundamentals' […]" (Aliber & Kindleberger: 43), in other words when the market price becomes overly disconnected from the fundamental value of a given asset. The common thread in bubbles and financial instability is, in short, a chronology from mania to panic, and eventually a crash:

> What happens, basically, is that some event changes the economic outlook. New opportunities for profits are seized, and overdone, in ways so closely resembling irrationality as to constitute a mania. Once the excessive character of the upswing is realized, the financial system experiences a sort of "distress," in the course of which the rush to reverse the expansion process may become so precipitous as to resemble panic. In the manic phase, people of wealth or credit switch out or borrow to buy real or illiquid financial assets. In panic, the reverse movement takes place, from real or financial assets to money, or repayment of debt, with a crash in the prices of […] whatever has been the subject of the mania (Aliber & Kindleberger: 2015**).**

Kindleberger's chronology of booms and busts are closely related to the dynamic amount of liquidity available in the financial system, and thus resembles the idea of the inherent instability of credit. Even with a fixed money supply from the central bank, credit can evolve endlessly, as long as the private sector wishes to and can get others to accept it, so money is also an elusive construct in his theory:

"When government produces one quantity of the public good, money, the public may proceed to produce many close substitutes for money, just as lawyers find new loopholes in tax laws almost as fast as older ones are closed. The evolution of money from coins to bank notes, bills of exchange, bank deposits, and finance paper illustrates the point" (Aliber & Kindleberger: 28)

From here, speculative manias can quickly gather speed by investing the vast amount of credit where the returns of the newest fad lie; typically in less liquid and more risky assets. This can go on until investors start to realise that it is a bubble, which according to Kindleberger is when prices diverge too much from the fundamentals. When the financial system then reaches the stage of panic, an important dynamic is the 'revulsion' that financial institutions begin to feel towards extending credit based on collateral (whether it be securities, commodities, or real estate), because their prices seem to have peaked and have become more *uncertain.* This panic is often self-reinforcing, driving asset prices and collateral value ever lower through 'discrediting' (Kindleberger: 46). Eventually this may lead to the crash because of fire-sales driving asset prices down unsustainably, turning problems of liquidity into problems of solvency for the weaker

participants. More on this with Minsky's distinction between hedge, speculative, and Ponzi entities, which fits well with Kindleberger's framework.

Kindleberger's theory naturally goes directly through the efficient market hypothesis, which states that all information is contained in an asset's price and that financial markets set prices efficiently based on fundamentals.

Besides the cyclicality of financial markets, he also places great emphasis on the interconnectedness between countries:

"The practical observation is that the increase in the supply of credit in one country may be followed by an increase in credit in other countries, because investors in the second country may respond to rising prices and profits abroad by demanding more credit so they can buy the assets and securities whose prices they anticipate will increase. The potential contraction from the shrinkage in the monetary base in the second country may be overwhelmed by the increase in the speculative demand for credit (Kindleberger: 44-45)

Long gone are the days when one nation's economic or financial problems are only their concern. In the global financial markets, there are typically important contagion effects, both on the way up and when things go downward.

Minsky's Financial Instability Hypothesis:

Related to Kindleberger's chronological dynamics of financial instability, Hyman Minsky proposed his *financial instability hypothesis* to explain why financial markets cycle between upswings and downturns.

"The first theorem of the financial instability hypothesis is that the economy has financing regimes under which it is stable, and financing regimes in which it is unstable. The second theorem of the financial instability hypothesis is that over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an unstable system" (Minsky 1992: 7).

To Minsky, financial instability in capitalist societies is created by the financial system itself, and even exacerbated by it – "inflation feeds upon inflation and debt-deflation feeds upon debt-deflation" as he puts is (Minsky 1992: 1). More specifically, he makes a distinction between *hedge, speculative,* and *ponzi* finance, in descending order of operating income per unit of debt: hedge firms can pay both the principal and interest payments of a loan via their own income, speculative firms are able to pay off interest, but must "roll over" their payments of maturing loans, while ponzi firms' operating income is insufficient to even pay all of the interest of their indebtedness, forcing

them to increase their level of debt or sell of assets. One of Minsky's points is that the relations above are not constant; when the economy starts to slow and corporate profits decline, hedge firms become speculative firms, while the latter falls into the category of ponzi firms – of course, many of the weakest companies already placed in the ponzi category often are forced to close up shop. Also, some companies will be very exposed to tightening of monetary policies (Minsky 1992: 7-8)

The main driver of financial instability, in other words, is that firms systematically become unable to pay their debts to the financial sector.

Thereby, he denies the view of classical economists such as Smith and Walras, that the economy is a self-sustaining entity, naturally inclined towards equilibrium and financial stability. According to Minsky, the financial system is *inherently* unstable (or at least inevitably moves towards regimes of instability), which bears a great resemblance to the point of Perry Mehrling (Minsky of course being one of the pioneers behind this idea): the supply of credit increases greatly in economic expansions, and then conversely declines, sometimes rapidly, in downturns. This *pro-cyclical* adjustment in the amount of credit is one of the main culprits behind the fragility of the financial system.

Stabilizing an unstable economy:

Minsky is sometimes seen as a pessimistic economic thinker when it comes to our ability to ever fully stabilize financial markets. He famously ends his work "Stabilizing an unstable economy" with the following statement:

"There is no possibility that we can ever set things right once and for all; instability, put to rest by one set of reforms will, after time, emerge in a new guise" (Minsky 2008: 370)

This of course puts a roof on the potential of policy implementation. Still, he does see intervention in the inherently unstable financial markets as essential and gives some tools and directions towards a more stable economy. Minsky characterizes banking as an "endogenous destabilizer" to the financial system, as it in times of economic tranquility constantly seeks to innovate in order to increase credit supply and circumvent central banking constraints (Minsky 2008: 279).

"Over an expansion, new financial instruments and new ways of financing activity develop. Typically, defects of the new ways and the new institutions are revealed when the crunch comes. The authorities intervene to prevent localized weakness from leading to a broad decline in asset values; this intervention takes the form of the Federal Reserve accepting new types of instruments into its portfolio or acquiescing in refinancing arrangements for new institutions and markets. Since the intervention by the authorities tends to validate the new ways, the central bank sets the stage for a broader acceptance and use of the new financial instruments in subsequent expansions" (Minsky 2008: 281).

Much like Mehrling talks about the hierarchy of money being dynamic, Minsky's point here is that by accepting assets of questionable quality in times of crises, it invariably legitimizes them over the longer term. Ironically, the central bank may end up indirectly creating sources of illiquidity if it legitimizes them by "accepting new types of instruments into its portfolio".

So how can we counter these forces? The primary focus for creating stable economies is through what Minsky calls "Big Government", the job of which it is to ensure high employment rates, keep inflation in check, as well as increasing income equality. The peculiar name needs some clarification: Minsky is very much echoing the thoughts of Keynes, although he tries to reframe how to understand him, putting a larger emphasis on the role of the financial system within the macroeconomy. It is sometimes misinterpreted as a call for socialism, but the goal of including the government as a player in financial markets was rather to reach a stage of "managed capitalism", in order to improve the profitability of private capital as well as reduce overall uncertainty of financial markets. The 'Big government' was meant to calm the so-called 'animal spirits' and dampen the inevitable volatility of a pure laissez-faire economy

"Unless we understand what it is that leads to economic and financial instability, we cannot prescribe – make policy - to modify or eliminate it. Identifying a phenomenon is not enough; we need a theory that makes instability a normal result in our economy and gives us handles to control it" (Minsky 2008: 111).

This is in essence the goal of Minsky's theory: To conceptualize financial instability in order to build more effective policies to combat it.

Governments' Debt Burdens and Macroeconomic Factors:

So far, a lot of focus has been put on credit within the financial sector in isolation. Another important point to expand on is how debt functions in relation with macroeconomic developments, specifically government debt and its sustainability.

It is overly simplistic to put a constant threshold for when a country's ratio of debt to GDP becomes untenable. Three main influencing factors can be identified, namely the growth rate of the economy, the real rate of interest on the government's debt, and the future budgets of the government. One should keep a close on how these affect the ratio between government debt and the country's GDP over time (Risager: 211-212). In other words, it is not an inevitability to default when faced with mountainous debt levels relative to current GDP levels, as long as governments can work towards

making the factors mentioned work in their favour, i.e. budgetary surpluses, negative real interest rates, and positive GDP growth.

Another important source of change in a country's outstanding debt, although it can be more difficult to quantify and predict, is *valuation effects*, which has a lot to do with market developments: This could be developments in exchange rates if part or all of the debt is in a foreign currency, as well as changes in the yield curve of bonds, the development of which is inversely related to the price of outstanding debt. Similarly, should the yield curve steepen (the rates of bonds with longer maturity increasing relative to the shorter-term bonds), the present value of the long-term debt of the government will also decrease, as the discounting factor becomes larger (Risager: 218-219).

One of the best friends of indebted nations is of course the force of *inflation*, which eats up some of the real value of the outstanding debt. For countries that are in control of monetary policies, this is a real, but sometimes also dangerous, option, since it might run amok, as history has shown again and again, driving countries' economies to the ground. It is all about finding the balance between loosening the conditions of the economy, but also retaining the right amount of market discipline. There are of course the classic options of lowering interest rates / printing money, but historically governments have also used "financial repression", i.e. strict regulation by which they can force financial entities to channel funds back to the government at very advantageous interest rates and thus easing the debt burden (Risager: 219).

Another typical tool when fighting debt burdens is implementing measures of *austerity*, which means much tighter fiscal policy, such as cutting expenditures on welfare and social benefits, raising the retirement age etc. – the goal here being to reduce government expenditure, so more funds can go towards servicing the debt. Austerity has been subject to much controversy for almost a decade, but it can indeed be an effective way to optimizing conditions for balancing inflow and outflow, if done correctly and, crucially, at the right time: typical benefits are the lower interest rate that follows from more assured investors that welcome the country's increased fiscal responsibility and therefore see placing investments there as less risky, as well as an overall more optimistic business environment, which hopefully boosts private spending. In situations like this we talk about 'expansionary austerity' (Risager: 222). Whether that is enough to offset the decrease in public spending and increase in taxes in order to raise GDP overall is another question. It is crucial that the positive consequences above do follow from austerity, otherwise it would be ill-advised to continue

this form of contractionary policies, only contributing to worsening the economic conditions by increasing unemployment and lowering growth rates.

Risager refers to Krugmann's point on austerity, which in turn very much echoes the classic approach of Keynes: that fiscal policy is a key tool to ensuring growth and keeping unemployment rates low in times of economic turmoil. One of Krugmann's key points is that *timing* is absolutely key when deciding to implement austerity policies or not: the economic fundamentals in terms of growth rates and employment must be relatively solid. Further, especially in low interest rate environments it makes little sense to try to save oneself out a recession, since it is very cheap to finance different projects in such an over-saturated savings environment. It is counter-productive to worry about the budget deficits in the short term, because the main objective is to get the economic machine running again. This point is well summed up by the quote from Keynes himself: "The boom, not the slump, is the right time for austerity at the Treasury" (Risager: 225).

Balance sheet recessions and debt deflation:

Richard C. Koo has a theory that describes the particularities of recessions caused by deleveraging, which he calls 'balance sheet recession', not to be confused with usual business cycles. The specific challenge here is that most of the private sector is concerned with *minimizing debt* rather than maximizing profits, because of the burden that follows after the burst of an asset price bubble. Because nominal debt remains the same, these events are huge blows to the balance sheets of businesses as well as households, which means that focus lies on saving or paying down debt, rather than consumption and investing. This of course very negatively affects the aggregate demand of the economy, and it also means that the money supply, mostly consisting of banks deposits, contract when the majority of the private sector is preoccupied with paying down debt at their banks. To Koo, this puts a serious dampener on the effectiveness of monetary policy: The private sector is not interested in borrowing, no matter the interest rate, as all effort will be put into deleveraging. Conversely, few lenders will look favourably on these weakened balance sheets when deciding where to put their money, so the money multiplier will be very low, maybe even negative, for central bank liquidity injections (Koo 2011: 19-20).

He is not overly optimistic about the prospect of raising inflation either (which would ease conditions for debtors): Here, it is important to distinguish *asset* prices from *consumer* prices. The deleveraging is a response to the former, which means that it can be challenging to increase the

inflation rate, especially with the money multiplier working against the central bank (Koo 2011: 20).

The result of this ongoing deleveraging is a 'deflationary spiral' where demand continuously decreases in the economy equal to the sum of savings and the amount of net debt repayments. What follows is either a recovery of the private sector's or the overall sector has shrunk too much to be able to save at all, which would lead the economy into a full-blown depression – he compares it to the Great Depression, when the U.S. lost 46% of its GDP primarily because everyone was paying down their debts and no one was borrowing or spending money (Koo 2011: 22).

"With borrowers disappearing and banks reluctant to lend, it is no wonder that, after nearly three years of record low interest rates and massive liquidity injections, industrial economies are still doing so poorly" (Koo 2011: 25)

One of Koo's main points is that in times of debt minimization, the remedy goes from being monetary policy (which is effective in normal times of profit maximization) to an effective *fiscal* stimulation of the economy until the deleveraging of the private economy has taken place. Unfortunately, political myopia and erroneous diagnosing often leads to 'fiscal hawks' turning up as soon as the economy starts to look like it is recovering, ending the support of the private sector prematurely and causing progress to be lost, which in turn leads to a 'policy zigzag' between fiscal stimulus and fiscal consolidation (austerity) – Koo uses the image of depressing both the brakes and the accelerator at the same time (Koo 2011: 32-33).

