International Review of Law and Economics 65 (2021) 105945

Contents lists available at ScienceDirect

International Review of Law and Economics

The global financial crisis, the EMU sovereign debt crisis and international financial regulation: lessons from a systematic literature review

Samira Meier[a,*], Miguel Rodriguez Gonzalez[b], Frederik Kunze[c]

[a] Mendel University in Brno, Zemědělská 1665, 61300 Brno-sever-Černá Pole, Czech Republic
[b] Gottfried Wilhelm Leibniz University Hannover, Otto-Brenner-Straße 7, 30159 Hannover, Germany
[c] Norddeutsche Landesbank Girozentrale, Friedrichswall 10, 30159 Hannover, Germany

ARTICLE INFO

Article history:
Received 31 August 2019
Received in revised form
15 September 2020
Accepted 17 September 2020
Available online 3 October 2020

JEL classification:
H12
K23

Keywords:
EMU
Sovereign debt crisis
Global financial crisis
Financial regulation
Banking sector
Insurance industry
Financial markets
Policy reform

ABSTRACT

To ensure the safety and soundness of the global financial system as well as individual financial institutions and to reduce systemic risk, numerous policy measures and regulatory reforms have been brought forward as a reaction to the Global Financial Crisis and the European Sovereign Debt Crisis. Simultaneously, numerous academic works have critically reviewed these developments. Therefore, based on a dataset of 455 papers, this article intends to structure the multitude of publications and provide a comprehensive overview of post-crisis regulatory research publications. Studies can be roughly divided into three overarching clusters: publications identifying causes of the crisis, articles focusing on policy and reform reactions, and literature investigating whether these reforms fit their purpose. A holistic and systematic review allows us to extract relevant recommendations and areas of action to prevent such a crisis in the future.

1. Introduction

Financial regulation has become increasingly important, since the reputation of economics as a profession has undoubtedly come under critical scrutiny with the mostly unforeseen outbreak of the last two major crises in the US and Europe (Toarna and Cojanu, 2015). Moreover, the bursting of the internet bubble, the global financial crisis (GFC), and the European sovereign debt crisis (SDC) have jointly generated costs in the world economy of approximately USD 30 trillions (see Taskinsoy, 2019). There are also indications that the causes of many crises are often similar. Overbeek (2012), for example, cites overaccumulation as the main driver of financial markets since the 1980s. As a result, it seems reasonable to address the reasons for the last two major financial crises in the world's two largest economies in a literature survey. To avoid such enormous financial repercussions in the future, scholars have delivered a large variety of critical examinations of the financial and sovereign debt crises and the decisive role of regulatory circumstances in order to eliminate such deficiencies. Thus, the question arises as to what extent the regulatory institutions and framework conditions were insufficient or could even have encouraged crises. Second, the question must be answered as to which measures or automatism influenced regulators' decisions on how to counteract the crisis. Finally, it is important to consider the extent to which new or ongoing regulatory adjustments or innovations influence the occurrence and course of future crises. Thus, to organize our discussion, we structured the paper into three sections (see Fig. 1) based on the identified crisis-related regulatory literature. This investigation was divided into three areas:

- Firstly, several authors deal with the causes and triggers of crises and stress situations.

* Corresponding author.
E-mail address: xmeier@mendelu.cz (S. Meier).

