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CENTRAL BANK DYNAMICS: A COMPARATIVE STUDY OF CONVENTIONAL MEASURES IN THE WAKE OF GLOBAL ECONOMIC UPHEAVAL

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Abstract

The 2007 subprime crisis, originating in the United States, sent shockwaves across the global economy, transforming into a full-fledged financial crisis with widespread ramifications on the real economy, affecting industrialized nations worldwide. The European Union, in particular, faced significant challenges, marked by substantial write-downs on securities and loans, coupled with an estimated six percent decline in GDP (Dell'Ariccia et al., 2018). In response to shrinking economic performance, jurisdictions typically turn to monetary stimulus through their central banks, employing interest targeting instruments linked to key interest rate reductions.

This paper delves into the aftermath of the 2007 subprime crisis and the subsequent financial turmoil, with a specific focus on the conventional measures adopted by central banks globally. A central tenet of these measures involves interest rate reductions, wherein commercial banks borrow capital at lowered rates from the central bank and subsequently lend these funds to both consumers and corporations. The objective is to foster favorable financing conditions, thereby stimulating investment and consumption, essential components for economic recovery.

Given the widespread adoption of similar instruments by central banks worldwide, primarily revolving around key interest rates and the credit channel, these policy measures are commonly categorized as conventional measures (Mishkin, 1996). This paper critically examines the effectiveness and nuances of these conventional measures in mitigating the economic fallout following the 2007 subprime crisis. Furthermore, it investigates the variations in the implementation and outcomes of these measures across different jurisdictions, considering the unique economic landscapes and policy frameworks in place.

Through a comprehensive analysis of the post-2007 subprime crisis era, this paper contributes to the existing literature on monetary policy responses to financial crises. It sheds light on the intricacies of

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conventional measures, exploring their limitations, successes, and potential areas for improvement. The findings of this study are crucial for policymakers, central banks, and researchers seeking to enhance the understanding of the long-term implications of conventional monetary measures in the wake of a global financial crisis.

1 Introduction

Originating in the US, the 2007 subprime crisis caused economic turmoil throughout the world. It soon evolved to a financial crisis reaching out to the real economy and hitting every industrialized country. The European Union was struck by massive write-downs on securities and loans as well as an estimated six percent decline in GDP *(Dell'Ariccia et al. 2018)*. Jurisdictions typically seek to absorb shrinking economic performance by providing monetary stimulus to the economy via their central banks. Frequently, they use instruments of interest targeting that are associated with a reduction of key interest rates. Following this conjecture, commercial banks will borrow money from the central bank at a reduced rate and lend their additional funds to consumers and corporates. These favourable financing conditions, in turn, encourage investment and consumption. Since central banks all over the world have been using similar instruments that mainly operate along the key interest rates and the credit channel within the last decades, these policy measures are commonly referred to as conventional measures *(Mishkin 1996)*.
In the wake of the financial crisis, the European Central Bank (ECB) and other central banks substantially lowered key interest rates. Later, with interest rates at the zero lower bound not showing the expected recovery and the emergence of a severe sovereign debt crisis within several countries of the Euro area, the ECB was compelled to move towards unconventional policy measures to restore the functioning of markets. Unconventional measures are commonly characterized as all expansive instruments that are not in regular use and that mainly occur after the drastic reduction of the key interest rate to provide additional liquidity to the economy*(Galariotis et al. 2018)*.
One of the most prominent measuresis Quantitative Easing (QE) which entailshigh-volume purchases by the ECB of government or government-guaranteed securities from banks or other institutions. These assets are financed by an augmentation of the reserve accounts that commercial banks hold at the ECB. The idea is as follows: when key interest rates and the corresponding yield on short-term bonds circle around zero percent, monetary stimulus can still be provided by boosting long-term bond prices and, hence, lowering the longer-term yield curve *(Dell'Ariccia et al. 2018)*.
Following the lead of the US Federal Reserve Bank (FED) and the Bank of England, the ECB set up large-scale asset purchase programs for the first time in 2014in an attempt to boost the access of households and businesses to credit.
First implemented in Japan *(Michaelis and Watzka 2017)* in 2001 when the Japanese economy was suffering from a deep recession and interest rates already shifted toward the zero lower bound, QE represents a fairly new policy measure in most other industrialized countries. Evidence on whether it reaches the intended outcome in the long-run is poor.
Given its potential to contribute to financial stability and to stimulate economic performance, QE comes with some concerns. A reduction in the yield curve and thus fewer credit constraints might trigger financial intermediaries and investors to over-proportionally move toward riskier investments. Although risk taking is an intended outcome of QE, an excessive appetite combined with a lack of discipline and diligence might cause adverse effects *(Dell'Ariccia et al. 2018)*. Prior literature delivers evidence for excessive risk taking when interest rates are low *(Abbate and Thaler 2019; Lian et al. 2019)*.
One of the markets that are most affected by enhanced credit supply and risk taking is the one forleveraged buyouts in connection with private equity (PE). Leveraged buyout refers to acquisitions of companies with a