"Although shunning fiscal profligacy is the right approach when the private sector is healthy and is maximizing profits, nothing is worse than fiscal consolidation when a sick private sector is minimizing debt […]. Unfortunately, the proponents of fiscal consolidation are only looking at the growth in the fiscal deficit while ignoring even bigger increases in private sector savings" (Koo 2011: 27)

In other words, there is often a type of political myopia at stake which leads to inconsequential action when the economy – specifically the private sector - needs fiscal stimulus the most. Besides continued support *during* the debt leveraging, some economics might even need it for a while after balance sheets look healthy because of what Koo calls a "debt trauma" from the painful years of paying down debt, which causes the private sector to be very careful when it comes to investments (Koo 2011: 34).

The domain of central banks and the domain of governments

Richard Koo makes an important distinction between 'balance sheet recession' and 'financial crisis' – the latter is a 'lender's phenomenon' and must be addressed by monetary authorities through liquidity infusions, guarantees, lower interest rates, and asset purchases. For balance sheet recessions on the other hand, monetary policy is largely impotent. Instead, the government must offset the deflationary pressure from the deleveraging of the private sector through fiscal stimulus. Central banks can avert financial crises, while governments must fix the challenge of the consequent balance sheet crisis by borrowing and spending the private sector's excess savings, both because monetary policy is ineffective at this point, but also because the government cannot tell the private sector to not repair its balance sheet. (Koo 2011: 35-36)

Private sector behavior		***Profit Maximization***	***Debt Minimization***
1) Phenomenon		Textbook economy	Balance sheet recession
2) Fundamental driver		Adam Smith's "invisible hand"	Fallacy of composition
3) Corporate financial condition		Assets > Liabilities	Assets < Liabilities
4) Outcome		Greatest good for greatest number	Depression if left unattended
5) Monetary policy		Effective	Ineffective (liquidity trap)
6) Fiscal policy		Counterproductive (crowding-out)	Effective
7) Prices		Inflationary	Deflationary
8) Interest rates		Normal	Very low
9) Savings		Virtue	Vice (paradox of thrift)
10) Remedy for Banking Crisis	a) Localized	Quick NPL disposal Pursue accountability	Normal NPL disposal Pursue accountability
	b) Systemic	Slow NPL disposal Fat spread	Slow NPL disposal Capital injection

(Koo 2011: 37)

The table is an extension of this point, originally from Koo's book "The Holy Grail of Macroeconomics: Lessons from Japan's Great Recession", in which he argues that there are two very distinct phases of an economy: the *yang* phase, which is the ordinary time of private sector maximizing profits, and conversely the *yin* phase, which is characterized by the private sector minimizing debt, in other words a balance sheet recession (Koo 2009: 176). Typical for a yin phase, the phase of debt minimization is that the demand for funds and aggregate demand contracts as all private borrowers seek to deleverage at the same time (fallacy of composition), creating a deflationary spiral as well as a 'liquidity trap', which renders central bank policies ineffective. As savings skyrocket, the aggregate demand and hurts the overall economy- the paradox of thrift (Koo 2009: 175-177).

The distinction is also important for dealing with banking crises and non-performing loans (NPLs). Here, Koo's main point is that it is only for localized banking crises in ordinary economic times that it is a good idea to dispose of NPLs quickly. In all other categories, one runs the risk of making the situation even worse by going forward too quickly: *"[…] attempting to sell NPLs when there are hardly any buyers runs the risk of pushing down asset prices even further, which could lead to a much weaker economy and the emergence of even more NPLs. In other words, rushing to dipose of NPLs only "destroys value" […]"* (Koo 2009: 231).

In terms of policies, the point above of course serves as an important guideline: knowing what ails the patient makes it much easier to find the right medicine, so to speak. Combining the yin and the yang phase is what Koo refers to as 'the Holy Grail of macroeconomics' (Koo 2009: 176) To Richard Koo, conventional economics underestimates this crucial distinction and therefore ends up recommending ineffective policy measures, for example applying yang measures to a yin phase:

> […] most people tend to regard smaller government and self-reliance on the part of the private sector as universally correct precepts that apply under all circumstances. They do so not only because these principles seem correct, but also because they are associated with the rapid economic growth and prosperity typical of *yang* phases. But the truth of the matter is that the economy prospered under smaller government because it was already in a *yang* phase with healthy corporate balance sheets (Koo 2009:166).

To Koo, the accumulated public debt that follows from this kind of fiscal accommodation is not overly worrisome, as "*The next bubble and balance sheet recession of this magnitude will happen only after we are no longer here to remember them"* (Koo 2011: 37), meaning there is plenty of time to pay down the debt of the public.

Although there are clear links to Keynes with the solution being deficit spending by the government, Koo does criticize him for missing the significance of balance sheets (he also criticises monetarists and neoclassical thinkers for making the same mistake): The idea that firms are not always maximizing profits was missed, and lack of investments could only be due to a decrease of the marginal efficiency of capital. Along the same lines, Koo does not buy that monetary policy is ineffective only because of the liquidity preference, as it only focuses on the behaviour of lenders and misses the vanishing demand for loans from borrowers. The liquidity trap, which renders monetary policies largely ineffective, is instead first and foremost a *borrower's* phenomenon (Koo 2009: 172). I will expand on this debate in the analysis of the European debt crisis.

The vicious cycle of over-indebtedness and deflation

Related to the idea of the private sector's debt minimization is Irving Fisher's concept of 'debt deflation': when either deflation or over-indebtedness in an economy stand on their own it an be bad enough, but the combination of the two, specifically over-indebtedness *causing* deflation when liquidation of said debt happens too quickly, it can wreak havoc to an economy. He describes it unfolding:

> Just as a bad cold leads to pneumonia, so over-indebtedness leads to inflation. And, vice versa, deflation caused by the debt reacts on the debt. Each dollar of debt still unpaid becomes a bigger dollar, and if the over-indebtedness with which we started was great enough, the liquidation of debts cannot keep up with the fall of prices which it causes. In that case, the liquidation defeats itself. While it diminishes the number of dollars owed, it may not do so as fast as it increases the value of each dollar owed. Then, the very effort of individuals to lessen their burden of debts increases it, because of the mass effect of the stampede to liquidate in swelling each dollar owed. Then we have the great paradox which, I submit, is the chief secret of most, if not all, great depressions: The more the debtors pay, the more they owe. The more the economic boat tips, the more it tends to tip. It is not tending to right itself, but is capsizing. (Fisher: 344)

To Fisher, the reason this cycle is so vicious is of course because the 'over-investment' or 'over-speculation' is done with borrowed money (Fisher: 341). It is the classic concept of leverage: the more indebted you are, the more you stand to gain if prices rise, but the more you will also lose if they drop. There is a snowball effect to it. Debt liquidation leads to falling prices and distressed selling, which contracts the deposit amounts in circulation when bank loans are paid off. This in turn leads to prices falling even further, leading to a fall in net worth of businesses, which causes employees to let go or perhaps even bankruptcies. As output decreases, pessimism starts growing, which leads to hoarding of liquidity. Prices and income are lower, but the level of debt stays the same. This whole process of debt deflation leads to a rise the real rate of interest, which puts a loop on the vicious cycle. (Fisher: 343)

Although Irving Fisher is categorized as a thinker within the neoclassical school of economics and has done important work within mathematization of economics, he had a bit of a different angle towards equilibria than most within this school. It is rather the exception than the rule that the economy stays in an equilibrium: *"It is as absurd to assume that, for any long period of time, the variables in the economic organization, or any part of them, will "stay put", in perfect equilibrium, as to assume that the Atlantic Ocean can ever be with a wave"* (Fisher: 339). In this way the theory in some ways resemble the thoughts of for example Minsky and the financial instability hypothesis, as Fisher also places great emphasis on the role of debt when asset prices fall.

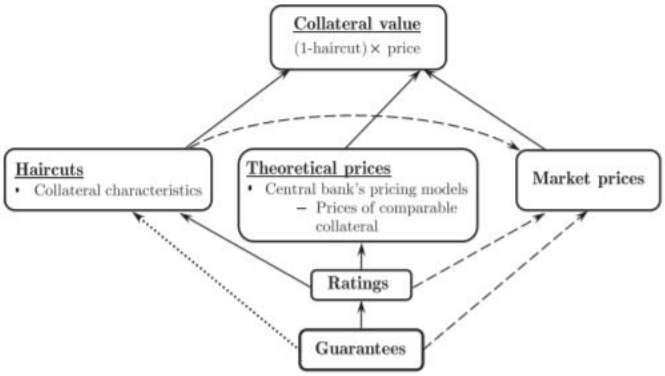
Reconceptualizing the frontiers of central banks:

Collateral Frameworks of Central Banks:

Building on the ideas on the architecture of the current global financial system and its focus on credit, I would like to delve deeper into a hugely important, yet sometimes overlooked, aspect of central banks and monetary policy: Collateral frameworks, as explained by Kjell Nyborg in hos book "Colleteral Frameworks: The Open Secret of Central Banks". While interest rate policies are covered with great scrutiny, collateral frameworks is a very important, but far less understood, aspect of monetary policy and the tools of central banks to affect liquidity conditions in financial markets. Because of the significance of money, these frameworks (or policies) constitute a crucial element of monetary policy, as central banks can use them to alter the hierarchy of money and influence market liquidity. In times of financial distress, central bank money can be injected against collateral on terms defined by the central bank, not market sentiments. In other words, a collateral framework decides the conditions for central bank repurchase agreements (repos). As previously mentioned, this type of money is the essential lifeblood for private banks, both in terms of satisfying reserve requirements as well as settling interbank transactions. On collateral frameworks, Kjell Nyborg begins:

"Their basic function is to define the set of eligible collateral financial institutions can use in operations with central banks to obtain central bank money (liquidity). They also determine the quantity of liquidity that a central bank will supply for each eligible collateral, by, for example, setting haircuts in repos with eligible counterparties ("banks"). This places collateral frameworks at the core of the monetary system and the financial system that extends (from) it" (Nyborg: 18).

This means that collateral frameworks in essence do two things: They define the set of eligible collateral that banks can use to obtain central bank liquidity through collateralized borrowing and defines the *collateral value* for each respective piece of collateral. The collateral value of a financial asset eligible for functioning as collateral is found by applying a given haircut to the market value of said asset (Nyborg: 26):



(Nyborg: 27)

As mentioned, these haircuts are determined by the central banks themselves and decide the amount of liquidity a financial institution can receive for each given collateral. In Nyborg's words, the closer the haircut is to zero, the higher the degree of 'fundamental liquidity' of a security, a complete degree meaning that it can be immediately traded at par with central bank money (Nyborg: 118) Interestingly, assets that are not traded in financial markets can often be used at the central bank as collateral; here, the central bank will calculate a 'theoretical price' of said asset (Nyborg: 178-179). There are also a couple of important indirect determinants of the collateral value, specifically credit ratings and government guarantees. I will delve into these issues in greater detail when looking at the case of the debt crises specifically.

Crucially, the collateral framework of a central bank can skew the production of eligible collateral and underlying real assets of the economy. If a central bank eases conditions for illiquid assets, for example by lowered haircuts for them, the endogenous production within an economy of these assets will typically increases, for example through increased financing of good and services with very long-dated returns (Nyborg: 20). In other words, the central bank can create biases in financial markets, which Nyborg illustrates with a telling analogy: *"As an extreme example, if central bank money is available only against igloos, or igloo-backed securities, igloos will be built. If the collateral framework favors housing, the risk of a bubble in property prices could be enhanced"* (Nyborg: 22)

Elasticity and discipline – altering the survival constraint:

"The survival constraint is the discipline that maintains the coherence of our decentralized market system, and management of that constraint is the most important duty of the central bank" (Mehrling 2011: 139).

In order to expand on this concept of a dynamic money hierarchy, it is useful to think of it as having a certain degree of elasticity and discipline at any given time – which is mainly decided by the central bank. The collateral framework is a crucial tool today for altering the degree of discipline or elasticity in financial markets; by choosing what assets to accept onto its balance sheet and at what haircut, the central bank can influence the functions of functions of the financial markets by providing a backstop for the collateral market valuation.

From Lender of Last Resort to *Dealer* of Last Resort, or a 'Pawnbroker for all seasons':

One of Perry Mehrling's main points about our contemporary financial reality is that central banks no longer act just as lenders of last resort, but as *dealers* of last resort. There is a crucial difference here. Thinking about the hierarchy of money and the importance of collateral quality, when markets break down dealers no longer act as the bridging factor between funding liquidity in money markets to market liquidity in capital markets; rather, market liquidity of assets is all about cheap shiftability directly to the central bank. When money markets break down, the central bank can save market liquidity, and thus prevent asset prices from plummeting, by absorbing the money markets onto its own balance sheet, thus expanding both the size of its assets and liabilities (Mehrling 2011: 124-125).

Mehrling's main point of the book is that central banking today has turned the old principle of "lend freely, but at a high rate" of Bagehot into "*insure freely but at a high premium"* (Mehrling 2011: 134). He also points to ensuring liquidity in the markets as key to preventing financial instability. When the interbank lending based on collateral breaks down, the central bank is in a way supposed to temporarily "*become"* the interbank market, i.e. facilitate trading between banks. It does this by putting a backstop on the prices of repos by committing to buying them with a haircut, thereby creating a private market for that kind of repo at a given level (Mehrling 2011: 132-133).

The central bank as a 'pawnbroker for all seasons'

Similar to Mehrling, Mervyn King also proposes a reconceptualization of the role of the central bank, but also expands upon the responsibilities of financial intermediaries for such a relationship to function. His proposal is also a reformulation of Bagehot's "Lender of Last Resort" to the central bank as "the pawnbroker for all seasons":

In the spirit of not letting a good crisis go to waste, I think it is possible to build on two of the most important developments in central banking since the crisis – the expansion of lending against wider collateral and the creation of money by quantitative easing – to construct a new role for a central bank as such a pawnbroker (King: 270).

The problem with Bagehot's lender of last resort to King is that it in many ways encourages banks to take on excessive risk. As long as the financial system is based upon the principle of alchemy, central banks eventually end up deviating from the principle of 'lending freely against good collateral at a penalty rate' – bad collateral is suddenly all there is left.