https://doi.org/10.1016/j.irle.2020.105945
0144-8188/

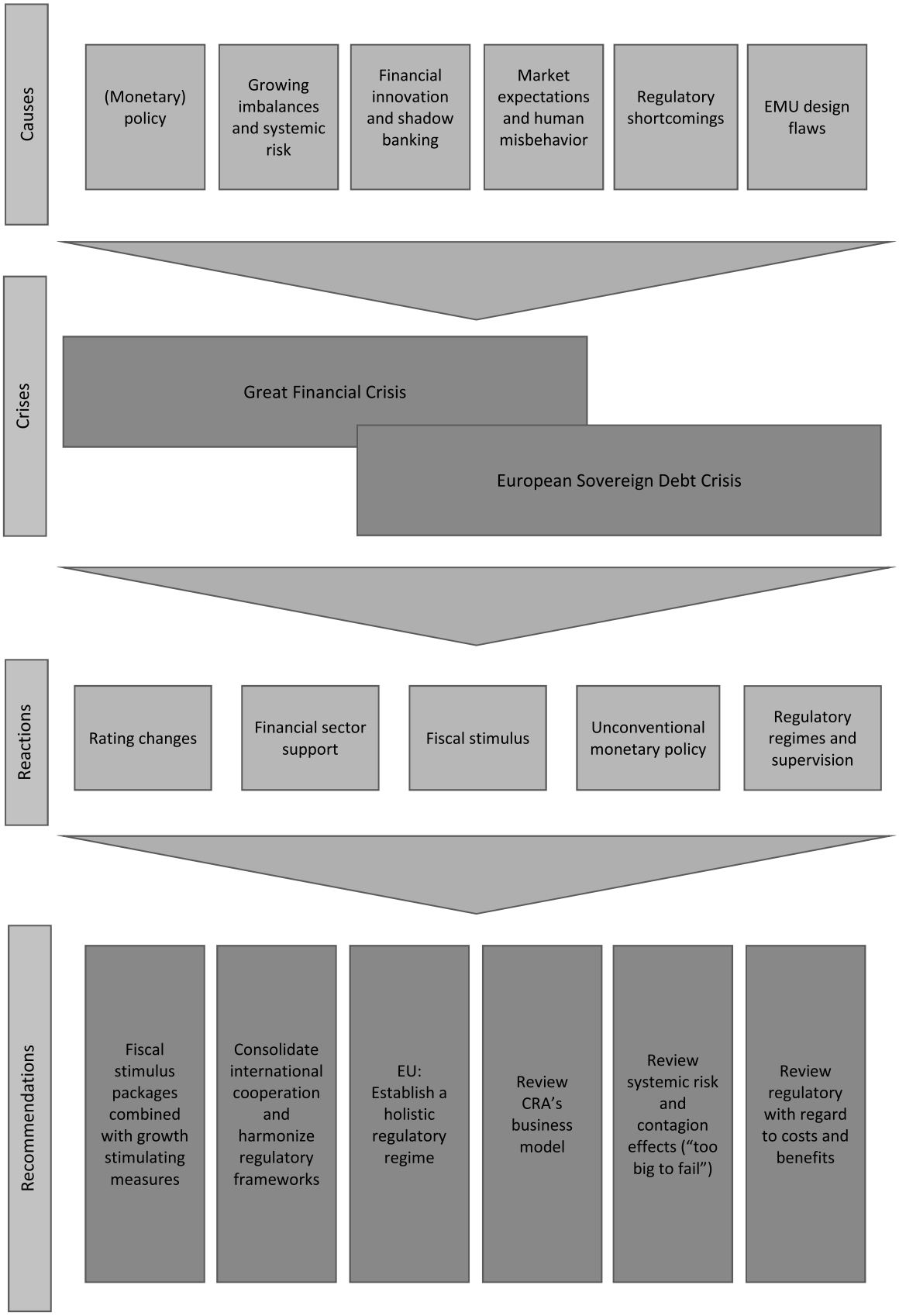

Fig. 1. The organization of the systematic literature review.

- Secondly, many studies focus on immediate policy reactions intended to mitigate crisis effects as well as reforms intending to stabilize the financial system.
- Finally, some researchers deal with the question of future development and, in this context, with the stress resilience of institutions and states as well as the danger of new crises.

However, the question arises why financial markets need to be regulated, when the literature actually assumes the existence of an at least moderately efficient market hypothesis (EMH).[1] It can be addressed in manifold ways: externalities such as bubbles and crashes, inefficient market structures, principal-agent problems, market entry/exit barriers, a lack of market integrity, or by considering financial market stability as a public good (see De Grauwe, 2011; Chaudary and Salvador-Adebayo, 2014). Since the incentives that the regulatory framework creates for decision-makers in the financial sector also play an important role, we present future potential research directions from both practical and academic perspectives. We argue in this paper that especially the concept of regulatory arbitrage may reveal that regulatory rules are often no panacea, but may even work to exacerbate crises (see Acharya and Richardson, 2009; Dagher and Fu, 2017). This view must not be taken as an opportunity to completely question the significance of regulatory and legal frameworks. Rather, a critical examination of their strengths and weaknesses is necessary in order to identify possible future Achilles' heels in the financial system in general and the Economic and Monetary Union of the European Union (EMU), and to deal with them accordingly. In doing so, we draw on the above-mentioned subdivision into the causes and effects of and reactions to the crises. Additionally, we reviewed recommendations to prevent similar crises in the future. In addition to the banking sector and the financial services industry, the insurance sector must also be included in this debate because it has been become an increasingly important actor in maintaining financial market stability (see Trichet, 2005; French et al., 2015).

Our literature survey is based on a structured and standardized search and identification process proposed by a collection of scientific publications (see Biener and Eling, 2012; Biener et al., 2015; Eling and Schnell, 2016; Eling and Lehmann, 2018). We review the English-language scholarly literature by using basic operations of Boolean algebra "TI[(financial regulation) OR (banking regulation) OR (insurance law) OR (insurance regulation) OR (regulatory authorities) OR (supervision)] AND TI[(crisis) OR (subprime) OR (sovereign debt)]"[2] in the journal databases EBSCOhost (Academic Search Ultimate, Business Source Elite, Business Source Ultimate and EconLit), ProQuest (20 databases in the social and economic sciences),[3] and the Social Science Research Network (SSRN). We then review academic articles, working papers, industry studies, and reports from January 2007 to May 2020 to cover the periods of the GFC and SDC. Moreover, we review citations in the identified papers to include further publications of interest. Additionally, we searched for supportive material via Google Scholar and regular Google searches. Based on this search and identification process a database of 455 papers is generated which main results are discussed.

The objective of this paper is to motivate further research interest in in-depth analyses of financial regulatory issues by bringing together the results of previous studies dealing with the cause-and-effect relationships of crises in a survey and, in particular, link our findings in the context of the regulatory frameworks.[4] The remainder of this paper is structured as follows. In Section 2, we review the literature on the causes of the financial and sovereign debt crises, focusing especially on the role of regulatory frameworks. In Section 3, we summarize relevant academic findings on policy reactions enacted over the course of the crises with a special focus on the interdependencies between the individual crisis sectors (i.e., sovereign debt crisis and financial crisis). Section 4 summarizes the findings from Sections 2 and 3 and formulates recommendations for regulatory action. Section 5 concludes the paper and provides recommendations for future research by focusing on the outlook and the question of the financial sector's resilience regarding future crisis events.

2. The emergence and causes of the Global Financial Crisis and the European Sovereign Debt Crisis

Undoubtedly, the economic and financial crises, starting with the burst of the housing bubble in the subprime segment of US mortgage markets in 2007, were driven by the interaction of many interdependent causes such as macroeconomic developments and (monetary) policy decisions, false expectations about innovations in financial markets, human misjudgments, and regulatory issues (see, for instance, Overbeek, 2012; Rose and Spiegel, 2012). In addition, the tremendous impact of these crises highlights the need for an appropriate and preventive regulatory framework. Although some developments of the GFC, like the globalization of markets or increasingly complex financial products, appear unique, there are indications that these structural problems have existed since the Great Depression in the 1930s (see Rötheli, 2010; Overbeek, 2012).[5] Accordingly, it seems reasonable to address the cross-country drivers of the last two major financial crises to gain valuable insights for the future. Waelti (2015) convincingly argues that the origin of a crisis is crucial to fully understanding the nexus between financial crises and reforms, and that more theoretical and empirical literature should focus on the analysis of the causes. It is therefore reasonable to address the question of the roots of financial problems (as discussed, for example, by White, 2008). For this reason, we briefly present the academic debate on the major developments leading to the GFC and SDC and elaborate on some important regulatory insights in this context. The following chapters therefore provide a structured discussion of the driving forces and triggers of the crises in the US and the EMU. As summary, Fig. 1 presents a schematic overview of these causes.