significant amount of borrowed money. Facing a tremendous rise within the last decades, PE firms play a major role in the broader economy. Their funds deliver a significant contribution to overall welfare by loosening credit constraints which promotes growth, expenditures and productivity of companies they are invested in*(Boucly et al. 2011)*. However, the positive effects in an environment with favorable credit conditions naturally exhibit an adverse impact once the buyout market is heading to its peak. Fewer credit constraints typically lead to increased competition which triggers PE investors to over leverage and overpay. This pattern can have undesirable systematic consequences once economic performance is going down. Poorly structured PE transactions that naturally inherit a higher default risk are more likely to face financial distress in times of economic downturns forcing them to reduce investment and employment and, hence, contributing to the intensity of the downturn*(Bernanke and Gertler 1990; Bernstein et al. 2019)*. Concerns about PE induced systematic risk has been also acknowledged by the ECB. Based on a 2015 survey on commercial banks' involvement on leveraged finance transactions, the ECB was prompted to issue a guidance to monitor the extent of leverage used in PE transactions *(ECB 2017)*.

Given the role of PE firms for the broad economy and the sensitivity of their funding activities to changes in credit supply, we investigate the link between QE and the PE market. More precisely, we inquire into the question whether the settlement of QE delivers an indication to an overheating of the PE market. So far, academia found evidence on QE heavily contributing to credit supply in the Euro area*(Hohberger et al. 2019; Koijen et al. 2016)*. Its direct impact on the PE sector has not been under scrutiny. We contribute to the literature by providing stylized facts on PE firms' buyout activities when credit constraints are weak. We present QE induced risks challenges and opportunities for the PE market.

Our analysis showsthat the increasing fundraising volume that arises due to the enhanced credit supply is limiting the number of lucrative assets resulting in an elevated risk for poor investment decisions. Evidence is given by the constantly growing market for covenant lite loans which represent a sub-variation of leveraged loans with relatively few restrictions on the borrower. One of the key challenges for PE managers remains the adequate and profitable usage of unallocated capital, commonly referred to as dry powder. QE, on the other side, comes with opportunities for PE firms. In view of the current buyout landscape and in course of the growing role of digitisation, the PE sector finds incentives for operational improvement by optimizing business models and generating innovations within the portfolio companies.

The remainder of the article is organized as follows: section 2 gives an overview of the ECB's unconventional monetary policies and in particular the QE milestones. It further describes the transmission channels of QE, the hypothesized impact on economic factors and the associated risks. Section 3 presents the buyout activities in the aftermath of the financial crisis. Section 4 treats the relationship between QE and PE and discusses the challenges, risks and opportunities for the PE market. Section 5 concludes.

2 ECB's Unconventional Monetary Policies

2.1 A Brief Review

In the wake of the subprime crisis in 2007, the interbank market in the Euro area shifted into a severe liquidity crisis and key interest rates approached the zero lower bound which forced the ECB to extend its conventional monetary policies by unconventional measures like providing unlimited overnight liquidity to banks via quick tenders and conducting supplementary refinancing operations with longer maturities. Further, the ECB changed its auction design to a fixed rate tender full allotment with bids at one basis point higher than in previous operations, and established temporary swap lines with other central banks, particularly with the FED*(Cour-Thimann and Winkler 2013)*.At the beginning of 2008, the FED and, shortly after, the Bank of England changed their monetary policy and reduced their key interest rates to nearly zero percent.