> It is not enough to respond to the crisis by throwing money at the system to douse the fire while reciting Bagehot; ensuring that banks face incentives to prepare in normal times for access to liquidity in bad times matter just as much. (King: 270)

Precisely the incentive for access to liquidity is what King's approach seeks to ensure, also in times of economic upswing and financial mania. The most important regulatory requirement on banks is that their *effective liquid assets* (ELA) must be greater than their *effective liquid liabilities* (ELL). ELA is calculated the following way: Besides the banks' reserves at the central bank, the so called "haircut" (the difference between the market value of the asset and the size of the loan) on other types of more illiquid financial assets would be determined in advance, so that the banks always know how large a cash demand they would effectively be able to meet, should they have to go to the central bank with collateral. In other words, this ELA would always be known to the banks, and they would not be allowed to let their ELL surpass this. (King: 269-273) Interestingly, this opens up for a calculation of the "degree of alchemy" within a bank or even the financial system as a whole. King's key aim is to eventually reduce this degree to zero, fittingly captured by the book title "The End of Alchemy" and to do this he also opens up for a tax on the degree of alchemy in the financial system: *"[…] private financial intermediaries should bear the social costs of alchemy"* (King: 271).

Ensuring that all deposits (and other liabilities of banks/shadow banks) are backed by either reserves or "[…] insurance in the form of pre-positioned collateral with the central bank" (King: 275) have several advantages, according to King (besides lowering the degree of alchemy – eventually eliminating it - and guaranteeing upfront payment for the liquidity insurance of central banks): Although a relatively radical reform of the financial system which help solve the problem of moral hazard generated from having the central bank act as such a generous backstop, it does not follow the more extreme proposals of full reserve banking which would eliminate a lot of the possibilities of our modern financial system. Also, there will be no need to decide on penalty rates

during a crisis since the liquidity insurance has already been set up previously, thus avoiding a lot of additional uncertainty (King: 271-273). This proposal will be examined in greater detail when discussing the possible future of the ECB

Political instability - halting economic growth

While the main focus is on central banks and their policy tools, it is important to note an important domain that central banking cannot directly navigate within, even though they indirectly are very intertwined: The political landscape. Political stability (or lack thereof) and fiscal policies of governments of course play a huge role in shaping financial and economic recoveries.

In an article by the IMF, the inverse relationship between political instability (measures by 'cabinet changes') and economic growth is demonstrated. Especially productivity growth suffers during periods of political instability, but also to some extent the accumulation of physical and human capital. One main reason is that business investments decline because of uncertainty regarding future economic policy, decreasing propensity to borrow. Further, productivity may also decline due to several factors, such as interference in the operations of firms and markets by civil unrest and strikes, which in turn would lead to fewer hours worked and maybe even damaged capital goods (Aisen & Veiga: 17). They conclude that it is paramount to limit the reach of political instability to economic policies in order to help economic growth by reducing investment uncertainty and productivity loss:

> Our results suggest that governments in politically fragmented countries with high degrees of political instability need to address its root causes and try to mitigate its effects on the design and implementation of economic policies. Only then, countries could have durable economic policies that may engender higher economic growth (Aisen & Veiga: 25).

The findings in the IMF article echo those of an article entitled *Political Instability and Economic Growth* by Alberto Alesina et el. They add that foreign investors may think twice before going in to markets with an unstable political climate (Alesina et al. 4). Further, they add that political stability and economic growth are deeply interconnected; *"On the one hand, poor economic performance may reduce investment and the speed of economic development. On the other hand, poor economic performance may lead to government collapse and political unrest* (Alesina et al: 1)

In short, economic recoveries also depend on political institutions functioning sufficiently. Typical factors that might work against the measures of central banks are political instability, which only contributes to the radical uncertainty ('unknown unknowns') which makes it even harder to set a steady direction and makes financial markets even more nervous, for example when it comes to

investing in the sovereign's bonds. Investments in businesses also suffer, as the prospects of the country it navigates in become more unclear, and the productivity may fall due to a decrease in physical and human capital. Having a functioning political system that is well equipped to handling economic recessions is crucial.

Central Banks Being 'The Only Game in Town' in times of political uncertainty:

The idea that central banks cannot stand alone in dealing with monumental challenges like financial crises and economic recessions is something that Mohamed A. El-Erian echoes in his book 'The Only Game in Town'. Here, he argues that central bank intervention alone is not sufficient to restore economic growth. It must be complimented by effective fiscal policies and structural reform. A consequence of central banking being "the only game in town" is that financial markets become decoupled from economic reality, and all the liquidity that is created by central banks only benefit investors, as the only thing it accomplishes is raising asset valuations and decreasing market volatility. He warns that there may be a limit for how diverged the two can be before markets will be worried by the artificially high asset prices, which would then revert to the economic fundamentals – or even further down (El-Erian: 126-127).

"It is not hard to see how political gridlock, challenged governments, and constant bickering among regional partners end up undermining proper economic management and cross-country policy coordination" (El-Erian 102-103)

He identifies some general reasons for economic risk taking having trouble catching up with that in the financial markets. Interestingly, he thinks the reason for the economy lagging behind is mostly because of a lack of *will* rather than *ability* to invest by businesses, in other words 'corporate cash hoarding'. First off, as previously mentioned, capital goods are some of the most illiquid assets which makes them less attractive in times of uncertainty; it requires a lot more confidence about long-term prospects to start investing in machinery, hiring and training new people etc., from the point of view of both the business sector and the banks. Further, the reach of central banks is much closer to home of financial agents, especially in periods of very aggressive purchasing of securities by the central bank, while the effects of this may not translate into economic growth if it stands alone – at the very least, these effects are more indirect and come to fruition over a longer time-frame (El-Erian 134-135).

Radical uncertainty and scenario analyses:

Because of the incredibly complex interplay between economics, policies, markets, and geopolitics and the radical uncertainty that follows from this, El-Erian encourages a "what if?" approach to predicting future outcomes, in other words scenario analyses rather than trying to pin down *the* most likely answer. His approach is inspired by his time at the IMF, where he learnt that although it is costly to think about crises that never materialize, it is even more costly to not be prepared for them in the first place. In other words, we must all be ready to ask the uncomfortable questions of what can go wrong, rather than fall victim to behavioural biases of focusing what is most likely to go right (El-Erian 238-239).

El-Erian's point is in many ways similar to Reinhart and Rogoff's warning of not falling into "this-time-is-different" thinking:

> The essence of this-time-is-different syndrome is simple. It is rooted in the firmly held belief that financial crises are things that happen to other people in other countries at other times; crises do not happen to us here and now. We are doing things better, we are smarter, we have learned from our past mistakes. The old rules of valuation no longer apply. Unfortunately, a highly leveraged economy can unwittingly be sitting with its back at the edge of a financial cliff for many years before chance and circumstance provokes a crisis of confidence that pushes it off (Reinhart & Rogoff (2009).

It is in this spirit that I will continue to the analysis and later discussion of the immensely complex situation of the European Debt Crisis, and in turn the discussion of likely future outcomes. There are simply too many variables and unknowns to give *the* answer to what has happened and how the situation will evolve, but I will apply the theories that have been examined to provide a perspective and try to understand the different dynamics better.

Section 2 – Presenting the case:

The Financial Tragedy of Greece

The Greek sovereign debt crisis developed over a relatively short period; the true financial situation in Greece started to emerge in October 2009 after the newly elected government came clean about previous under-reporting of debt deficits. Within a timespan of two weeks, estimations of the actual budget deficit skyrocketed from 3.7% of GDP to 14% of GDP – an unpleasant surprise for everyone, not least global investors. Faith in the financial soundness of Greece diminished dramatically over the coming months and in the Spring of 2010 the officials in Athens had to

formally request a bailout. Just how did a member of the European Union fall from grace so quickly?

Hands tied and a political mountain to climb

Historically, a common action when faced with significant budget deficits is to depreciate your own currency in order to improve competitiveness (e.g. in terms of exports and tourism), but this was a non-option since monetary power within the eurozone lies exclusively with the ECB. Instead, Greece had to rely on "internal devaluation"; in other words, cutting wages, social benefits, and increasing taxes to reduce prices. Politically speaking, this is quite the challenge – not least in Greece with its history of excess spending in the public sector. Undoubtedly, Greece has had too lax of an approach when it comes to collecting taxes, fighting corruption, and making ends meet in its spending on the public sector (Gaikwad et al.: 3-5).

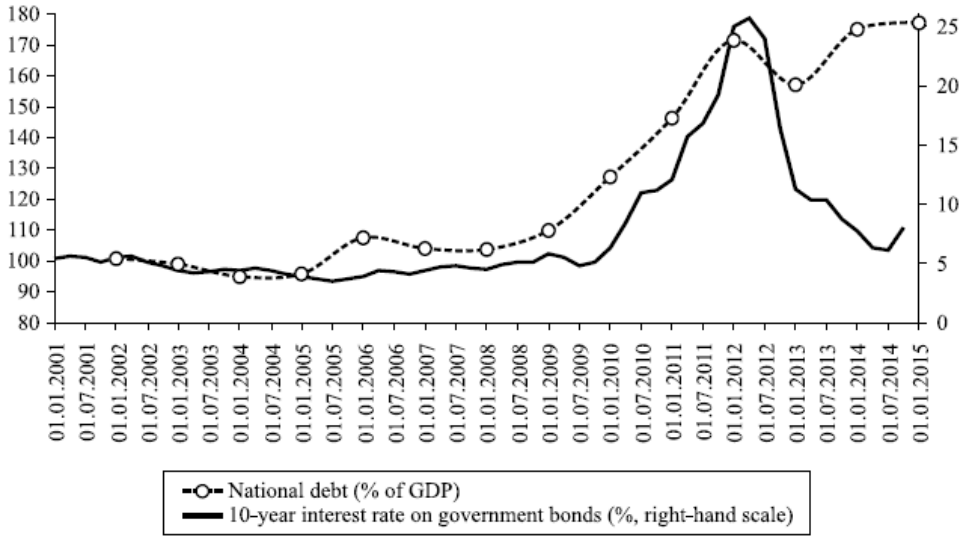
Therefore, there was a colossal job in front of the Greek government in cleaning up the many years of financial neglect and overspending in the public sector. Domestically, these attempts at reforms were met with violent protests, but at the same time the Greek government did not have much of a choice if Greece were to qualify for the bailout from the so-called Troika (European Commission, ECB and IMF), and thus avoiding a "Grexit", i.e. defaulting on its debt and leaving the eurozone. This domestic encumberment of political action is not to be underestimated and definitely played a role in the worsening of the situation (investors were not exactly reassured by the scenes of protests and riots), once again exemplifying the close connection between the political and financial world.

Crumbling confidence and increased cost of borrowing – a vicious cycle

An integral element to understanding how the fiscal situation went so horribly wrong in Greece is the link between investor confidence and access to borrowing in financial markets. After having enjoyed enormous benefits of liquidity in global capital markets from joining the eurozone in 2001 (which made investors associate them with the financial top-tiers of Europe), Greece experienced the flipside of the coin when their actual debt ratios came to light; contracting liquidity and high interest rates on their debt.

The credit rating agencies were not having it either. First, Greece lost its A-rating in December 2009, before being downgraded to "junk" status in April 2010 (Rissel: 5) – both events of course pushed the cost of borrowing for Greece even further and thus worsened the issue of solvency. The development in the yield of Greek bonds is very telling; from being considered about as safe an

investment as German debt, investors started to require huge returns for going anywhere near the debt of Greece.



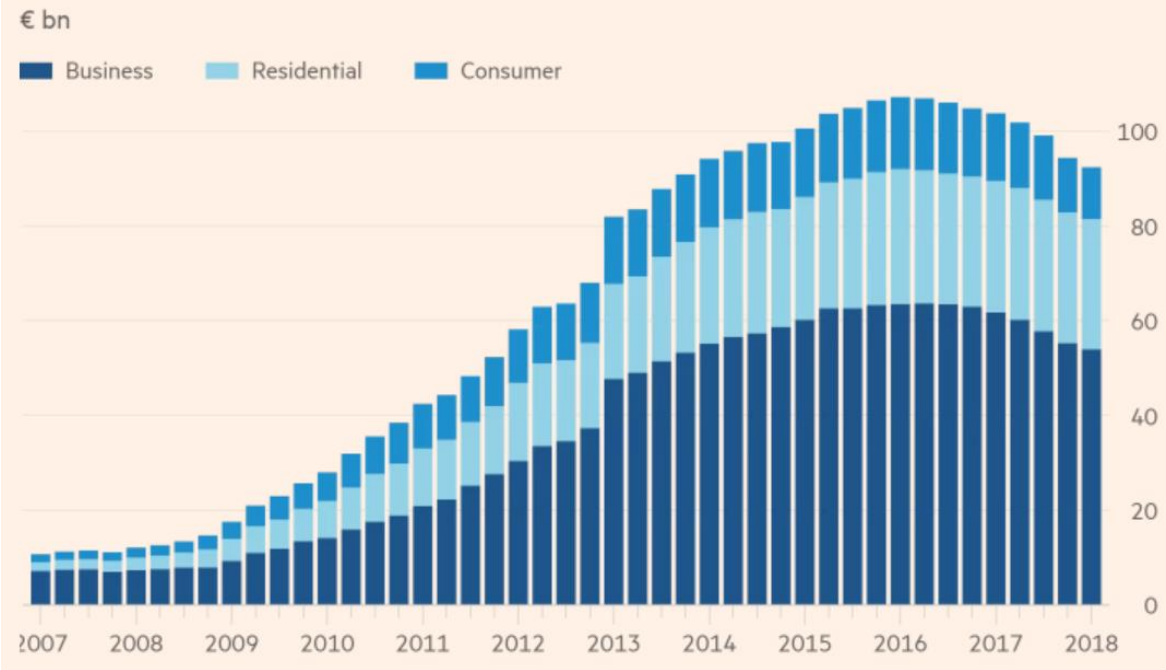
(Beshenov et al.: 430)

Spiraling into the debt crisis:

As the factors above point to, the Greek sovereign debt crisis was caused by a mix of political and economic/financial aspects. More specifically, the combination of Greece's historical lack of budgetary discipline and the bad political climate, as well as market worries about the solvency of Greece, was too much to overcome within their own ranks. Importantly, both elements reinforced each other, making the downward slope that much steeper for Greece. As mentioned, there was therefore no other option than to request a bailout and in May of 2010, the first bailout package was put into action and Greece had to agree to tough austerity measures.