2.1. (Monetary) policy decisions

As stated above, the GFC is the consequence of the burst of the financial bubble in the US real estate market, and its severity was compounded by many factors. As Rose and Spiegel (2012) and Caprio (2009) show, over-accumulation in the financial markets occurred because of public policy decisions that were incompatible with economic fundamentals. In fact, there is evidence that the housing bubble was inter alia a result of national policy decisions like state subsidies to support home ownership in the US (see White, 2008; Rötheli, 2010; Liou, 2013).[6] As a result, spec-

[1] Ball (2009), Siegel (2009) and Malkiel (2011), for instance, discuss a possible coexistence of the EMH and crisis events.

[2] TI means that the search procedure was limited to the titles of the publications.

[3] A detailed list of the ProQuest databases is available on request from the authors.

[4] According to Amri and Kocher (2012), the most empirically analyzed databases regarding the effects of bank regulation and supervision on crisis events are *The World Bank Survey*, *Financial Reforms Database* and the *International Country Risk Guide*.

[5] For a historical reappraisal of banking regulation from the 1930s until the early 2000s, Kroszner and Strahan (2014) provide a detailed overview of causes and effects of banking regulation.

[6] Examples are the Congress' reinforcement of the Community Reinvestment Act, relaxations of down payment standards by the Federal Housing Administration, or

ulators were increasingly attracted to the US real estate market, while artificially generated demand caused property prices to rise. These risk factors were underestimated by both financial markets and regulatory authorities (Buttimer, 2011).

In addition, the emergence of macroeconomic imbalances has also been exacerbated by improper monetary policy decisions (see, for example, Mah-Hui, 2008). In fact, the Federal Reserve Bank (FED) did not return to a more restrictive monetary policy after lowering the key interest rates after the financial turmoil of the early 2000s like the Internet Bubble and the financial crash after the 9/11 attacks. Measured by the Taylor rule, the monetary policy had been too expansive, leading to an underestimation of risks (Banerjee, 2011) and an oversupply of liquididy in financial markets (Rötheli, 2010; Rose and Spiegel, 2012). The S&P/Case-Shiller home price index, an indicator of price development, almost doubled after the burst of the Internet Bubble to the beginning of the collapse of Lehman Brothers (see S&P Dow Jones Indices LLC, 2019).[7] For this reason, many investors were seeking high-yield investment opportunities, and the resulting effects are often emphasized as crucial drivers of the housing price bubble (see Mah-Hui, 2008; Taylor, 2009a; Rötheli, 2010). This trend of rising prices ultimately resulted in a financial bubble in the housing market (see Overbeek, 2012). However, as Gokhale and Van Doren (2009) argue, even if the FED would have anticipated the emergence of a bubble, there are doubts about whether it would have adapted its monetary policy, not only because of political pressure (Kantor and Holdsworth, 2010), but also because of the existing price stability in the US economy. In particular, Banerjee (2011) argues that one problem at the beginning of the crisis was a strict focus on price stability, although this was probably achieved by massive foreign (e.g., Chinese) capital flows. Nevertheless, according to Cheng et al. (2017), banks are generally an appropriate instrument to contribute significantly to ease the effects of a crisis, which has unfortunately not happened in the 1930s Great Depression (Kantor and Holdsworth, 2010).

Moreover, public financed stimulus packages were needed to weaken the effects of the economic crisis. Thus, European national governments massively supported financial institutions through capital injections (e.g., Hypo Real Estate, Fortis, Anglo-Irish, etc.). Blanchard et al. (2009), as well as Hauptmeier et al. (2011), for instance, find evidence that governmental support programs helped to effectively manage sovereign debt issues and strengthen budgetary consolidation. Moreover, Taylor (2009b) highlights the misinterpretation of problems in the bank credit market and the unclear framework of governmental state rescue packages as fundamental mistakes of political actions and interventions. Consequently, these countries' spreads on government bonds were significantly widening because of the growing default risk (Lane, 2012). However, Gajewski (2014) argues that the growing sovereign risk, predominately in Greece, Ireland, and Spain before 2009 was due to the reduction of base rates by the ECB.[8] According to Crowley and Lee (2009), Greece, Spain and the Benelux countries were most disadvantaged from a centralized monetary policy, while it was beneficial for well-positioned countries like Germany, because of a "neomercantilist accumulation strategy" (see Overbeek, 2012). Moreover, the author shows that lax fiscal policies and the application of different monetary policy measures were major drivers of the SDC. Overall, Toarna and Cojanu (2015) argue that a commonality of both crises is the lack of common rules for systemically important financial institutions (such as the FED or the ECB), and thus, the absence of an equal distribution of responsibility.