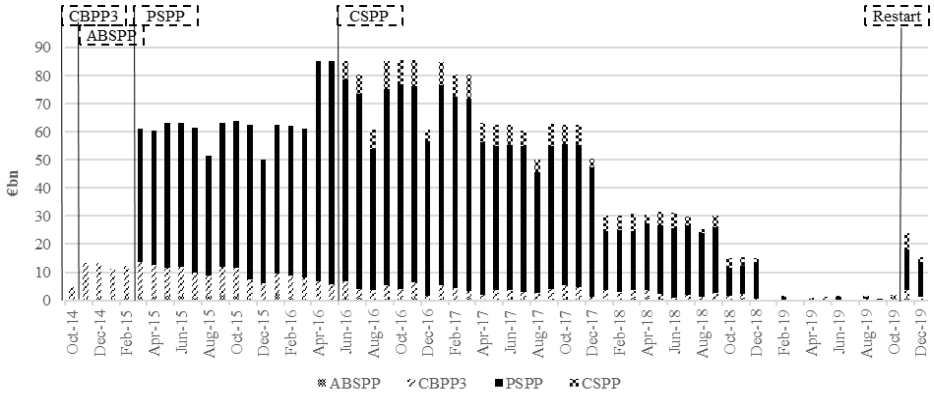
The ECB, instead, did not take action and rather gave more emphasis to inflation risk by initially increasing the key interest rate by 25 basis points (bp) in July 2008. In the aftermath of the Lehman bankruptcy in September 2008, the financial market crisis worsened dramatically and resulted in an almost complete drying-up of the interbank market. The ECB rapidly took action by reducing its key interest rate within seven months by 325 bp to 1 percent in May 2009 and, beyond, implementing the enhanced credit support (ECS) that was intended to promote the flow of credit.

In early 2010, when the euro area sovereign debt crisis started to rise, the ECB established the Securities Markets Programme (SMP) to further inject liquidity and to restore the monetary policy transmission mechanism, i.e. via direct purchases of government bonds (Greek, Portuguese and Irish) in secondary markets. Furthermore, the ECB stopped and partly reverted the already commenced exit from unconventional monetary policy measures, in particular in relation to the use of Very Long-Term Refinancing Operations (VLTRO) and the currency swap agreements on dollar basis. In August 2011, the ECB extended the SMP to Italian and Spanish government bonds and announced in December 2011 to implement additional measures by e.g. establishing long-term refinancing operations. In September 2012, the SMP was terminated and substituted by a new policy measure, the Outright Monetary Transactions (OMTs) which was originally envisaged for purchases of government bonds with a maturity of up to three years, issued by countries under a European Stability Mechanism (ESM) macroeconomic adjustment programme or a precautionary programme (Enhanced Conditions Credit Line).The OMT, however, was never put in place. 2013 was mainly characterized by a further reduction of the key interest rate in two steps from 0.75 percent to 0.25 percent and the introduction of forward guidance activities, aiming to reduce uncertainty by announcing the ECB's conditional future strategy with regard to key policy instruments.President of the ECB, Mario Draghi stated in July 2013 that 'the Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time. This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics.'

2.2 Quantitative easing (QE) and the asset purchase programmes (APP)

Due to the disinflationary pressures and decreasing expectations of inflation where key interest rates already shifted aroundzero percent, the governing council of the ECB decided in June 2014 to expand their monetary policies by gradually implementing new unconventional monetary policy measures. Itfirstinstalled Targeted Longer-Term Refinancing Operations (TLTRO) allowing banks to borrow money from the ECB with a duration of up to four years at a fixed interest rate. In September 2014, the ECB furthermore announced to implement two new APPs, the Asset-Backed Securities Purchase Programme (ABSPP) and the third Covered Bond Purchase Programme (CBPP3) which marks the start of QE in the euro area. In January 2015,the ECB announced to expand the APP by the Public Sector Purchase Programme (PSPP) in order to further ease the path of monetary policies as the already implemented unconventional monetary policy measures did neither reduce the disinflationary pressure nor the decreasing expectations of inflation. The PSPP was designated for purchases of securities of the public sector until September 2016 with a monthly volume of €60 billion. In December 2015, due to downwardly revised forecasts, the PSPP was extended until March 2017 with a monthly volume of €80 billion beginning from April 2016.At the same time, the ECB announced to add the Corporate Sector Purchase Programme (CSPP) to the APP from June 2016 onwards to purchase corporate sector bonds. Figure 1depicts the historical monthly net purchases under the APP at book value for the four programmes.