Through most of the 00s, Greece benefited hugely from having joined the eurozone back in 2001, as yields on Greek bonds fell to an all-time low, resulting in an increase of average volume traded of nearly seven times. Having been more than 10% above German interest rates, the spread between Greek and German bonds fell to a miniscule 50 basis points. In other words, Greece was considered a safe bet by investors, which helped the Greek economy to begin taking off because of all the inflow of funds. Now they were experiencing the flip-side of this coin: nervous investors that were unwilling to lend them money and it became ever-harder to service their existing debt.

Because of the debt becoming much more expensive to service, as well as trouble increasing growth, Greece's debt to GDP rose sharply from 127% in 2009 to 179% in 2017.[1]



Financial Times (2018)[2]

Non-performing loans are still a huge burden on the Greek economy, and unemployment rates are still more than double of what they were pre-crisis. Still, on the optimistic note there may be some signs of recovery, for example by the recent relaxation of the capital controls, increasing withdrawal limits at banks, as well as slight signs of increased output (Financial Times 2018).

Italy – a crippled banking sector and political instability

Overall, Italy is currently faced by tremendous economic, financial and political challenges: the country has a very difficult time solving the interconnectedness between the government debt, the banking crisis of non-performing loans, and the lack of political solutions in general.In terms of Italy's economic productivity, there is still a lot to be left wanting. In fact, Italy's output in terms of real GDP today is more or less equal to the levels of 2000, not least because of its otherwise significant industrial sector lagging behind since the financial crisis, as it is a relatively cyclical industry, as well as low labor productivity growth and high unemployment rates (Risager: 233-236).

[1] Eurostat: General government gross debt https://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=teina225&language=en

[2] In charts: Greece's economy is rebounding – but there is far to go: https://www.ft.com/content/3067bf9c-8a88-11e8-bf9e-8771d5404543

Non-performing loans (NPLs) in Italy accounts for more than double of the European average, following the recession that began in Italy in 2010. In this period, a serious amount of companies, especially SMEs, in primarily construction/manufacturing (typically some of the first industries to get hit) went into bankruptcy, which soured a lot of the debt held by Italian banks – these two industries alone account for tens of billions of dollars in bad debt. This development has cast the very solvency of some Italian banks into doubt.

The debt to GBP of Italy is around 132.7% as of 2016, while the average of EU members was around 80% (Ugeux: 1). There is a crucial aspect of interconnectivity between the Italian banking sector and the state, which Alan Blinder also points out when he mentions the element of contagion, not only between countries, but also between banks and sovereigns. It is a vicious cycle of banks and governments becoming increasingly dependent on each other, and thus a sovereign-banking crisis emerges (Blinder: 419-420). On the one hand, many sovereigns are in huge debt, partly because of bailout packages to banks, and on the other hand many banks at the same time are huge stakeholders in the very same debt, which they can ill afford to see go downhill.

Some believe that the worst is behind the Italian economy, notably the Director General of the EU Economic Affairs, Marco Buti, referring to the slow but steady fall in NPLs, as well as an increase in competitiveness of Italy. He cites the link between “real economic developments and NPL

dynamics", which indeed is important, while lauding the general Eurozone for a "recovery at a steady pace"[3].

Interestingly, it seems that the market does not whole-heartedly agree and has caught on to the deeper issue of how interconnected the Italian banks and the state are. As Ugeux points out, even though Italian banks in general look fine in terms of capital ratios, most investors see through the superficial reporting and focus on the regulatory shortfalls of Basel III, which favours holdings of sovereign debt – Ugeux refers to this as the "dichotomy of capital adequacy and market evaluation". There is for example a 0% capital adequacy ratio for sovereigns, and risk weighted adjusted assets do not sufficiently take the problem of the significant amount of NPLs on Italian banks' balance sheet into account (Ugeux 2017: 4). This is why the market has discounted the stocks of Italian banks, and thus in a way discredited the remarks of Marco Buti and the European Commission.

Political uncertainty and diminishing confidence in recovery:

The Italian election of 2018, in which the anti-establishment 5-Star Movement became Italy's biggest party did by no means help on investors' confidence in a recovery of the Italian economy, leading to a jump in the yield of Italian government bonds. It is a textbook example of politics spilling over into financial markets. Still, an exit from the Euro seems unlikely and the yield of a 10-year bond is still lingering around 3%, whereas it was at 8% back in 2012.[4]

An overview of the ECB's measures and recent evolution:

The ECB has evolved dramatically over the last decade and become a much more powerful institution in order to better control the developments in troubled countries within the euro zone. From being hawkish in their approach under Trichet, the ECB took a drastic turn when Mario Draghi was appointed President in the Fall of 2011 and became much more proactively involved in solving the challenges of the euro zone. The following Summer of 2012, Draghi famously proclaimed that the ECB would do "whatever it takes" to preserve the euro.

[3] An unusual recovery: Charting the way forward for European policymakers: http://voxeu.org/article/unusual-recovery-charting-way-forward-european-policymakers

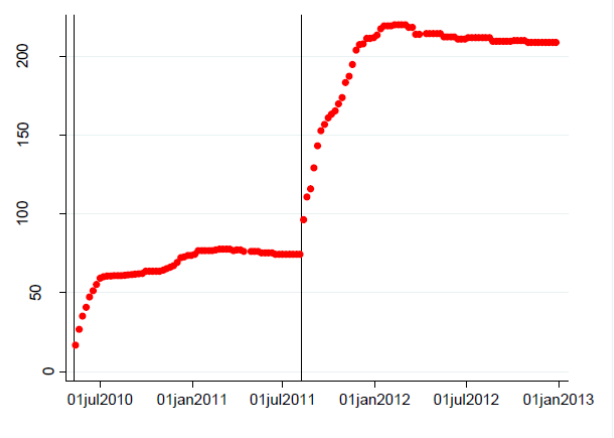
[4] Here's why markets are so scared of the latest Italian political drama: https://www.cnbc.com/2018/05/29/heres-why-markets-are-so-scared-of-the-latest-italian-political-drama.html

Important measures of the ECB:

Securities Markets Programme (SMT)

Introduced in 2010, the SMT meant the purchase of government debt of distressed countries by the ECB (in principle it also entailed the purchase of private securities, but this never actually took place). No planned amount of purchase was disclosed. From the outset, the ECB bought Greek bonds, but did not include Italian bonds in the programme until 2011, when they drastically increased the purchasing of sovereign debt (from around EUR 75 billion to around EUR 220 billion). The primary motivation for this policy was to *"ensure depth and liquidity in those market segments which are dysfunctional"* (Krishnamurthy et al: 8).

Figure 2. ECB bond holdings under the Securities Markets Programme (SMP)



(Krishnamurthy et al: 40)

Long Term Refinance Operations (LTRO)

In December of 2011, the ECB introduced the LTRO scheme, lending banks within the euro zone money against collateral with different haircut rates – in principle in unlimited amounts (the so called "full allotment" policy). Collateral and haircut policies of the ECB is an important topic which I will expand upon later. The main objective of the policy was the same: to enhance market liquidity and overall bank lending within the euro area (Krishnamurthy et al: 9).

The LTRO was an extension of the existing main refinancing operation (MRO), which until then had been the primary source of lending, to up to three years. An important difference between them is that MRO funding is rolled over weekly, where LTRO are 3-year loans with the same interest rate cost. Banks in the euro zone found this lending extremely attractive: On the very first day of the LTRO allotment, European banks borrowed almost half a trillion Euros, the day after just above this

mark. The net increase in the first week was EUR 210 billion, as it also acted as an attractive substitution for the previous lending facilities (Krishnamurthy et al: 10). An important consequence of the LTRO was that a large degree of sovereign bond purchases were done *indirectly* by providing liquidity to banks at very advantageous rates.

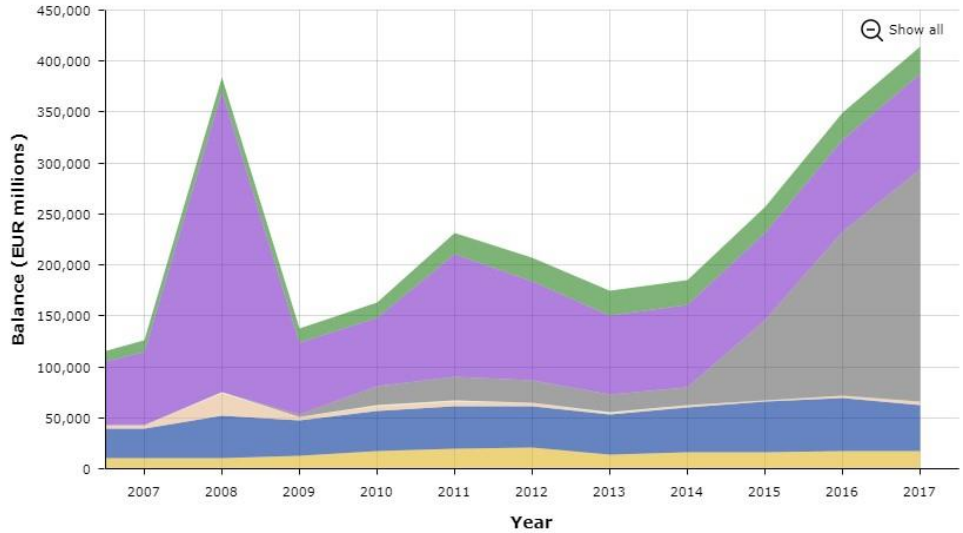
Outright Monetary Transactions (OMT)

Interestingly, this policy has so far never been put to use since it was introduced shortly after Draghi's famous speech in 2012, but was still very effective at reducing the yield of especially Italian bonds, which can probably be ascribed to the perceived reduction in risk of default as well as "redomination", i.e. a breakup of the Euro with vulnerable countries returning to their own currencies. It enables the ECB to directly buy sovereign debt with no ceiling, but it involves a condition of applying for the programme, which means fiscal adjustments (Krishnamurthy et al: 8-9).

Quantitative Easing 2015:

Quantitative easing (large scale asset purchases) seeks to stimulate financial markets and the overall economy when the conventional method of lowering interest rates further is no longer an option and normal open market operations are not sufficient to reach the desired level of money supply.

[5] Assets of the ECB over time



Purple: Intra-Eurosystem claims

Black: Securities of euro area residents denominated in euro

[5] https://www.ecb.europa.eu/pub/annual/annual-accounts/html/index.en.html

Over the last decade, the balance sheet of the ECB has more than tripled in size, growing especially fast since QE was introduced in 2015. More interestingly, it was not until 2009 that the ECB started buying government debt, which is now making up the majority of its balance sheet. One very important effect of this is that it reduced the yields of both Greek and Italian government bonds, as the perceived risk of holding them fell. (Krishnamurthy et al: 8).

The figure below illustrates the effect of the three policies on the yield of government bonds in basis points of different maturities for Italy and Greece, respectively.

		Avg. yield	6mo	2yr	5yr	10yr
Policy	Ann. date			ITALY		
SMP	May 10, 2010	**-47**	-15	**-80**	**-55**	**-31**
	Aug 7, 2011	**-84**	-26	**-103**	**-107**	**-92**
	Total	**-131**	-41	**-183**	**-162**	**-123**
OMT	Jul 26, 2012	**-72**	**-48**	**-116**	**-77**	**-48**
	Aug 2, 2012	-23	-30	**-64**	-29	11
	Sep 6, 2012	**-31**	-15	-21	**-42**	**-46**
	Total	**-126**	**-93**	**-201**	**-148**	**-83**
3-year LTROs	Dec 1, 2011	**-46**	-25	**-46**	**-69**	**-34**
	Dec 8, 2011	**35**	10	30	**47**	**35**
	Total	-11	-15	-16	-22	1
Policy	Ann. date			GREECE		
SMP	May 10, 2010	ND	**-430**	**-1123**	**-698**	**-500**
	Aug 7, 2011	ND	ND	93	8	-3
	Total	ND	ND	**-1030**	**-690**	**-503**
OMT	Jul 26, 2012	ND	ND	ND	ND	-78
	Aug 2, 2012	ND	ND	ND	ND	-67
	Sep 6, 2012	ND	ND	ND	ND	-36
	Total	ND	ND	ND	ND	-181
3-year LTROs	Dec 1, 2011	ND	ND	500	175	-147
	Dec 8, 2011	ND	ND	499	80	90
	Total	ND	ND	999	**255**	-57

(Krishnamurthy et al: Appendix Table 3)

The incredibly high numbers that the ECB put into the financial markets did not only decrease the yields of troubled nations, but also caused a rise in stock prices. Especially stock prices of the financial sector grew, not least because they held a lot of government debt – when yields fell, the price of these bonds rose and thus their balance sheets started improving (Krishnamurthy et al: 32).

The (unconventional) monetary policies of the ECB the recent years have no doubt helped the struggling nations of the euro zone. But also, the political project of the banking union seems to

have helped dampen the troublesome situation by “leveling the playing field” from a regulatory and supervisory standpoint, reassuring investors. One example of the utilization of the SSM is how the ECB ordered Greek banks to reduce their holdings of Greek government debt, which also led to a fall in the yield of the Greek bonds (Verón: 5-6). The banking union of the Eurozone will only be covered very briefly.