2.2. Growing imbalances and systemic risk

As previously mentioned, macroeconomic developments like cheap Chinese imports and the resulting economic disequilibrium in the balance of trade also contributed to the emergence of the crisis in the US (see, for instance, Lander et al., 2009; Miele and Sales, 2011; Rose and Spiegel, 2012). These imbalances also resulted from capital flows from less developed markets to US financial markets, which subsequently strengthened the effect of over-accumulation (Obstfeld and Rogoff, 2009; Banerjee, 2011). The bursting of the real estate bubble, the price collapse, and the bankruptcy of many companies led to a massive economic shock, and as a result, an increasing number of banks accumulated large amounts of bad debt in their accounts. The massive financial impact then caused a worldwide recession, adversely affecting other economic factors, such as private and public wealth and consumer spending (see for instance Brunnermeier, 2009; International Monetary Fund, 2010; Gorton and Metrick, 2012a), as well as economic prices and wages, as revealed by many European countries (Glod, 2018). Consequently, the GFC weakened European financial markets and simultaneously increased the national debt of many EMU members (Glod, 2018). Likewise, European banks were eventually affected by the impact of the GFC. This was mainly due to globalization in the banking sector, mainly from Europe towards the US financial markets (Welfens, 2008). Moreover, the effects on the US mortgage market also indirectly affected involved financial systems in emerging markets. This is explained, to some extent, by the "safe havens" effect and the reallocation of investments (see De Santis, 2012).

Thus, in addition to an economic and banking crisis, the situation in Europe also developed a sovereign debt crisis, starting with the debt issues of Greece in 2010 (Lane, 2012; Calabrese et al., 2017; Wegener et al., 2019). Moreover, Reinhart and Rogoff (2011), for example, provide evidence in favor of a link between banking and sovereign debt crises and even suggests that banking crises are a predictor of debt issues in developed and emerging countries. To prevent further contagion effects in the US and Europe, many states took individual rescue measures to mitigate the crisis impact (Demirgüç-Kunt and Servén, 2010; Overbeek, 2012). In this context, Demirgüç-Kunt and Servén (2010) argue that state guarantees can increase systemic risk by worsening the economic situation of a state through financial rescue measures and potential payment defaults after a financial shock. Similarly, Ureche-Rangau and Burietz (2013) confirm that, in particular, capital injections and government guarantees transmitted the GFC to the SDC. Alter and Schüler (2012) argue, that the systemic risk results from a "private-to-public risk transfer" which makes financial shocks more likely to cause national bankruptcy. Furthermore, the interdependent nature of bank bailouts and state finances reveals that one subcrisis might drive the other (see Ureche-Rangau and Burietz, 2013; De Bruyckere et al., 2013).

After the onset of this crisis and the collapse of Lehman brothers, member states' debt-to-GDP ratio rose significantly, because governments were relying on strong fiscal stimulus packages and bail-out programs to mitigate the inevitable economic recession and prevent the collapse of the financial system (Velinov, 2015; Grammatikos and Vermeulen, 2012; De Santis, 2014; Karagounis et al., 2015). Investors reacted with a loss in confidence regarding certain Eurozone member states' solvency and perceived defaults as likely outcomes (Bijlsma and Vermeulen, 2016; Alsakka et al., 2014; Arce et al., 2013). Consequently, sovereign credit default swaps (CDS) spreads widened dramatically (Aizenman et al., 2013; Alter and Schüler, 2012). CDS are common financial instru-

pressure on credit providers by the US Department of Housing and Development (HUD) to grant more mortgages.

[7] Case and Shiller (2003) are some of the few economists that had actually anticipated the house price bubble.

[8] For more detailed studies on the determinants of Eurozone sovereign bond spreads see Barrios et al. (2009), Croci Angelini et al. (2016) or Attinasi et al. (2009).

ments that function as insurance against government defaults. CDS spreads indicate the price of such insurance for a specific country. Prior to the GFC, when default risks for European member states were near zero, CDS spreads remained at low levels with little volatility. Therefore, trading activity in this segment had been low (see Arce et al., 2013). However, the financial crisis marked a caesura. German CDS spreads, for instance, remained at a relatively low level, never crossing the 100 basis points mark, whereas the Greek CDS spreads skyrocketed and even exceeded 1,100 basis points in the summer of 2010 (Bernoth and Erdogan, 2012; Grammatikos and Vermeulen, 2012; Fabozzi et al., 2016).

Systemic risk in the context of financial contagions could also have contributed to the crisis (see Liou, 2013). Following the events outlined above, a growing body of literature considers sovereign contagion effects in the EU and the transmission of sovereign risks from distressed financial markets towards the sovereign. This is because the costs of bail-out programs lead to increased sovereign credit risk (see Attinasi et al., 2009; Sgherri and Zoli, 2009; Alter and Schüler, 2012; Alter and Beyer, 2014). This impacts the financial sector, as bailout programs are funded through new issues of government bonds, which are often bought by domestic banks. Furthermore, Glod (2018) highlights the contagion in the EMU because of the interconnectedness of the member states. However, shadow banks could also have contributed to the spread of the crisis, since Bengtsson (2013) finds that there is a link between the shadow banking system and overall financial stability. However, in some EU countries, increased borrowing led to high inflation, resulting in balance of payments deficits and higher sovereign debt. Glod (2018), for instance, finds strong evidence for inflation and unemployment to explain public indebtedness. In particular, fragile economies like the PIIGS states,[9] faced severe economic impacts and sovereign debt issues (see, for example, Sklias et al., 2014; Guerreiro, 2014; Ramos-Francia et al., 2014). The disparities in associated default risk are underlined by substantially lower credit spreads of countries like Germany compared to those located in the European periphery (e.g. Greece) (Attinasi et al., 2009; Arce et al., 2013; Aizenman et al., 2013). In the following, these countries were facing higher risk premia on sovereign debt, further worsening their debt situations (Lane, 2012). Subsequently, Beirne and Fratzscher (2013) find that price changes of sovereign risk in the follow-up of the European crisis were mostly based on the respective European member states' economic fundamentals, and in the PIIGS countries, price adjustments seem to result from a "wake-up contagion". However, De Grauwe and Ji (2013) state that a large part of sovereign spreads could be explained by self-fulfilling market expectations, which then resulted in economic imbalances in the EMU. In this context, Giordano et al. (2013), for example, also find evidence for a "wake-up-call contagion" instead of a "pure contagion". In contrast, Gómez-Puig and Sosvilla-Rivero (2016) highlight the coexistence of both. However, Beirne and Fratzscher (2013) find evidence for a "herding contagion" in sovereign debt markets during the SDC.