Figure 1 Historical monthly net purchases under the APP (data source: ECB)



In an attempt to return to conventional monetary policies, the ECB successively reduced the monthly purchases under the APP by first announcing in December 2016 to cut purchases from €80 billion to €60 billion from April 2017 until December 2017. It furtherdeclaredin December 2017 to additionally lower the amount to €30 billion from January 2018 until September 2018. Finally, the ECB stated in October 2018 to scale down monthly purchases to €15 billionand terminated net asset purchases in December 2018. The principal payments from maturing securities purchased under the APP, however, were continued to be reinvested and key interest rates remained unchanged. In November 2019, net purchases under the APP restarted at a monthly pace of €20 billion.

2.3 Transmission channels of QE and the impact on economic factors

To achieve its primary goal of stimulating investment and consumption, QE mainly works via three different transmission channels: i) signaling, ii) portfolio rebalancing (also referred to as asset valuation) and iii) reanchoring *(Andrade et al. 2016)*.

ECB's announcement to implement QE provides signaling information about the likely path of future monetary policies to market participants and can be considered as complement to forward guidance. Particularly, it shows a credible commitment to keep short-term interest rates low in the future since a sudden upwards movement of interest rates would imply large-scale impairments on assets held by the ECB *(Clouse et al. 2003)*. Rebalancing relates to changes in investors' asset valuations. QE induced asset purchases increase the price of long-term bonds and thus flattens the yield curve by reducing the term premium. Consequently, investors rebalance their portfolios and start to shift towards assets with higher expected returns and, in turn, take on more risk. The increased asset prices of long-term bonds also lead to positive effects on the balance sheets of banks resulting form of higher valuation of their assets. Elevated asset values can be considered as capital injection which alleviates capital constraints, lowers interest rates and thereby increases the supply of credits. Last, the reanchoring channel describes the reversal of deviations between long-term inflation expectations and central banks objective, which may be driven by the private sector's uncertainty about the length of the horizon over which price stability will be restored*(Andrade et al. 2016)*.

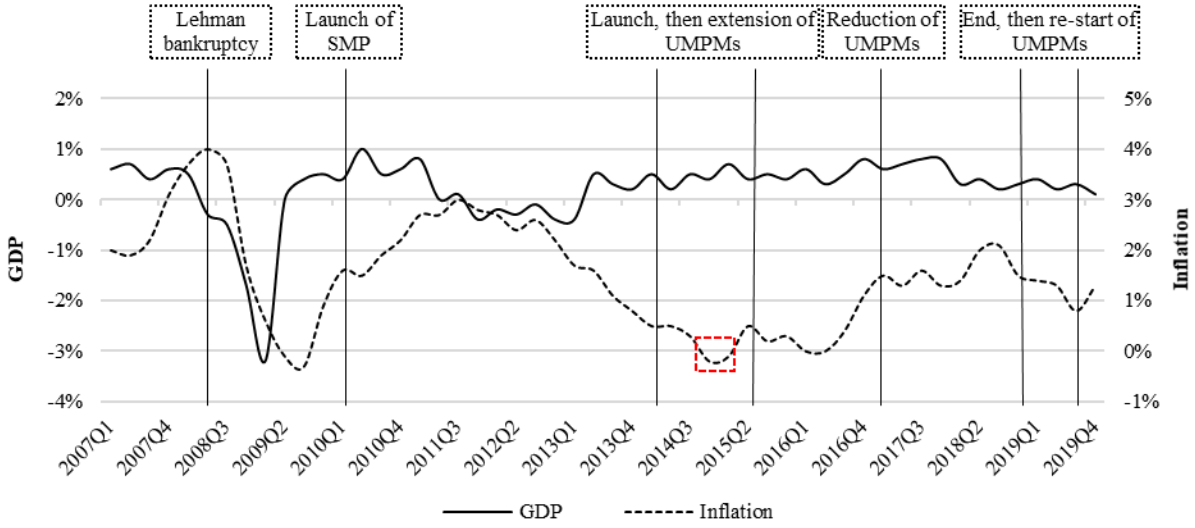
The question whether QE provides monetary stimulus has been in the focus of prior research. *Andrade et al. (2016)*show that QE announcement exhibited a significant and persistent impact on the decline of sovereign yields on long-term bonds, also leading to a rise of share prices of banks which had more sovereign bonds on their balance sheets. Both results are consistent with the conjecture of portfolio rebalancing. They also show that QE activated all three transmission channels and that the QE announcement contributed to support both inflation and output. *Hohberger et al. (2019)*support the notion that ECB's QE significantly contributed to annual GDP growth and CPI, the latter also being presented by *Beck et al.(2019)*. *Kapetanios et al. (2012)*identify the same effect for the UK market. *Lemke & Werner (2020)*find that yield reductions are almost fully attributable to a reduction in term premiums driven by the portfolio rebalancing channel. *Albertazzi et al. (2018)*deliver evidence that QE was