Establishing the Banking Union - towards a supra-national framework:

An important condition for going forward with such immense lending facilities was the move towards a ‘banking union’, increasing institutional integration within the euro zone (and other EU countries that are willing to participate), as well as giving the ECB powerful regulatory tools in terms of supervision and resolution of the banking sector. The main goal of this is “the elimination of national competitive distortions that tie banks to the creditworthiness and political idiosyncrasies of the member state in which they are headquartered” (Verón: 12).

The two first ‘pillars’ have already been established, the Single Supervisory Mechanism (SSM, established 2014) and the Single Resolution Mechanism (SRM, established 2014). The former grants the ECB the supervisory rights over any bank within the euro zone as well as the right to withdraw its banking license, while the latter deals with the resolution/restrucutring of any failing participating bank (Verón 10-11). What still has not been established is the European Deposit Insurance Scheme (EDIS), primarily because of political controversy over “legacy issues”, i.e. nations in effect potentially bailing out other nations’ banks.

Section 3 - Analysing the debt crises of Greece and Italy, and the response of the ECB

Minsky’s financial instability hypothesis and the economy of Greece:

Applying Minsky to the developments in Greece helps show how a period of relative tranquillity throughout most of the 00s in many ways were the very foundation for the debt crisis that unfolded (hence Minsky’s phrase that ”stability breeds instability”). Although Minsky mainly spoke about private firms, the Greek government can be seen as becoming increasingly financially fragile, eventually being entirely dependent on external credit, the lenders being mainly Germany, France, and other strong economies. On the surface things looked promising for Greece, with impressive growth rates throughout the 00s. However, underlying this were budget deficits and increasing debt levels. When the credit crisis of 08 ensued, aggregate demand and business activity declined

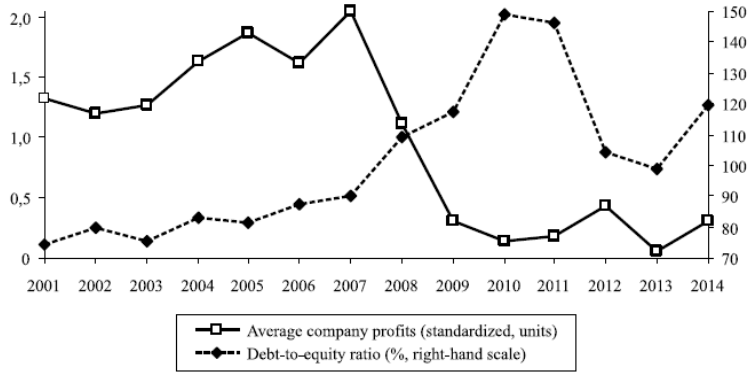
throughout the Eurozone soon after, which led the Greek economy into a recession. This was the turning point, where the Greek went from a speculative to Ponzi entity: There was simply too big of a gap between the economic fundamentals and the debt levels to finance it, which left the Greek government no choice but to increase the debt levels by going to lending countries in order to pay its existing debt.

One of the reason for it coming this far, was the increasing financial fragility because of the positive association by being a member of the Euro. Credit was cheap as the yield of the Greek government bonds were close to those of Germany. Countries did not take the current debt of the country into consideration, underestimated it because of the implicit guarantee of being part of the Euro. From having access to very cheap credit, especially Greece felt the force of rising yields, which is a prime example of the inherent instability of credit at play. There is an interesting development in the relationship between the debt of Greece on the one hand and then the yield of its 10-year government bonds on the other: From being relatively aligned up until 2012, they suddenly diverge remarkably. The first part makes good economic sense: The perceived risk of the debt of Greece determines the yield (which exploded at the end of 2009 after the government came clean about its extreme budget deficits and overall debt levels). But why the sudden detachment between the two?

In Kindleberger's words, the incredibly low yield of Greek government debt through the 00s was an example of the 'mania' that ensued from them joining the euro zone in 2001, giving them hugely advantageous rates from association with the power that is the Euro – in many ways the lending became severely detached from the economic fundamentals, the criteria for a bubble in Kindleberger's terms. Once Greece itself provided the wake-up call in 2009, panic and the associated revulsion and discrediting ensued.

The Greek private sector

The private sector is of course the traditional way of applying Minsky's financial instability hypothesis. An interesting study of the development of 60 of the largest Greek companies has been made. Here, the situation also changed in 2008, as profits fell, and their debt-to-equity ratios rose dramatically, thus increasingly taking shape of Ponzi entities, as the graph below shows.



(Beshenov et al.: 434)

The post-crisis consquences led to large debts in the private sector, which forced down spending levels, leading to reduced aggregate demand, which was not helped by the implementation of austerity measures. In turn, this led to higher borrower and lender risk caused demand for money to rise, money supply to contract, and consequently the cost of borrowing to increase. Even firms that looked relatively healthy could be badly hit, as the demand for their product declined, forcing them to take out loans or cut costs, for example by selling off its assets or firing employees.

Debt deflation in Greece:

When thinking about Fisher's point about debt deflation, the negative inflation rates in Greece were cause for concern.

As output fell and the economy reaching a stage of deflation, the balance sheets of businesses came under even more pressure, which in turn increased the amount of non-performing loans in Greece significantly, as the private sector increasingly was unable to keep up with the real value of its debt. The Greek economy ended in a debt spiral as Fisher warned about, because the cost of borrowing became so high that it could not effectively roll over its debt; in fact, it only increased.

Sovereign Debt Descending in the Hierarchy of Money

Another part of the financial instability hypothesis, and along the same lines the 'mania' of the economic and financial upswing in the majority of the 00s, was the dynamic of seeking towards higher returns, which of course to a larger degree could be found in the periphery European countries, compared to for example Germany, France, and the UK. When uncertainty is perceived as low and financial markets as stable, investors tend to get more adventurous, which contributed further to an inflow of credit to Greece and Italy. The flipside of this is that when the financial instability ensues, there is a flight of liquidity towards safer investments, which of course resulted in the exploding yields of these countries. In other words, credit fundamentally moves *pro-cyclically*, which is one of the main lessons of Minsky and Kindleberger; it is what feeds the speculative bubbles, which eventually burst.

Non-performing loans – Bad memories of the Italian recession:

Although not as indebted in comparison to its GDP as Greece, Italy is of course a much larger economy and much more systemically important. As seen below, inflation rates have not been as bad as in Greece, but Italy has also fought against a private sector in recession and their banks being crippled by a large amount of NPLs as result.

Besides the macroeconomic factors that Risager talks about, for example the long-term growth problems that has worsened since the industrial sector was dealt a blow in the recession following the financial crisis, leading to high unemployment rates as well, it can also be argued that we are seeing a degree of "clogged" lending mechanisms for business investments. This can be due to a combination of high borrower's *and* lender's liquidity preference, as the Italian banks are already preoccupied with divesting their current NPLs, and the private sector might to some degree be in

what Koo calls a ‘balance sheet recession’, still trying to get their debt levels to sustainable levels. In Italy, the policy of austerity has of course also meant that it has been difficult to implement impactful fiscal policies as a compliment to the partly sterilized monetary stimulus.

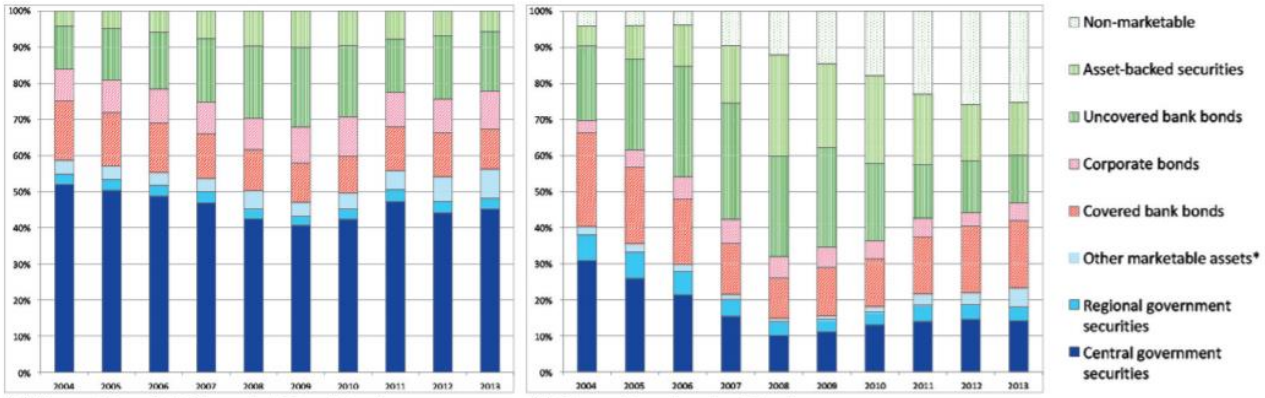
Political gridlock in Italy and Greece

Though harder to quantify, general political gridlock and uncertainty over which direction policies will go has undoubtedly worsened the situations for Greece and Italy. The ‘radical uncertainty’ that both Merhling, Keynes, Minsky, and Kindleberger all talk about is only increased, which can swiftly translate into financial markets, for example in the form of higher yields. Gridlock may also keep the liquidity preference of both borrowers and lenders relatively high, as businesses and banks are more unsure about the prospects of an economic recovery. In short, there is a risk of a vicious cycle. This is of course very relevant for Italy right now after the election in the spring of 2018, which has caused some degree of nervousness.

Besides increased uncertainty, severe political instability can of course also lead to direct negative influence on economic growth, for example due to strikes and even riots that can damage capital goods, as well as reduce overall output of the workforce. Especially Greece has several times seen violent riots at heated austerity protests.

Understanding the collateral framework of the ECB

In this part of the analysis I will look at what the ECB has done to manage the crises of Greece and Italy, specifically its collateral frameworks, as the incredibly low – even negative – interest rates is a topic already much covered. The collateral frameworks that Kjell Nyborg talks about have played a huge role in stabilizing the situations in Greece and Italy and European financial markets in general. It is to be seen closely related to all the other mentioned policies it has adopted, e.g. SMT, LTRO, OMT, and of course most recently QE. When the ECB creates money and injects it into “the economy” it is often done by repo lending to European banks, meaning that the banks need to pose collateral in order to gain central bank money. Think of the balance sheet of the ECB: Both the assets and liabilities increase simultaneously, as central bank money is created ‘out of thin air’ (a liability for the ECB), and consequently exchanged for assets of different kinds (which is an asset for the ECB). Even though Mervyn King mostly talks about ‘financial alchemy’ in relation to private banks creating deposit money out of thin air when borrowing, the concept can be expanded to this dynamic.



(a) Composition of eligible marketable collateral (b) Composition of used collateral

(Nyborg: 57)

The figure above contains a very important point in regards to the ECB and its collateral policy in the euro zone: To the left is a graph of the *eligible* marketable collateral from 2004 to 2013, with the bottom, blue, being generally the highest quality collateral (government bonds and supranational agency bonds); the middle, red, being collateral of an intermediate quality (corporate bonds and secured bonds issued by banks); finally the top, green, layer of collateral is of the lowest quality (typically asset backed securities and uncovered bank bonds).

What is remarkable is when the eligible collateral is compared to the actual *use* of collateral in repo transactions between the ECB and banks across the euro zone for the same period, the graph is roughly inverted. This means that what banks have pledged as collateral for borrowing are mainly assets of low quality, as measured by low liquidity and high risk, also resulting in a high haircut. Another interesting development is that banks in general pledge more than 3 times as much collateral than what is necessary for their aggregate respective liquidity uptake, excess collateral which can always be withdrawn again – or exchanged for liquidity. Nyborg points to the very negligible opportunity cost of the pledged collateral as behind this phenomenon, and the lack of incentives to provide liquidity directly through financial markets between banks (Nyborg: 54).

The above seems to be a typical example of Keynesian liquidity preference at play. In a time of great political and economic turbulence, the banks would rather have some of their assets with the central bank, which can provide a 'cushion', should things take a turn for the worse.

Theoretical prices:

Importantly, an estimated 76% of eligible collateral is so illiquid that there is no market price available, which gives the ECB no other choice than calculating theoretical prices, using models

that compare prices of 'comparative collateral'. By value, about one third of pledged marketable collateral have theoretical values calculated (Nyborg:180).

Thinking about the hierarchy of money, this is definitely an artificial construction that pushes the assets at the bottom towards the top of the hierarchy through improved conversion closer to at par value, circumventing traditional market discipline that would have required a much higher haircut in order to get rid of these types of assets. Nyborg points towards this as 'collateral arbitrage': That banks can get rid of their lowest quality securities through the central bank and then use their good collateral in the interbank market, thus taking advantage of the monetary system (Nyborg:183)

Guarantees and ratings

I briefly alluded to the effect of credit ratings and government guarantees when first talking about collateral frameworks. When Greece eventually was downgraded to junk bond status, the ECB made an exception and still accepted it as collateral (Nyborg: 95). The significance of this is hard to understate when thinking about the interconnectedness between collateral value at the central banks and market prices in times of high liquidity preference. When the ECB decided to keep on accepting Greek debt, the market liquidity of Greek bonds did not take what would have been a catastrophic hit in terms of price and consequently the yield. Related to this, Greece's credit rating has upgraded by DBRS, Fitch, and S&P this summer[6] which likely will strengthen the downward momentum of the Greek debt. Having peaked at just above 40% and now moving around 5%[7], there is no doubt that the ECB's bilateral repo agreements helped them tremendously in overcoming the market panic.

Government guarantees of institutions is especially prevalent in Italy; out of 329 credit institutions with government-guaranteed collateral in 2013, 257 were Italian (Nyborg: 98). This is a clear sign of the bank-sovereign dependency there is in the country: The private banks are struggling with high amounts of NPLs, while also carrying a lot of domestic sovereign debt. On the other hand, the government are also dependant on the financial institutions in Italy looking as sound as possible. Overall, the lower haircuts and consequently higher collateral values following the two factors of credit ratings and government guarantees have done Greece and Italy a favour, lowering the yields

[6] Greek 10-year bond yield: https://da.tradingeconomics.com/greece/government-bond-yield
[7] Greece credit rating: http://www.worldgovernmentbonds.com/credit-rating/greece/

by helping the market prices of their government bonds, thus easing their (colossal) debt burdens somewhat.