2.3. Financial innovation and shadow banking

Besides disadvantageous economic developments and misguided policy decisions, Acosta-González et al. (2012), as well as Caruso et al. (2019) state that financial determinants were key drivers of the GFC. Before the crisis events, financial markets were changing for various reasons, such as the increasing innovative power of financial institutions and financial products, new credit transfer mechanisms, and a trend towards shadow banking (Miele and Sales, 2011).[10] In general, product innovations, such as mortgage-backed securities (MBS) or collateralized debt obligations (CDOs), have been seen as promising high-return assets with low default risks. These asset-backed securities (ABS) were then distributed by US banks, transferring the opaque risks to other financial markets.

Moreover, the securitization process, seems to have been strongly driven by incentives and regulatory flaws, both seen as major key features of the GFC (see, for instance, Pacces, 2010; Caprio, 2013). Furthermore, the dependence of the regulatory system on private rating agencies and their valuation of financial assets are heavily criticized, since credit rating agencies (CRAs) systematically underestimated the risk of securitized assets (see, for instance, Buiter, 2007; Coval et al., 2009; Rötheli, 2010; Rose and Spiegel, 2012). Therefore, banks granted highly risky loans, also in the knowledge, that they could easily transfer their risks to financial markets (Coval et al., 2009). Therefore, the combination of positive ratings for securitized assets and issuing banks underpinned the underestimation of systemic risk. However, Coval et al. (2009), for example, claim that the opaque construct of securitization was a major reason for many market participants and regulators to not anticipate the crisis. Additionally, Arezki et al. (2011), for instance, point out the announcements of CRAs are not only a driver of the GFC, but also in case of the SDC.

For the reasons mentioned above, such as the excess liquidity in the financial markets, these financial innovations were seen as promising investment opportunities. As a result, the (shadow) banking system – including so-called off-balance sheet special purpose vehicles (SPVs) – invested in these financial products (see Caprio, 2013). Noeth and Sengupta (2011) describe this shadow banking system as "a large segment of financial intermediation that is routed outside the balance sheets of regulated commercial banks and other depository institutions". Further, the SPVs issued short-term securities to raise the required capital to buy the ABS from the banking sector. Additionally, financial guarantees of other banks were provided to signal creditworthiness to their investors (Welfens, 2008). Then, after the beginning of a more restrictive monetary policy, and the first increase in the FED Funds Rate since 9/11 (see Board Of Governors Of The Federal Reserve System, 2019), higher interest rates led to financial distress of borrowers due to interest-related mortgage loans. Accordingly, the first credit defaults occurred, starting in the subprime segment. Since the issuing banks of mortgage loans were often no longer bearing the credit risks by having transferred the risk "off-balance", most importantly, the SPVs, or the banks guaranteeing the SPVs, but also best-rated investment banks (like e.g. Lehman Brothers) got into financial distress. This resulted to some extent from an economic sentiment of uncertainty, especially in the (inter)banking markets, and a "bank-run" in the shadow banking sector (Gorton and Metrick, 2012b).

2.4. Market expectations and human misbehavior

As stated above, real estate price increases, mainly driven by expectations, resulted in an artificially induced overvaluation of the US housing market[11] and large increases in household debt (Miele and Sales, 2011). Although the vulnerability of the sub-prime credit market to property price fluctuations is well known, the extent of the collapse was underestimated by both supervisors and mar-

[9] PIIGS is an acronym for the EMU member states Portugal, Ireland, Italy, Greece, and Spain.

[10] Conversely, Gokhale and Van Doren (2009) find no evidence that financial products like teaser-rate hybrid loans and credit default swaps were determinants of the SDC.

[11] See also Rose and Spiegel (2012) for a more detailed literature review of the price appreciation in real estate before the GFC.

ket participants (Buttimer, 2011). According to Rose and Spiegel (2012), the real estate bubble in the US was a result of excessive leverage and a structural underestimation of systemic risk. In the literature, there are indications that this misbehavior in the run-up to the GFC can be explained by behavioral economics in the greater part, clearly contradicting the ideal of a homo economicus. Grosse (2017), for instance, lists five different behavioral aspects of the GFC:

1. Overconfidence of creditors
2. Overconfidence of debtors
3. Underestimation of the company's own financial risk[12]
4. Misjudgments of generated risks by rating agencies and regulatory supervision
5. Breakdown of the bank refinancing market (because of e.g. fear)

As additional drivers of the crisis Toarna and Cojanu (2015) mention several aspects of information asymmetry, such as herd behavior or irrationality of market participants due to high financial incentives combined with a low responsibility for risks. As an example of the EMU, Reichlin (2014) states that information asymmetry in the banking sector caused a dependence between bank and sovereign risks. Additionally, adverse selection within banks' balance sheets might have also been a major driver of the crisis (see Nyborg, 2008; Welfens, 2008). In general, Palvia and Patro (2011) find evidence that the risk of banks can be determined by capital market data, and thus, market discipline seems to be effective in monitoring banks' risk. However, the "too big to fail" theory speaks against this approach (see Toarna and Cojanu, 2015; Rose and Spiegel, 2012).[13] The emergency bailouts of banks and other financial institutions, which are seen as systemically relevant, and the fear of contagion effects, actually carries the risk of moral hazard among the decisive market participants (Liou, 2013), but also on the side of the borrowers (Caprio, 2013). Securitization had also an incentive-reducing, and thus, behaviour-altering effect, in particular on the valuation of counterparty risk (Buiter, 2007; Caprio, 2013) or credit checks (De Michelis, 2009; Caprio, 2013). Overall, several studies describe some process of corruption in business ethics among many market participants (see, for example, Lander et al., 2009). The interbank market collapsed because of market sentiment characterized by insecurity and mistrust, which ultimately resulted in a credit crunch (Welfens, 2008; Caprio, 2013). Welfens (2008) illustrates the interdependence of various crisis factors by explaining the loss of confidence by asymmetric information in the banks' balance-sheets and the lack of transparency due to financial innovations.