mostly reflected towards riskier assets in financially more vulnerable countriesin the Euro area (e.g. Cyprus, Greece, Italy, Spain)whereas in less vulnerable countries rebalancing triggered credit extension to the corporate sector. Examining QE measures for a longer time period in Japan,*Michaelis and Watzka (2017)*show significantly stronger positive effects on GDP and CPI over time.

Unconventional monetary policy measures of the ECB that had been installed prior to QE, were also able to positively contribute to macroeconomic and financial variables.*Darracq Pariès and Santis (2015)*identify positive effects on GDP and CPI upon the installment of VLTRO.*Krishnamurthy et al.(2018)*find that SMP and OMT dropped bond yields considerably, *Esser and Schwab(2016)*show that asset purchases improved liquidity conditions and reduced default-risk premia. According to *Ferrando et al. (2015),* OMT was followed by an immediate rise of bank credit supply, especially for firms with elevated creditworthiness. They also show that firms reduced their use of debt securities, trade credit, and government-subsidized loans.

Figure 2 shows the quarterly development of GDP and the yearly harmonized index of consumer prices since 2007 and marks QEand other milestones.

Figure 2 GDP and inflation growth rates in 19 Euro countries (data source: Eurostat)



The graph reveals that the launch of the SMP in early 2010 rebounded GDP and inflation growth rates in the short-term. The settlement of QE in the third quarter of 2014 is accompanied by a delayed increase in inflation reaching the target value of 2 percent in 2018. GDP remains on a constant level upon the QE launch and takes a slight decline in 2018.

2.4 Risks of QE

While research suggests that QE has been effective in reaching particular macroeconomic and financial targets in the past, concerns about adverse effects that could jeopardize financial stability arise.First, QE seems to inherit a bubble building risk. Loose monetary policies in connection with low interest phases tend to increase asset prices *(Bordo and Landon-Lane 2014)*. Second, since QE apparently is associated with lower nominal returns, investors can be prompted to move towards higher risk. Likewise, higher asset prices usually go hand in hand with credit expansion and higher income streams and, thus, might lead to a lower risk perception *(Borio and Zhu 2012)*.Numerous studies identify an elevated risk appetite of banks when interest rates are declining *(Jiménez et al. 2014; Neuenkirch and Nöckel 2018; Abbate and Thaler 2019)*. A further risk appears if large-scale asset purchases of the ECB reverse to huge impairments if interest rates rise. This could also lead to liquidity risk in the corporate sector *(Dell'Ariccia et al. 2018)*.