(Nyborg: 201)

The red line in the graph above shows the total liquidity *needs* of the banking sector in the euro zone, while the green line shows the amount that has actually been *injected*. What is interesting is that the two used to coincide up until 2008, where the full allotment policy was introduced, and then takes off completely once QE is brought in play. From a viewpoint of the hierarchy of money, banks can hold very illiquid assets that are hard to sell in the private market and be guaranteed immediate shiftability to central bank liquidity anyway. It is a tremendous amount of elasticity that is being given to the hierarchy, where the goal can be analysed as the excess amount of liquidity to calm market sentiments, as well as translate into a recovering economy and increased lending to the private sector. So far it has been with limited success, as it is mainly the stocks of banks that have benefited (Nyborg: 32).

Link to Shadow Banking and Capital Markets

Besides normal investor behaviour, looking towards the shadow banking system specifically can perhaps also explain why the yields of Greece and Italy rose so rapidly. As mentioned, shadow money is repo liabilities backed by tradable collateral, where it is essential for the acceptability that parity is to central bank liquidity is maintained, which in turn relies on the underlying collateral. When uncertainty about Greek and Italian bonds skyrocketed, yields rose, and prices fell, this suddenly meant that this specific government debt no longer was attractive for the shadow banking

sector, as it lost its 'risk-free' status. Their debt became much lower graded, yields rose, prices fell, general uncertainty rose, so it became less attractive to use as collateral. Demand fell rapidly, which started a vicious cycle of market valuation of their debt. Since shadow money relies on the authority and creditworthiness of the issuer of the underlying collateral, the shadow banking sector would have to accept greater haircuts for using this specific debt, which meant a flight from it, which in turn put the valuation of the bonds even more under pressure, when the holders of the repos try to liquidate. This is not so much the scope of this thesis, but the debt crisis has of course also put great pressure on the shadow banking system. As previously noted by Gabor and Vestergaard: "*Loss of confidence in expectations about near-term collateral price movements translates into loss of confidence in the moneyness of repo claims backed by those assets".* As Greece and Italy increasingly became "shut out" of private capital markets, they became reliant on cheaper ad hoc lending from the so-called troika of the ECB, the European Commission, and the IMF. The focus of this thesis is of course on the measures of the ECB.

The ECB as a Dealer of Last Resort

In his book "The New Lombard Street", Perry Mehrling talks about how the Federal Reserve acted as a 'Dealer of Last Resort' during the US credit crisis, but the concept can be expanded to the policies of the ECB: By posting central bank money in amounts higher than what banks would have been able to get in the markets for eligible collateral. Pre-crisis, central banks were mostly thought of as acting in money markets and helping in terms of very short-term liquidity, but today the European Central Bank is purchasing assets directly in the capital markets. It recognizes that in a market based system under such distress, it is not always enough to only provide short-term funding, as it might not be enough for banks to be willing to endure the risk of less liquid assets, especially in times of high uncertainty and consequently high liquidity preference; instead it must itself *insure* the prices of eligible assets in the capital markets by acting as a dealer of last resort, which assures market players that they can always *at the least* shift the asset into a given amount of central bank money, which prevents market prices from dropping below – this has put a backstop to on the developments of the yields of the troubled European countries, by maintaining the 'moneyness' of their credit and thus ensuring a relatively high degree of fundamental liquidity. Rather than 'lending freely', the ECB is 'insuring freely' the price of eligible assets.

Nyborg goes as far as saying that the ECB is in reality *funding* bank and sovereigns, as it is not just traditional liquidity support any longer and helping banks clear each other's payments; rather the

ECB has become a 'player' itself and provides money to the system over the long term (LTRO is as mentioned now up to three years) against relatively poor collateral, thus indirectly bailing them out:

"The significance of the full allotment policy is that it allows a bank to finance a large portion of its balance sheet directly from the Eurosystem and without competition from other banks or discipline from the markets. The financeable portion is made large through the eligibility of non-marketable assets. The increased usage of non-marketable and other lower-quality assets in Eurosystem operations under the full allotment era […] supports the view that the haircuts of these assets were set low (conversely, collateral values set high) in order to help out weaker banks. Extending the maturities in the LTROs to three years is also especially useful to weaker banks since it assures the availability of funding for this extended period of time. This is essential to the full allotment policy serving its (indirect) bailout role, since it reduces policy uncertainty with respect to the availability of funding" (Nyborg: 205)

Fundamental Liquidity in the Hierarchy of Money:

Summing up on the measures of the ECB and the effects of credit ratings and government guarantees, from a conceptual point the aim is to make relatively weak financial assets with a low degree of 'moneyness' (Mehrling) or 'fundamental liquidity' (Nyborg).

Fundamental liquidity as Nyborg talks about can largely be compared to Mehrling's idea of increasing 'moneyness' of assets, the higher up you move in the pyramid, meaning that the easier it is to shift into money higher up the hierarchy at par on demand. As Mehrling says, when central banks increase the elasticity of the hierarchy of money, and generally in times of financial booms, the hierarchy flattens and the qualitative difference between central bank money and different kinds of credit becomes blurred. This makes these relatively poor assets more liquid and shiftable into the highest form of liquidity. Just like the example of the igloos, if the ECB creates too strong a bias towards lower quality collateral, we might see a surge in illiquid assets, since there is very little discipline from market forces, which might end up making the system vulnerable when the accommodative monetary policies are withdrawn – the hierarchy of money reasserts itself so to speak. That is the danger of the 'bailout' of the weaker banks and sovereigns that Nyborg talks about. Ironically, there may be a form of financial instability in the very accommodative policies of the ECB, accepting even more assets onto its portfolio (think non-marketable assets without even a quoted price), which in turn will be legitimized over time. Recall Minsky's quote on the central banks intervening in order to prevent broad declines in asset values by accepting more and more types of assets onto their balance sheets, thus 'validating the new ways' and setting up for a broader acceptance of these assets for future expansions, only increasing the inherent instability of credit.

Economic recovery and debt sustainability of Greece and Italy:

As mentioned by Nyborg, it is mostly financial markets and bank stocks that have been doing well as a result of ECB's policies. The yields of government debt of both Greece and Italy are looking much more stable compared to half a decade ago, which has eased the burden to some degree. Yet, as we saw earlier, true economic growth to fight the debt burden is still left wanting. Where lies the reason for this decoupling? A classic economic factor to look at when assessing the health of an economy is the activity and growth of small and medium enterprises. This has been a well-known pain point for both the Greek and the Italian economies.

A part of the answer may lie with the notion of 'debt minimization', as presented by Richard Koo. Recall the distinction between a 'textbook' mindset of profit optimization (the yang phase) and then conversely the debt minimization of a balance sheet recession (or yin phase). For example, following the recession that began in Italy in which its hugely important construction and manufacturing industry took a huge blow, which of course resulted in the amount of NPLs surging as well, there is still not much lending to SMEs in Italy. The OECD cites a low demand for credit in Italy even in times of incredibly low interest rates, and a decrease in lending to SMEs in Italy in 2014 and 2015, with 2016 stabilizing a bit (OECD 2017: 5). This seems like a very good example of what Koo talks about of balance sheet recessions and times of deleveraging. Many businesses in Italy face huge debt challenges, which of course puts a dampener on demand and prices, further worsening the situation.

Despite the huge amount of asset purchases by the ECB, inflation has been very low (even negative in periods. This once again points towards that monetary policy cannot stand on its own. Although the financial markets have down well, the economies of Greece and Italy are evidently not following the same path, with price levels in the countries not developing as hoped. This points towards a fundamental gap between what the numbers in the stock markets show at large and then the economic realities of the private sectors.

Here the point of Koo would be that there is a great need for fiscal stimulation of the Italian economy, as it in many ways is caught in a 'liquidity trap': no matter the amount that is injected from the ECB, monetary remains largely ineffective when it comes to creating demand for credit. Keynes focused on liquidity traps (extraordinarily high liquidity preference) as a *lender's phenomenon*, which is also definitely true as the Italian banks are still dealing with a 'debt trauma', both in the form of existing NPLs as well as most likely a behavioural preference for liquidity rather

than venturing into new investments, in other words being biased towards more liquid investments and shying away from more uncertain long-term investments in for example capital goods of different kinds. This is what leads to a 'sterilization' of the monetary policy of the ECB, to use Keynes' words. Koo instead emphases the liquidity trap as a *borrower's phenomenon*. No matter how much credit is thrown at the private sector, the demand will simply not be there. The Italian sector can be said to be caught in this 'paradox of thrift': output is much lower than usual and there is still a tendency to save, which can quickly hurt the economy further by lowering demand. Koo argues, in a very Keynesian way, that the answer to getting out of this negative spiral, is through active fiscal stimulation of the private sector. The crises of exploding yields are largely averted by the ECB, but the domain of central banks simply do not reach this type of crisis. The private sector, being in what Koo calls a *yin* phase, desperately needs fiscal stimulus from the Italian government.

This leads to one of the most controversial aspects of the debt crises: *Fiscal austerity*. This is of course what actually was put in place as a condition for the huge bailouts that Greece and Italy have received. Seen through the lenses of Koo's theory, this only hurts the prospect of revitalising the Italian private sector. Expanding on the notes of Risager on expansionary austerity, the main positive effects of introducing fiscal hawkishness is the general positive response from investors in terms of government debt and – hopefully – and increased inflow of credit from investors. However, Risager as well as Krugman points out that the economic fundamentals needs to be stable (in terms of growth rate, unemployment rates etc.) before introducing measures of austerity. As mentioned, in low interest rate environments it makes even more sense for the Italian and Greek government to finance different projects, rather than trying to claw out of the recession through increasing savings. The top priority in a slump like the ones both Italy and Greece are currently in is to get the private sector going.

Further, as illustrated by Koo's point, further credit is not what is needed, as the private sectors are stuck in a liquidity trap, with *borrowers* not calling for any further credit while in the process of minimizing their current debt, so the prospect of experiencing 'expansionary austerity' were always slim in this case. Of course, this is a hugely complex situation, where a lot of different interests within the Eurozone need to be aligned. There has most likely been an aspect of quid pro quo, where the creditors needed assurance of repayments. Going back to the three main macroeconomics factors of a government's debt sustainability, the growth rate of the economy, the real rate of interest on the government's debt, and the future budgets of the government, one could argue that the ECB has helped as much as possible in terms of the yield of the debt. Remaining are the growth

rate and the future budgets, both of which should optimally evolve positively simultaneously, but in reality there may often be some degree of sacrificing one for the other in times of balance sheet recession – either the budget deficits increase because of fiscal expansion, which would help the private sector, or conversely the budget deficit can be decrease, but at the expense of the private sector's recovery. Minsky would likely have echoed this approach and called for 'Big Government', which means trying to improve the profitability of the private sector through 'managed capitalism'.

Expanding the idea of yin phases to the banking sector and specifically non-performing loans, for a systemic banking crisis in times of balance sheet recessions, one should proceed slowly as well as relying on capital injections (of which there has been plenty) in order not to "destroy value", which could be compared to an incident of Fisher's debt deflation; the goal is to avoid significant price drops and 'fire sales' through rapid offloading.

The growth of financial markets and valuation effects on debt sustainability

Briefly, the above can perhaps also partly explain the dynamics behind why financial markets are reaping a lot of benefits from the measures of the ECB, while there is still a long way to go in terms of economic growth. Because of banks' strong liquidity preference, the capital injections by the ECB stays within the financial sector, especially with liquid assets such as stocks. This bias causes these assets to outpace the real economy, as most of the money goes there. Indirectly, the financial markets have of course benefited the Greek and Italian economy tremendously, as the yields have gone down significantly, because of a more confident investor environment.

The vicious cycle of political instability:

A final aspect that both Greece and Italy have been struggling with outside the realm of finance and economics; political instability. As noted, political instability can negatively affect the productivity growth as well as accumulation of human capital and physical capital, for example through decreased business investments in uncertain times, as well as civil unrest. It is a factor that, if not dealt with, can reduce a country's debt sustainability over the long run, if the feedback-loop between political instability and economic unsustainability continues. Especially Italy is in a precarious situation politically right now, after the election in the spring of 2018, where a true political direction is still to be set.

Central Banks Being 'The Only Game in Town' in times of political uncertainty:

The idea that central banks cannot stand alone in dealing with monumental challenges like financial crises and economic recessions is something that Mohamed A. El-Erian echoes in his book 'The Only Game in Town'. Here, he argues that central bank intervention alone is not sufficient to restore economic growth. It must be complimented by effective fiscal policies and structural reform. A consequence of central banking being "the only game in town" is that financial markets become decoupled from economic reality, and all the liquidity that is created by central banks only benefit investors, as the only thing it accomplishes is raising asset valuations and decreasing market volatility. He warns that there may be a limit for how diverged the two can be before markets will be worried by the artificially high asset prices, which would then revert to the economic fundamentals – or even further down (El-Erian: 126-127).

"It is not hard to see how political gridlock, challenged governments, and constant bickering among regional partners end up undermining proper economic management and cross-country policy coordination" (El-Erian 102-103)

He identifies some general reasons for economic risk taking having trouble catching up with that in the financial markets. Interestingly, he thinks the reason for the economy lagging behind is mostly because of a lack of *will* rather than *ability* to invest by businesses, in other words 'corporate cash hoarding'. First off, as previously mentioned, capital goods are some of the most illiquid assets which makes them less attractive in times of uncertainty; it requires a lot more confidence about long-term prospects to start investing in machinery, hiring and training new people etc., from the point of view of both the business sector and the banks. Further, the reach of central banks is much closer to home of financial agents, especially in periods of very aggressive purchasing of securities by the central bank, while the effects of this may not translate into economic growth if it stands alone – at the very least, these effects are more indirect and come to fruition over a longer time-frame (El-Erian 134-135).