2.5. Regulatory shortcomings

In light of the above findings, some reasons for the collapse of the global financial markets can clearly be found on the regulatory level.[14] Wallison (2009), for instance, emphasizes that the opaque US regulation is mainly responsible for triggering the crisis.[15] Swamy (2014) finds evidence that crisis countries were generally subject to weaker regulatory requirements than non-crisis countries. In the case of Europe, similar results can be confirmed by stating that countries with stricter regulations face lower risks of bailouts and other crisis measures. (Hoque, 2013; Maddaloni and Scopelliti, 2019). This would support the theory of risk capital flow toward regulatory arbitrage opportunities. The importance of regulating mortgage servicing is highlighted, for instance, by McNulty et al. (2019). The fact that financial institutes could do business off their balance sheets had been a regulatory shortcoming that firms used to generate regulatory arbitrage (Caprio, 2009). This led to disincentives for various market participants and regulators (Buiter, 2007; Banerjee, 2011). In addition, since regulators also relied on the risk assessments of CRAs, the effect was further intensified (Coffee, 2009; White, 2009b; Banerjee, 2011). Regulatory flaws, such as off-balance transactions, provoked less incentives for proper credit monitoring of mortgage lenders (De Michelis, 2009; Pacces, 2010; Caprio, 2013). As a consequence, mortgages did not remain on the balance sheets of the issuing banks so they could transfer risks and release equity for new businesses (Caprio, 2009). According to Banerjee (2011), a possible explanation for not adequately regulating financial innovations prior to the crisis could be a lack of awareness of these practices within the regulatory authorities' human capital stock.

However, there is still lively debate about the existence of a major period of international market liberalization in the run-up to the crisis (like stated for the US and UK by Coffee (2009), Banerjee (2011) or De Grauwe (2011)). Market liberalization was to some extent politically motivated, such as with public housing policy in the US, such as in regard with public housing policy. For example, the US mortgage business is said to not have been strictly regulated, as revealed by too-low bank capital requirements and the shortcomings in regulating off-balance business (see Lau, 2010; Mazumder and Ahmad, 2010; Kodres and Narain, 2012; Jost, 2008; Binney, 2010; Anginer et al., 2019). In comparison, Buttimer (2011) argues that the US housing market was well regulated, and that this type of regulation was intended by the federal government. According to them, the regulatory failure can be explained by incentive conflicts within the regulatory authorities since they stimulated these developments. Similarly, Pacces (2010) confirms this result through the false expectations and the acceptance of regulatory arbitrage. Equally, Calabria (2009) states that a crisis event had been a matter of regulation failure instead of a deregulation problem.

Undoubtedly, as shown by Caprio (2009), there was already much controversy regarding the Basel regulatory framework in the run-up to the crisis, but also the lowering of banks' minimum reserve standards by the US Federal Reserve and other central banks (Cabral, 2013). In accordance, Rötheli (2010) or Cabral (2013) argue that banks' capital-to-asset ratios were reduced, which in turn led to an increased systemic risk in the financial system. In particular, the capital requirements for securitized products have been too low under Basel, so the above-mentioned incentives were generated (Blundell-Wignall and Atkinson, 2009; Rose and Spiegel, 2012; Cabral, 2013). Hoque (2013) confirms similar results for Europe. According to his findings, countries with tighter Tier 1 capital requirements exhibited less risk. As an example, Kantor and Holdsworth (2010) emphasize the importance of regulating firms' capital structures.

As stated above, uneven features of regulatory frameworks can create an effect known in the literature as regulatory arbitrage (see Blundell-Wignall and Atkinson, 2009; Pacces, 2010; Kroszner and Strahan, 2011). According to Banerjee (2011), this effect leads financial companies to migrate from more strictly regulated markets (such as banks) to less-regulated markets (such as investment

[12] A more generalized view on this aspect is described by Liou (2013) as "weaknesses of corporate governance".

[13] However, in case of cross-border groups for example, Cotterli and Gualandri (2010) argues that some firms are actually "too large to save".

[14] According to Slattery and Nellis (2011), there are two approaches to explain why regulatory weaknesses in financial markets exist. The theory of market failure explains this with the economic advantages of uncontrolled markets, which should only be regulated in cases of imbalances, for example through information asymmetry. The theory of state failure explains the imperfection of regulation with the bounded rationality of regulators due to asymmetric information. There is evidence for both approaches during recent crises.

[15] For a quick view on regulation before the outburst of the crisis, see Caprio (2009).

banks or hedge funds).[16] Thus, financial liberalization, particularly in the US, also promoted weaker regulation on other financial markets to prevent these negative effects. Welfens (2008), for instance, states that about half of the US mortgage market was essentially unregulated. Furthermore, Toarna and Cojanu (2015) argue that the lack of capital control could also have had negative impact from a regulatory point of view. In general, a possible explanation for the failure of supervision is given by Welfens (2008), arguing that, for incentive reasons, there is a strong migration of highly qualified personnel from the regulatory authorities to the private sector.