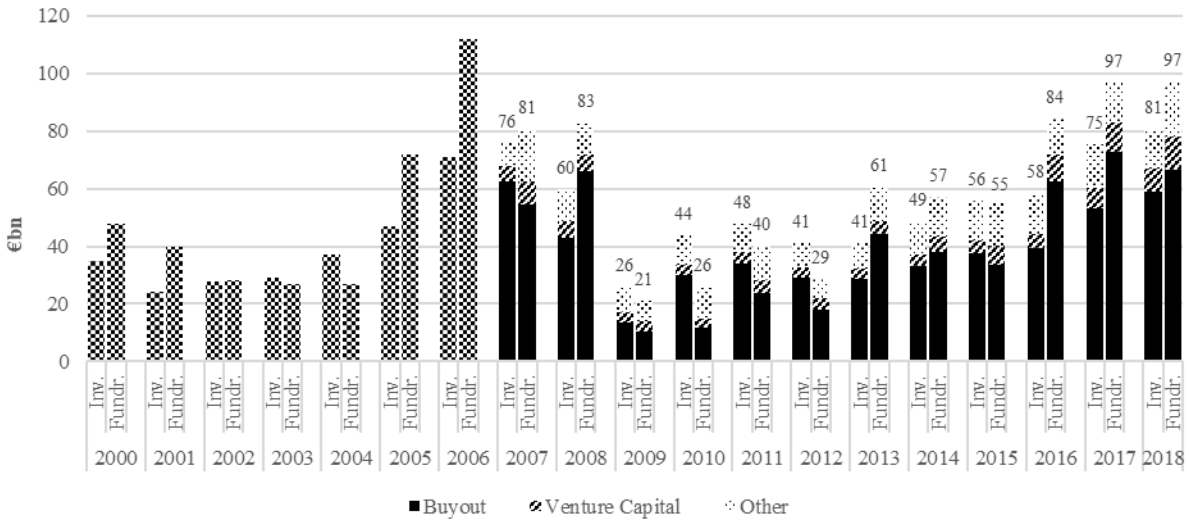
Further, the prevailing favorable financing conditions also seem to preserve structures and to promote weaker companies at the expense of new ventures. Occasionally, the term 'zombie company 'shows up in that context, which the BIS defines as 'firms that are unable to cover debt servicing costs from current profits over an extended period'. Analyzing the periods 1987 to 2016 and 14 countries, the BIS shows that the percentage share of zombie companies increased from 2 percent to 12 percent*(Banerjee and Hofmann 2018)*. The OECD concludes that zombie companies contribute to an overall lower productivity growth, which also harms other market players*(McGowan et al. 2018).Caballero et al. (2008)* show that the appearance of zombie firms triggers healthy firms to cut on entry and investment.

Overall, QE might impose distortions on the coordination function of markets in a way that excessively high asset prices in many segments do not provide reliable information on credit qualities and investment opportunities. Additionally, higher risk exposure simply a need for monetary normalization in the mid-to longtermt o prevent a sustainable destabilization of the financial system*(Bundesverband Öffentlicher Banken Deutschlands 2018).*

3 Buyout activities in the aftermath of the financial crisis

Although various studies found that private equity (PE) performance is consistently exceeding that of public markets *(Harris et al. 2014),*the PE market did not remain unaffected by the initial restricted financing conditions in the wake of the financial crisis and the uncertainty with respect to the stability of the monetary union. Since 2000, the European PE market gradually increased to a historical second highest level of €76bn in investments in 2007 and sharply decreased in 2009 to a market with €26bn in investments. The European market, however, recovered from the financial crisis, which can be concluded from investment and fundraising volumes as shown in figure 3.

Figure 3 PE investments and fundraising in Europe(data source: Invest Europe)



The investment volume reached its peak in 2018 with a volume of €81bn and outreaches the second highest volume from 2007 by 6 percent. The increase mainly results from more volume in venture capital and growth backed transactions while the volume of buyout transactions is lower by 6 percent. The number of companies backed in buyout transactions also decreased since 2007 over-proportionally by12 percent showing that transaction prices for buyouts went upin the aftermath of the financial crisis. The median purchase price multiple (EV/EBITDA) for European PE buyout transactions increased to a decade high of 11.8 in 2018 and start to take a nosedive in 2019, resulting in a median purchase price multiple (EV/EBITDA) of 8.9 in the third quarter.