Where to from here? Discussing QE withdrawal and the future of the ECB

The discussion will try and relate the analysis to the future outlook of the recovery of the Greek and Italian economies, as well as provide a template for policy-making, based on the results of the analysis. Specifically, with the news of the ECB aiming to reduce, and eventually completely withdraw, its quantitative easing, I will try and predict some potential effects and areas to watch out for. Lastly, some of the political developments and their significance for the ECB and the economies of Greece and Italy will be discussed.

The Domain of Central banks and The Domain of Governments – bringing Yin and Yang together

With his theory of 'the Holy Grail of macroeconomics', Koo gives a very clear and important distinction between monetary policy and fiscal policy and how different economic times call for different measures. In regular times, monetary policy is effective at guiding and adjusting economies, by tinkering with the interest rate for example, while fiscal policy often runs the risk of "crowding out" the business of the private sector. Conversely, in periods of debt minimization monetary policy loses its effectiveness because of a high liquidity preference – Koo underlines the liquidity trap as a borrower's phenomenon, while I think Keynes' point on banks being concerned with their balance sheets is equally valid – whereas fiscal policy now become absolutely key in stimulating the private sector. It must increase its budget deficit and stimulate the economy as long as the private sector is in a balance sheet recession.

However, this very clear distinction might underestimate the complementary nature and the interconnectedness of monetary and fiscal policy – at least in terms of their effects. To build upon Koo's analogy, yin contains in it a piece of yang and vice versa. They are not separate in nature, but complimentary. I think this is what we have seen to some degree in the measures of the ECB and dealing with the debt crises of Greece and Italy. For example, when the ECB exempted Greece from the minimum credit rating in order for bonds to be used as collateral, this meant that banks could still hold them and have direct access to central bank money, which in turn helped prevent a "run" on the bonds of the Greek government, which would have been devastating for their debt sustainability because of exploding yields. For example, when the ECB chose to accept Greek debt as collateral, even though its credit rating did not live up to its initial standard, it had a significant impact on bringing the yield of the Greek government's debt, which in turn supports its debt

sustainability and fiscal opportunities from the valuation effects. I am sure Koo does see how monetary and fiscal policy feed into each other in terms of *effects*, but his primary focus in the text is to guide policy *decisions*, which of course are seen as two completely distinct realms. But are they really?

What happens when the ECB withdraws QE?

In the summer of 2018, the ECB announced that it would begin to wind back its quantitative easing programme, starting in the fall and eventually ending net purchases by December 2018. At the same time, it ensured that interest rates would remain at the same record-low level for at least another year (Financial Times[8]). What this will mean for financial stability and the development of the debt crises of Greece and Italy is of course a hugely complex question with a lot of radical uncertainty but based on the analysis I will try and give a few possible scenarios.

Scenario 1 – Financial instability from over-creation of illiquid/risky assets

In terms of financial markets, the circumvention of market discipline that Nyborg talks about will take place in much smaller degree. Assets that are fundamentally illiquid will remain so to a greater extent, once the ECB completely withdraws from this amount of capital injection. The point about the collateral framework of the ECB creating a bias towards the creation of more illiquid ands risky assets could bring with it a large portion of risk for financial instability, once the monetary system no longer accommodates them as much. This was what Minsky meant with the financial system being inherently unstable and how central bank policies inadvertently can increase future risks through their accommodative policies. In the term of Merhling, the hierarchy of money will be reasserted, meaning the shiftability of assets to central bank money relatively close to at par will be more difficult. One interesting point to look out for is of course the development of the yield on sovereign debt, and to what degree they are still being kept down by monetary policies and the collateral framework. Should the withdrawal cause instability in European capital markets, the debt of periphery countries will probably feel the consequences as some of the first, which will make the debt harder to service once again.

Shifting from the financials, from the view of Koo, the withdrawal of QE should not have a huge effect on the recovery of the private sector, as there at this point already is a huge amount of excess credit with low demand from the private sector. However, from the lender's perspective, which

[8] ECB to end QE at end of 2018: https://www.ft.com/content/4f459f68-6fc3-11e8-92d3-6c13e5c92914

Keynes put forward, one could argue that with the many banks weighted down by NPLs will become even more willing to pay the liquidity premium of forgoing income from more long-term investments, once central bank money becomes harder to come by directly, and they once again have to rely on the stability of interbank markets. Is it an oversimplification to think about it as *just* a borrower's phenomenon or *just* a lender's phenomenon, so most likely the decreased liquidity injection will make banks more wary and could potentially decrease lending to SMEs in Italy and Greece even further.

Scenario 2 - Debt deflation as result of QE withdrawal

One could also be worried about inflation rates for good reason, since the development has not gone as hoped, even with billions of euros of sovereign debt bought each month. As we saw previously, inflation rates have especially not been very reassuring for either Greece or Italy. One potential outcome of the withdrawal of QE could be that is translates into even lower prices, which could force liquidation of assets, potentially leading to a debt deflation and deeper balance sheet recession of the private sectors.

This could happen through an increased liquidity preference of banks, knowing that central bank money will be less readily available, and they will to a larger degree depend on repo-lending in interbank markets. They could become more inclined to pay a larger 'liquidity premium' of holding more liquid assets that are easier to shift to central bank money at par, and thus also work better as collateral between banks. If demand for liquid assets rise, the reverse will be true for illiquid assets, such as capital goods and other long-term business investments, which in turn could lead to lower output and higher unemployment rates in Italy and Greece. Additionally, holding so much home-sovereign debt could of course also leave their already NPL-ridden balance sheets exposed, should the market valuation of them fall as a consequence of less support from the ECB, further discouraging them from risk-taking in the form of lending to SMEs in challenged industries.

Scenario 3 – Withdrawal of QE will not make an impact

This seems unlikely, as investor nerves already showed at the announcement of the withdrawal of QE, as shown below in the gap between the yield of Italian and German sovereign debt increasing.

Private liquidity markets will perhaps not necessarily take a hit if the money markets and the shadow banking system can sustain a sufficient level of credit on their own, as well as keeping haircuts low on collateral. But it is hard to see how the more vulnerable assets in the capital markets, such as bonds of periphery countries, should not be affected by the lack of excess funding. It would rely on the collateral framework and full allotment policy being enough, with the ECB no longer directly purchasing assets. At the very least, this scenario seems like a utopia without some degree of fiscal measures filling the monetary gap of the end of QE.

A fiscal response to the withdrawal of QE:

All else equal, the fact that the ECB will withdraw its QE programme leaves a big gap – one that will likely need to be filled by expansionary fiscal measures. This makes the question of austerity necessary to revisit. It can of course be argued that increasing the budget deficits of Greece and Italy is naïve. Just like we would not put out a fire with gas, why should we not find something to counter the accumulation of government debt, rather than throw more debt at the problem? Koo's point about a balance sheet crisis of similar proportions being generations away at least does not seem like a very convincing argument. If there is anything the last decade has taught us in terms of financial instability, is that it can come out of nowhere and from pretty much anywhere. Further, following the theories of Minsky and Kindleberger, our financial economy is more than capable of creating a crisis out of the very stability that would be necessary to truly bring down the debt levels. One of the concepts that can be found in all of the theories of this thesis in some form or another is 'radical uncertainty': What seemed like a once-in-a-century crisis may be followed by something

even larger, caused by something we cannot even include in predictions yet – an unknown unknown. This notion of 'unknown unknowns' is something that could be integrated into mainstream economic academia to a larger degree, which is tempted to provide *the* clear-cut answer through mathematization of complex economic and social issues. A very alluring, but also potentially dangerous approach. For example, the notion that people always act rationally and independently based on all-encompassing information seems like a fairy-tale. This presumption is of course an easy target – and therefore often targeted – but the points in this thesis serves as once another reminder that this approach has its flaws, although simplicity (in terms of limited options and scenarios) also has its merits sometimes. As long as policy makers remember to step back from their models and re-evaluate the underlying concepts and look at what is going on "on the ground".

Besides the misdiagnosis that Koo talks about, the neoclassical approach to austerity perhaps also underestimates the political challenges and civil unrest that ensues from implementing these strict fiscal policies. One thing is reducing the budget deficit on paper in times of recession, another is making it a consolidated effort. In both Greece and Italy, we have seen unfortunate scenes of political instability because of these policies, which ironically can work the other way and concern investors in terms of the future prospects. There are of course also the real economic consequences of civil unrest and political unrest in the shape of lower output, strikes, and damage to capital goods during the riots and protests.

The European Central Bank as a quasi-fiscal entity?

It can be argued that in the face of large political uncertainty and gridlock in terms of completing banking union, fiscal harmonization controversial, the ECB has taken over the role of fiscal support as much as reasonably possible within their mandates:

"*Like dedicated engineers, central banks constructed the best bridge possible with the limited materials they possessed. But no matter how long a bridge they have built, the right destination was never theirs to deliver on their own*" (El-Erian 254).

One of the ways this is done is through *funding* of specific banks and sovereigns, as Nyborg puts it. Since the lending is over such as long time-frame and the collateral that is needed is of such a relatively poor quality (remember the distinction between eligible and used collateral), he argues that it is not really emergency *lending* anymore, but rather funding of specific institutions. This gives the operations an element of quasi-fiscal nature.

Some even argue that what the ECB has been doing is a form of financial repression. As mentioned, this is traditionally thought of as a government's way of reducing its real rate of interest and thus its debt burden by circumventing market forces through different kinds of regulation. By keeping interest rates so exceptionally low and allowing so many different kind of assets of questionable character to keep the yield down, the ECB is effectively shifting some of the governmental expenses from the periphery countries to the wealthy nations of the Eurozone. A study suggests that the ultra-low interest rates imposed by the ECB cost Germany at least 37 billion EUR per year in interest income (Rösl & Tödter: 7). Outside the ECB, there are examples of Greek banks liquidating their foreign debt in order to place domestic debt in pension funds, which can also be seen as a way of pushing rates down.[9] The conflict of interest between countries within the Eurozone has been evident at multiple times during the debt crises. Converging economic policies are of course an obstacle when political interests are very different.

The role of the ECB in the future:

A Pawnbroker for All Seasons?

Whereas Mehrling in his book mostly analyses how central banks have come to function as 'dealers of last resort', Mervyn King's idea about a 'pawnbroker for all seasons' seems like an interesting proposal for structural reform of the collateral frameworks of central banks – a modern day interpretation of a central bank in the world of the "new normal". Philosophically speaking, it could almost be seen as a 'social contract' between the central bank and the banking sector. It is hard to imagine a central banking system going back to a pre-crisis structure, but also close to impossible to imagine the current conditions continuing, as shown by the recent statement of the EBC regarding their QE withdrawal. While the old practice of central banking in the words of Bagehot was to lend freely at a high rate against good collateral, the ECB has for the last years *insured* collateral market prices at relatively low rates compared to the poor quality of the collateral. As the insurance aspect has worked very well, the objective is to "not let a good crisis go to waste", as King put it, but on the other hand also find a more sustainable way of doing so, both financially and socially.

This social contract would let the ECB continuously act as a dealer of last resort to insure private liquidity markets do not break down, by putting a backstop on the market prices of the underlying collateral used so widely in repo agreements in interbank markets. In return, the banking sector of

[9] Reinhart 2011, Financial Repression Redux: https://www.imf.org/external/pubs/ft/fandd/2011/06/Reinhart.htm

the Eurozone would have to balance their ‘effective liquid assets’ with their ‘effective liquid liabilities’, the first of which is always known through calculations of the value of pre-positioned collateral at the central bank, guaranteeing liquidity insurance of central banks, which is paid for upfront. This would help bring back the idea of the ECB as a source for liquidity in times of emergency, not as an endless provider of liquidity, as we saw with Nyborg and excess liquidity amounting to more than one and half trillion euros. In turn, this would increase the discipline of financial markets, for example in the form of counter-party evaluation, hopefully leading to better financial integration across European markets. Also, it would combat the bias towards creation of illiquid, risky assets, which for the moment always can be shipped off to the ECB, should the need arise. In short, it is a way of fighting the undeniable moral hazard that arises from such an accommodative monetary policy. As noted previously, there is currently no counterparty evaluation done by the ECB, it only looks at the collateral; the counter-party risk of the ECB is not something that is thought of a lot, since it in principle can fund itself endlessly, but in theory the questionable character of a lot of the assets it purchases could put the integrity of its balance sheet into question.

In many ways it is a natural extension of the current development of the European Banking Union, through which the ECB has already been given significant supervisory rights over banks within the eurozone (through the SSM). The collateral framework that Mervyn King presents would give a less distorted view of how the balance sheets of banks are looking, insuring that they do not need to decide on collateral value of assets while the financial system is on fire.

Compared to some of the more radical calls for reform in the last decade, such as full reserve banking, the ECB, and central banks in general, can still support the creation of credit by the banking system, just in a more controlled fashion. Today’s credit-based banking system has undeniable advantages and is a big part of what makes economic upswings possible as well, but we need to get a better hang of the inherent instability of credit that follows with the ‘alchemy’ of our current banking system. Finding a middle ground that optimally balances the creation and allocation of credit with ongoing financial stability is key. This will of course be as much a political battle as it will be one of economics. Seeing the measures of the ECB as purely driven by economics misses a significant part of the picture.

Thinking of the consequences from an economic viewpoint rather than financial stability and central bank policies, the advantages of this system would hopefully translate into a less “clogged” lending system of European banks, which could lead to growth in SMEs and help the recovery of

the real economy, for example in Greece and Italy. This should come from some degree of "de-financialization" of the economy, where banks are no longer incentivized to find profits primarily in the stock markets and housing markets, but also invest in businesses and capital goods that actually help the economy grow. The ECB could build up its collateral framework, so it favours bank assets where the underlying investment is something that contributes to growth rates and job creation. Again, this would also require a lot of political debate – how the development of fiscal harmonization across the eurozone develops over the coming years will be interesting to follow.