2.6. EMU design flaws

Nevertheless, there are also factors that can be explained by the shortcomings of the regulatory framework of the EMU or national features in member states. Cotterli and Gualandri (2010), for instance, describe the specific problems of the EMU regarding the regulatory framework as a "problem of the fragmentation of supervision" and "the lack of a single supervisor and a single procedure for dealing with cross-border crises". According to Reichlin (2014), there are four key features of European financial markets, which also explain their sensitivity to the banking crisis. These features are "bank dominated corporate finance, dependence on wholesale funding markets, cross-border financial integration in wholesale but not in retail, and the key role of banks as intermediaries in the government bond markets". In short, Welfens (2008) describes the regulatory framework of the EMU as a loose association of different regulatory authorities.[17] Equally, Giani (2010) argues that European financial supervision and crisis management do not complement each other.

Although there had been favorable developments for certain EMU members, such as the stabilization of credit ratings in peripheral countries, De Grauwe and Ji (2014) argue, that the loss of sovereignty of the member countries made the EMU more sensitive to "self-fulfilling liquidity crises", which can possibly lead to state bankruptcies. Generally, national economies can address domestic economic imbalances through their own policy decisions, for example, by devaluating the domestic currency in case of a crisis. In the context of the EMU, this lack of action also resulted in a divergence of member countries, although because of an "internal devaluation" through wage adjustments or increasing sovereign debts (see Overbeek, 2012). However, the author also argues that the level of debt itself was not the underlying problem, but rather the risk premiums charged on the debt of peripheral countries, which worsened their financial situation even more.

Apart from this, prudential regulation aims to maintain the profitability of a company or a country after a financial shock. As stated above, bank capital requirements were not sufficient to withstand the 2007 shock, with some states even facing sovereign debt issues. Therefore, macroprudential regulation flaws can also be identified as a cause of crisis. Even though Banerjee (2011) doubts the effectiveness of macroprudential regulation because of the supervision's contribution to the emergence of the crisis, Caprio (2009), for instance, describes the negative effects that occur when market participants are qualified to generate regulatory arbitrage by "regulator shopping." As revealed for instance by Ongena et al. (2013), who found evidence for spill-over effects of regulation in the banking sector by their lending activities abroad.

[16] This can be beneficial for both the migrating firms, since they generate competitive advantages over domestic competitors, and the weakly regulated financial markets, which benefit from growth-enhancing capital flows.

[17] Such as, the Committee of European Banking Supervisors (CEBS), the European Commission, the European Banking Committee (EBC) the European Securities Committee (ESC), the European Financial Conglomerates Committee (EFCC) or the European Insurance and Occupational Pension Committee.

Table 1
Overview of policy crisis responses in the aftermath of the GFC.

Policy area	Policy reaction
Financial sector support	Ad-hoc bail-outs Ring fencing of bad assets Recapitalization Provision of lender of last resort facilities Reduced collateral requirements
Fiscal policy	Stimulus and recovery packages Tax cuts Debt haircuts
Monetary policy	Forward guidance Interest rate cuts and negative interest rates Quantitative easing and asset purchase programs
Regulatory reforms in the banking sector	Capital requirements and leverage restrictions Systemic risk Too big to fail institutions and resolution mechanisms Shadow banking Speculative financial products
Regulatory reforms in the insurance industry	Capital requirements Risk assessment Market discipline Supervision and reporting

3. Reactions to the crises

Failure to effectively regulate the financial system provoked the GFC and the SDC, which in turn have triggered different kinds of reactions to this unique period of stress (Andritzky et al., 2019; Trabelsi, 2012). Today, more than a decade later, immediate reactions to the crisis as well as regulatory changes established in the aftermath of the crisis are widely discussed in academics, politics, and popular media. Some claim that crisis induced regulatory measures did not go far enough (see Aizenman, 2009; Jones et al., 2016; Cecchetti and Schoenholtz, 2017), while others warn of over-regulation or over-reaction (see Ferran, 2011; Aizenman, 2009; Davies, 2010). Even though substantial and coordinated regulatory changes were inevitable, political leaders initially focused on crisis mitigation and crisis management following a step-by-step or trial and error approach (see Mayntz, 2013; Drew, 2010; Pavlat, 2009). As summarized and presented in Fig. 1, immediate reactions and long-term responses to the crisis can be structured as follows: rating agency reactions, emergency stabilization efforts of the financial sector, fiscal and monetary policy responses, and long-term regulatory reforms. Inspired by the overviews of Ait-Sahalia et al. (2012) and Blundell-Wignall (2012), Table 1 provides a summary of policy measures referred to in the literature.

3.1. Rating changes and rating agencies

Over the course of the SDC, increased attention was devoted to CRAs and their rating actions pointing towards limited competition in and regulation of the CRA industry, over-dependence on CRAs assessments, nontransparent methodologies, as well as conflicts of interest resulting from the clients soliciting rating-payment models (see, for example, Athavale and Chowdhury, 2015; Papaikonomou, 2010; Utzig, 2010; Bradley, 2009; Bernal et al., 2016).

Essentially, sovereign credit ratings are supposed to reflect a country's probability to default, meaning that a country is unable to meet its debt obligations. In the pre-crisis period, European countries commonly enjoyed high and stable IG credit ratings, resulting in their safe haven status for investments in European

sovereign bonds, despite known structural deficits (Alsakka et al., 2014; Haspolat, 2015; Liapis, 2012; Goodstadt, 2009). However, during the SDC, this assumption was permanently challenged when CRAs began to downgrade government ratings for countries in the European periphery as a reaction to their increasing government expenditures and growing budget deficits (Alsakka et al., 2014). Thereby, CRAs signaled a loss of confidence in these economies. These rating actions play a pivotal role as they predominantly influence borrowing costs in capital markets for states and financial institutions (see Drago and Gallo, 2017; Alsakka et al., 2014; De Bruyckere et al., 2013). Access to funding, particularly affordable funding, is of great importance to any economy as these financial resources stimulate investments and economic growth.