The decrease in the third quarter of 2019 might be primarily driven by concerns around Europe's economic outlook with respect to uncertainties related to the Brexit since the UK constitutes the largest PE market in Europe in terms of buyout volume. The temporary cessation of net purchases under the APP in 2019 probably plays only a minor role as the ECB already decided in September 2019 to restart its programme from November 2019 onwards. A further explanation could be provided by the recent proliferation of bolt-on acquisitions since smaller transactions typically exhibit lower multiples in comparison to large outlier buyouts in times when multiples in the broader buyout market are excessive. Although lenders are showing the willingness to finance transactions with a maximum level of debt, regulatory requirements imply thresholds for the use of leverage.

4 Relationship between QE and the PE market

4.1 4.2 Challenges and risks on the PE market

The rise of purchase price multiplesuntil the second half of 2019mainly stems from the sharp increase of available dry powder and the various options that are available for potential targets when it comes to raising capital, thanks in part to historically low interest rates that have made borrowing easier*(Woodman 2019)*.PE managers consider the availability of cheap debt and the huge wall of cash as crucial for the development of the PE market *(Espinoza 2018)*.Cheap debt enables PE managers to access a higher number of strongly leveraged transactions which not only increases the return on buyouts but also makes more resources available to PE managers for refinancing already transacted buyouts. Likewise, cheap debt allows PE managers to take into consideration potential targets with lower cash flows which, in turn, extends the horizon of buyout opportunities. PE funds are not the only profiteers of cheap debt as strategic investors are also striving for lucrative investment opportunities leading to a higher competition on the buyout market and, hence, to higher purchase price multiples.

The strong fundraising environment makes a lasting impact on the behaviour of PE managers and strengthens their willingness to compensate high purchase price multiples with offensive fundraising and a greater degree of fast investments *(Espinoza 2018)*. However, in times of an economic slowdown *Bernstein et al. (2019)*show that the decrease of investments is lower for PE backed companies compared to other firms due to the access to resources and relationships of their PE sponsors for raising equity and debt funding.

Researchers from the Bocconi University in collaboration with Goldman Sachs*(Gatti et al. 2015)*reveal that in an environment of intense competition and high target valuations buyout activities from PE funds occur less often than corporate takeovers from strategic investors. These findings are interpreted by literature as evidence that high prices adversely affect buyout activities when driven by an increasingly competitive landscape and high stock market valuations.

*Preqin (2018)*concluded from a 2018 survey among PE managers that 'after years of rising prices, valuations remain the number one concern facing PE managers. Fifty-eight percent of surveyed fund managers believe that pricing for portfolio companies is higher than 12 months ago and consequently 30 percent reported that they are finding it more difficult to find attractive investment opportunities. While many fund managers remain confident in their ability to innovate and find value, a significant proportion (36 percent) reported that they are reducing the targeted returns for their funds due to current valuations.'

The expectation of future increasing key interests might even prompt investors to withdraw from the PE market since other markets could be considered more attractive. Yet, Christine Lagarde, president of the ECB, announced in January 2020 that key interests will most likely not increase in 2020 and in the foreseeable future. The optimistic view of PE managers for the future of the PE market in the PwC report *(Roberts and Naydenova 2019)* corroborates the notion that a withdrawal of PE managers from the intense competition for lucrative assets is not immediately foreseeable.

Beside the increasing number of zombie companies the BIS *(Goel 2018)*draws attention to a further phenomenon arising in the shade of QE. Financing of corporates in the US and Europe by using leveraged loans is constantly growing. Leveraged loans are lending to corporate borrowers with high levels of debt and low credit ratings and constitute a financing tool that PE funds often use for leveraged buyout transactions. According to the European Leveraged Loan Index (ELLI), the market for leveraged loans is strongly growing and doubled its size in terms of loans outstanding since 2016 from approximately €100bn to €200bn in the third quarter of 2019. Further, the market for covenant lite loans which represent a sub-variation of leveraged loans with even fewer restrictions on the borrower is growing rapidly. Taking the sum of leveraged loans, the share of covenant lite loans increased from approximately 50 percent in 2016 to over 85 percent in the third quarter of 2019*(Goel 2018).*This development expresses investors' willingness to waive collaterals for financings despite weak repayment capabilities of borrowers. One explanation could be delivered by the uncertainty about the duration of the current economic cycle with such favourable loan terms.