Section 4 – Rounding off

Implications and limitations:

The creation of money and credit in all its different forms plays a huge and fundamental role in the workings of financial markets, and in turn the economy. This dynamic is one of the main drivers behind financial instability and should be accounted for to a much larger degree in mainstream economic thinking and when designing policies for improving the functions of financial markets. Private markets for liquidity play an essential role in today's credit system, as a lot of financing of long-term assets are financed by rolling over short-term liabilities. In turn, the settlement constraint in the daily clearing of transactions for banks is also crucial to consider, as shortage of (central bank) money for banks will lead to a forced sale of other assets, which depreciates the price. When liquidity breaks down, the inherent instability of credit shows itself, and problems of liquidity can turn into problems of solvency because of "fire sales". In other words, credit and debt is not just the "intertemporal optimization" as it is often thought of.

Further, besides not being a mere 'veil of the economy' it is hopefully apparent from this thesis that money is neither something constant or timeless. Rather, it evolves over time, and the moneyness of different asset classes dynamically improve and decline. As Minsky aptly puts it:

"*[…] what is money is determined by the workings of the economy, and usually there is a hierarchy of monies, with special money instruments for different purposes. Money not only arises in the process of financing, but an economy has a number of different types of money: everyone can create money; the problem is to get it accepted"* (Minsky 2008: 255).

Building on this, the way our financial markets are set up inherently builds instability. Crises are not consequences of external shocks to the system, such as a war or a bad crop, but rather a result of the system itself, leading banks and policy makers as well to fall prey to biases, thinking "this time

is different" and letting credit run loose without enough oversight. It seems that we inevitably go through periods of, mania, panics, and crashes. This is something we should build policies around.

This dynamics of money and credit and the creation of instability can be linked to policies of central banks: As argued by Minsky and Nyborg, what the central banks accept on their balance sheets indirectly legitimizes them and creates biases towards the creation of them. Although the degree of accommodation from the ECB was deeply necessary in times of the debt crises, it calls for considerations about how central bank policies should look like in the future when things have become more normalized. The insurance of the market pricing of collateral is a valuable lesson from the crises that we should learn from, but without creating additional moral hazard in the banking system. One suggestion for this is the 'pawnbroker for all seasons' framework of Mervyn King.

In terms of macroeconomics, it is also worth considering how monetary stimulation might not always translate into recovery of growth and employment in the private sector, implying a limit of domain for central banks. As we saw, in times of political and financial uncertainty, the liquidity preference of both lenders (banking sector) and borrowers (private sector) increases. For the private sector specifically, we may see times of 'debt minimization', which is not something that is normally accounted for in mainstream economics, and thus the "go-to" response of monetary stimulation is sterilized and the problem unsolved. If we are in the unusual situation of a balance sheet recession (yin) phase, it is necessary for the government to stimulate the private sector; though it will increase its debt burden in the short term, its debt sustainability will improve in the longer term, by helping firms in the private sector going from Ponzi and speculative balance sheet structures to more well-balanced hedge entities, to use the language of Minsky. Thus, carefully analysing the underlying causes of economic recession is paramount to finding the right policy responses, whether they be monetary or fiscal. As pointed out in the discussion, there are of course inevitable "spill-overs" of monetary policies into fiscal policy and vice versa, in other words they are not two completely distinct worlds. In terms of the case of the debt crises of Greece and Italy, it seems stronger fiscal collaboration across the Eurozone is needed in order to get the private sectors going. With many of the periphery countries being exposed regimes of savings, it seems the economic growth is dampened even further by reducing output and demand.

While this thesis has attempted to introduce a reconceptualization of the debate of financial instability, economic recessions, and central bank policies from a broad perspective – using the debt

crises of Greece and Italy as examples thereof – it offers little quantitative precision. This was of course not the goal to begin with but analysing financial instability and debt crises quantitatively from the perspective of the concepts presented would definitely be interesting and relevant. A mathematical approach would for example be better at weighing the concepts in terms of significance for the case of the debt crises, as well as examining positive/negative covariance in precise numbers between factors such as collateral framework adjustments and the production of different financial assets, political instability and economic production, just to name a few. This element is of course also crucial for deciding future directions, but is an element of research for another study.

When trying to examine the interplay of finance, economics, and politics from a very broad and conceptual level, there are of course a lot of aspects of the incredibly complex situation of the debt crises this thesis does not capture. Readers interested in the empirical side of the debt crises will likely find the data analysis superficial. For example, looking at the balance sheet of the ECB, inflation rates, debt levels, a more detail-oriented focus could have extracted a lot more information from these numbers. For the purpose of this study however, they were to a larger degree meant as examples of the theories, functioning as iterative points to build a conceptual framework from. In other words, the case is not the goal and focus of extensive focus, but rather a means to build a more philosophical reconceptualization of how to think about financial and economic challenges.

Also, when choosing focus, a lot of interesting perspectives of course have to be left out, such as behavioural aspects, deeper focus on political solutions to the problems, the interconnectedness between countries etc. I have outlined these potential research questions to build from in the following.

Further perspectives:

The results of this thesis of course only touch the surface of the complexity of financial instability and the debt crises in Greece and Italy. Potential further questions that extend from this thesis could be:

- What role does ‘contagion’ play in the financial and economic state of connected countries?
- What behavioural aspects can help deepen our understanding of policy makers and investors continually falling into “this-time-is-different thinking”, contributing to stability as breeding instability?

- What impact has the shared currency had on Greece and Italy's ability to deal with their debt burdens?
- How could the political project of finalizing the banking union as well as working towards fiscal harmonization across the eurozone affect the recovery of the Greek and Italian economies?
- How does the regulatory frameworks of for example Basel III and Mifid II play into the financial stability of European banks?
- What effect does the trend of banks consolidating into large universal banks have in relation to the degree of lending to small and medium enterprise businesses?

Concluding remarks:

Summing up, this thesis started by establishing a theoretical framework that focuses on the hierarchical nature of money and credit, and how it can help explain financial instability, for example by looking at the breakdown of private markets for liquidity and relatedly shadow banking repo transactions. The cyclicality of this type of instability was explored via Kindleberger and especially Minsky and his financial instability hypothesis. Linking financial markets to economics, the thesis turned among other concepts to liquidity preference of banks by Keynes, as well as the idea of balance sheet recessions by Richard Koo, which examines why monetary policies can sometimes be rendered ineffective in dealing with recessions. The interplay between financial markets and economic fundamentals was complimented by considerations on debt sustainability of sovereigns, as well as how political instability might play into recoveries and vice versa. An important focus on the thesis was how to examine how these issues can be solved by central banks, focusing on the use of collateral frameworks, which are a lesser known policy tool, even though it plays a significant role today in relation to liquidity provision to the banking sector.

After the conceptual analysis, the theories were applied to the case of the debt crises of Greece and Italy, as a way of analysing the causes of the crises as well as the main challenges of solving them. It found that because of the very stability that followed from the first part of the 00s, partly from being associate with the stability of Euro, the amount of credit in the countries rose sharply, which eventually became too big of a burden for the countries, as the economic realities could not keep up. As NPLs began to soar in both countries, the crises also spread to the banking sectors. Here lies one of the biggest challenges of economic recovery: even with immense monetary stimulus, both lenders and borrowers are in a state of high liquidity preference, the latter also to some degree in.

Consequently, the monetary measures end up benefiting the financial sector and stock markets the most, as the funds mostly stay in more liquid markets and do not translate into investments in more long-term, illiquid investments, such as capital goods. In other words, an increasing 'financialization' of the economy has taken place, which for example can be seen in disappointing inflation rates of Greece and Italy. Growth rates and job creation in both countries suffer, which of course limits the debt sustainability. The measures of the ECB did however help immensely in bringing down yields of government debt.

The discussion focused on different possible scenarios for the ECB's QE stimulus will be withdrawn by the end of 2018, including instability in financial markets, further debt deflation and balance sheet recession, or the more optimistic event that it will not translate into any noticeable difference. It also considered the future of the ECB with focus on its collateral frameworks that has been an important mechanic of its QE stimulus, arguing along the lines of King and Mehrling that the rewriting of Bagehot's "lend freely at a high rate against good collateral" into "*insure* freely but at a high premium" has been an effective tool that makes sense keeping, but in a way that does not create unwanted biases toward low-quality collateral (and thus creation of these types of assets) and moral hazard in general. I argued that King's 'pawnbroker for all seasons' is a possible way of rewriting the current collateral framework of the ECB without losing the positives of our modern credit-based financial system, and can be seen almost as a social contract between the central bank and the banking system; the central bank continues to insure the market prices of underlying collateral, but only if pre-positioned and paid for upfront, rather than the central bank needing to decide on theoretical prices and haircuts on non-marketable assets during crises, for example. Lastly, the domain of central banks and monetary policies on the one hand, and the domain of fiscal stimulus of governments on the other hand was discussed. It was argued that in special economic times, such as balance sheet recessions, monetary policies can be rendered ineffective, calling for a temporary increase in fiscal stimulus, not austerity. The overall thread in the argumentation is that different kinds of money and credit, and the survival constraint of settlement between different parties plays an essential part of our financial system today, which we must take into account, both increasingly in mainstream economic academia, but also when designing monetary and fiscal policies. In short, the functions of money and credit matter for financial instability and recovering from economic recessions – it is about time we get a hang of this dynamic.

References

Books/articles:

Aisen, Ari & Veiga, Francisco Jose (2011). How Does Political Instability Affect Economic Growth? IMF Working Paper 11/12

Alesina, Alberto et al. (1992). Political Instability and Economic Growth. NBER Working Paper Series No. 4173.

Beshenov, Sergey & Rozmainsky, Ivan (2015). Hyman Minsky's Financial Instability Hypothesis and the Greek Debt Crisis. Russian Journal of Economics

Blinder, Alan S. (2014). After the Music Stopped: The Financial Crisis, The Response, and the Work Ahead. Penguin Group.

El-Erian, Mohamed A. (2016). The Only Game in Town: Central Banks, Instability, And Avoiding The Next Collapse. Yale University Press

Gabor, Daniela & Vestergaard, Jakob (2016). Towards a Theory of Shadow Money. Research paper.

Gaikwad, Nikhar et al. (2015). To Grexit or Not? Politics and Greece's Sovereign Debt Crisis. Stanford Graduate School of Business

Hirai, Toshiaki et al. (2013). Keynesian Reflections: Effective Demand, Money, Finance, and Policies in the Crisis. Oxford University Press.

Keynes, John Maynard (1936). The General Theory of Employment, Interest, and Money

Kindleberger, Charles P. & Aliber, Robert Z (2015). Manias, Panics, and Crashes: A History of Financial Crises (7th edition). Palgrave Macmillan.

King, Mervyn (2016) The End of Alchemy: Money, Banking, and the Future of the Global Economy. Little, Brown

Koo, Richard (2009): The Holy Grail of Macroeconomics: Lessons from Japan's Great Recession. John Wiley and Sons Ltd.

Koo, Richard (2011): The World in Balance Sheet Recession: Causes, Cure, and Politics. Real-World Economics Review, no. 58.

Krishnamurthy, Arvind et al. (2017). ECB Policies Involving Government Bond Purchases: Impact and Channels. Research paper draft.

Mehrling, Perry (2011). The New Lombard Street: How the Fed Became the Dealer of Last Resort. Princeton University Press

Mehrling, Perry (2012). A Money View of Credit and Debt. Conference paper.

Minsky, Hyman (1986). Stabilizing an Unstable Economy, 2008 edition. McGraw-Hill Education

Minsky Hyman (1992). The Financial Instability Hypothesis. Levy Economics Institute.

Nyborg, Kjell G. (2017). Collateral Frameworks: The Open Secret of Central Banks. Cambridge University Press

OECD (2017). Financing SMEs and Entrepreneurs 2017: AN OECD Scoreboard

Reinhart, Carmen M. & Rogoff, Kenneth S. (2009). This Time is Different: Eight Centuries of Financial Folly. Princeton University Press.

Risager, Ole (2017). Global Macroeconomics for Business and Investors (2nd edition). McGraw-Hill Education

Rissel, Adam (2011). The Euro Zone and the Sovereign Debt Crisis. Darden Business Publishing.

Rösl, Gerhard; Tödter, Karl-Heinz (2017). The Financial Repression Policy of the European Central Bank: Interest Income and Welfare Losses for German Savers. Ifo Institute.

Ugeux, Georges (2017). What Does the Italian Banking Crisis Teach Us on Basel III and the European Banking Union? Thomson Reuters.

Verón, Nicolas (2015). Europe's Radical Banking Union. Bruegel Essay and Lecture Series.

Websites – all accessed on September 14th 2018:

Fisher, Irving (1933). The Debt-Deflation Theory of Great Depressions:
https://phare.univ-paris1.fr/fileadmin/PHARE/Irving_Fisher_1933.pdf

Mervyn King's "Pawnbroker for All Seasons" Explained:
http://positivemoney.org/2016/03/mervyn-kings-pawnbroker-for-all-seasons-explained/

Eurostat: General government gross debt. Annual data:
https://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=teina225&language=en

Financial Times (2018) In charts: Greece's economy is rebounding – but there is far to go:
https://www.ft.com/content/3067bf9c-8a88-11e8-bf9e-8771d5404543

An unusual recovery: Charting the way forward for European policymakers: http://voxeu.org/article/unusual-recovery-charting-way-forward-european-policymakers

Here's why markets are so scared of the latest Italian political drama:
https://www.cnbc.com/2018/05/29/heres-why-markets-are-so-scared-of-the-latest-italian-political-drama.html

The balance sheet of the ECB:
https://www.ecb.europa.eu/pub/annual/annual-accounts/html/index.en.html

Greek 10-year bond yield:
https://da.tradingeconomics.com/greece/government-bond-yield

Greece Credit Rating:
http://www.worldgovernmentbonds.com/credit-rating/greece/

ECB to end QE at end of 2018:
https://www.ft.com/content/4f459f68-6fc3-11e8-92d3-6c13e5c92914