A main feature of leveraged loans is the variable interest rate. In case of rebounding key interests, PE backed companies realizing lower cash flows will most probably have struggles to acutely refinance higher payments. In view of a potential upcoming change in the economic cycle the resulting losses can be a potential trigger for a chain reaction that will affect the real economy and cause comprehensive financial distress.

The rise of leveraged loans as a consequence of QE could also be observed in other jurisdictions. Using Japanese bank-firm data, *Nakashima et al. (2017)*find evidence for an association between the share of assets purchased by the Japanese central bank and the amount of lending to companies with a higher probability of default. In contrast, expanding the monetary base which commonly is considered as a conventional policy measure does not reveal such effects.Finding empirical evidence for the link between QE and financial dimensions is not without controversy. A central problem involves identification. Empirical literature faces the challenge to isolate the effect of unconventional monetary policy measures from overlapping policy initiatives taking place at the same time *(Dell'Ariccia et al. 2018)*.

The question whether a high credit supply promotes risk-taking has been in the focus of an intense academic debate. Overall, prior research supports the notion that the increasing fundraising volume will most likely result in an elevated risk for poor investment decisions. *Chu and Deng (2019)*find that QE encourages individual risk taking which can be driven by behavioural bias. Others find that financial intermediaries grant more credit to risky firms due to agency conflicts *(Jiménez et al. 2014; Dell'Ariccia et al. 2017)*.

4.3 Opportunitieson the PE market

In the light of a changing competitive environment on the PE market new opportunities for fields of action arise which go beyond fundraising and leverage as the only value adding factors. The consideration of strategic components becomes crucial in this context. In view of the current buyout landscape and in course of the growing role of digitisation the PE sector might find incentives for operational improvement by optimizing the business models and generating innovations within the portfolio companies*(Roberts and Naydenova 2019).Gatti et al. (2015)*mention further opportunities as the specialism on sectors, especially on SME's, gaining industry specific knowledge, careful selection of potential targets and early processing, and execution of transactions as additional factors improving the performance of PE funds.

The need for reorientation of PE managers' strategy and the opportunity to skim off from the changing strategic components has already been noticed by various market participants.The PwC Private Equity Trend Report 2019shows that 91 percent of the survey respondents expect the impact of operational improvements on returns to increase, 87 percent are using less financial leverage. 92 percent of the respondents have undertaken more co-operations with strategic investors, ahead of using less leverage or financial engineering. Co-operations with

strategic investors increase the fund's firepower and ability to complete larger deals due to the direct access to deals without paying the usual fees charged by a PE fund.The overall picture suggests that the PE market is not only becoming more independent from financial leverage but rather shows a stronger focus on operations. 43 percent of the surveyed PE managers have carried out more minority investments in the last three years, which can most probably be attributed to the stronger seller's market and competition on the buyer's market. Beyond the focus on operations PE managers show an increasing interest in private debt, with 44 percent having already invested in private debt and 51 percent intend to do so in the future. Private debt is the most favoured asset diversification strategy among PE managers.

Conclusion

Considering the findings of previous studies one can conclude that unconventional monetary policy measures reveal a significant impact on financial and macroeconomic variables, yet evidence on long-term consequences in the Euro area remains weak. Using the example of the PE sector, our analysis contributes to the literature by showing that enhanced credit supply is boosting the fundraising volume. An ensuing limited number of lucrative assets results in an elevated risk for poor investment decisions. Evidence is given by the constantly growing market for covenant lite loans. In a booming environment, when competition is more intense and target valuations are high, PE managers face the challenge to keep a balance between investment pressure and not to fall for the overvaluation. This situation is corroborated by an increasing number of strategic investors who are also seeking for profitable investment opportunities and, thus, additionally raising competition and target valuations on the buyout market. The efficient use of dry powder becomes more of a challenge in this vein. QE, on the other side, comes with opportunities for PE firms. In view of the current buyout landscape and in course of the growing role of digitisation, the PE sector finds incentives for operational improvement by optimizing business models and generating innovations within the portfolio companies.

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