When considering CRA downgrades during the SDC, it becomes evident that sovereign ratings were adjusted according to the contemporary perceived political risk. Early works (see Erb et al., 1996) emphasize the interconnection between political risk, sovereign rating changes, and borrowing costs. As mentioned above, particularly countries in the European periphery faced rating changes over the course of the crisis, namely Cyprus, Greece, Ireland, Italy, Portugal, and Spain. In total, there were 63 notches of downgrades by Moody's between 2008 and 2013 for this group (Boumparis et al., 2017). Greece in particular was severely affected when the country's debt was downgraded to junk status. Although Moody's was found to be more likely to opt for multiple notch downgrades, the other two leading CRAs, S&P and Fitch, acted in a similar manner (Alsakka et al., 2014). Because of rating downgrades, government bond yields rose constantly, increasing borrowing costs for the respective countries (Afonso et al., 2012).

Negative rating changes of sovereign states do not only influence a government's cost of borrowing, but also have a significant impact on the domestic banking sector. Negative rating changes of a sovereign state result in lower capital ratios for domestic banks, hence increasing funding needs and costs (see Drago and Gallo, 2017; De Bruyckere et al., 2013). Moreover, Arezki et al. (2011) and Alsakka et al. (2014) find empirical evidence for a sovereign-bank rating channel during the crisis period. Once a state faced negative rating actions, this trend or bias was also passed on to ratings of domestic financial institutions, which then affected their funding costs as well and potentially limited their access capital markets, a phenomenon that has not been detected in the pre-crisis period. This is particularly true for domestic banks of the aforementioned countries, as these banks hold substantial debt issued by their respective domestic country (see a case study on Italy by Albertazzi et al., 2014). It was found that the debt ratio at the country level is one of the most important drivers of financial contagion between sovereign and bank risks, which is reflected in the rating channel (De Bruyckere et al., 2013). In short, through credit ratings, sovereign risk is transmitted to the domestic banking sector and the domestic economy as a whole (Drago and Gallo, 2017; Alsakka et al., 2014).

Sovereign rating changes are not only transmitted to domestic financial institutions via the rating channel, there is also a spillover effect on the CDS market (Drago and Gallo, 2016). Rating downgrades introduce new information and this so-called information discovery effect impacts CDS markets. Downgrades trigger increasing CDS spreads; however, such spillover effects have not been found in the case of rating upgrades. Through rating changes, CRAs heavily impact financial markets and influence investor decisions (Drago and Gallo, 2016).

Following the severe downgrades European countries experienced, critical voices were raised blaming CRAs for exacerbating the crisis. In this context, reforming the CRA industry has been discussed (Gärtner et al., 2011; Paudyn, 2013; Duan and Van Laere, 2012). As the three major CRAs are all located in the US, it could be argued that the CRA market is characterized by oligopolistic features. Establishing a European CRA, potentially even a public one, was proposed to promote competition (European Parliament, 2016). Duan and Van Laere (2012) question the pro-profit business model of CRA and argue that CRAs are characterized by traits of public goods. According to their empirical analysis, credit rating reform following a public good approach is practicable. Moreover, the introduction of such a business model would eventually stimulate competition in the credit rating industry, whereby competitive pressure would force the conventional for-profit CRA industry to improve their methodology and offerings (Duan and Van Laere, 2012).

Public debate forced European policy makers to take action, so the European Securities and Markets Authority (ESMA) put forward a new regulatory regime regarding CRAs which was introduced in 2012 (see European Commission, 2011; European Securities and Markets Authority, 2017). Intending to improve rating qualities, this regulatory approach requires disclosure of whether a rating analyst issues a rating from within the EU or from a jurisdiction that at least qualifies as "endorsed" (meaning similar rating regimes compared to the EU apply). Through an empirical analysis of 70 countries' sovereign rating actions assigned between 2006 and 2016 by the three major CRAs, Moody's, S&P, and Fitch, Klusak et al. (2019) provide mixed evidence with regard to the impact of a rating analysts' location on rating quality. On the one hand, quality decreases following the introduction of the disclosure rule were detected, for example, ratings by Moody's and Fitch were less informative, possibly because CRAs located in third party countries face less scrutiny compared to local ones. On the other hand, CRA offices located outside the EU aim to build a strong reputation for quality. In short, disclosing an analyst's location does not yield consistent quality improvements in ratings (Klusak et al., 2019). In summary, the close link between country risks and bank risks became evident during the SDC and was reflected in the reactions of CRA, which is especially true for peripheral Europe. In addition to the intense debate on CRAs and their business model, comprehensive regulatory novelties failed to materialize.

3.2. Financial sector support

The subprime crisis seriously weekend the financial sector and many financial institutions, commercial as well as investment banks fell into severe distress, some even went into bankruptcy, creating an elevated level of systemic risk (see White, 2009a; Benczur et al., 2017). As an initial reaction, governments began to bail-out financial institutions and provided them with large-scale capital injections. The first bail-outs took place in Germany and the UK (both 2007) (see Gerard, 2009; Forbes et al., 2013), a well-known example is the Scottish bank HBOS (see Dewing and Russell, 2016). On the other side of the Atlantic, the insurance group AIG was bailed-out in 2008. Other prominent banks affected by the crisis include Lehman Brothers (bankruptcy in 2008) and Bear Sterns (bailed-out by the Fed in 2008 and subsequently sold to JP Morgan Chase) (see Lodge and Wegrich, 2011; Harrington, 2009; Werkmeister, 2010; Davidoff and Zaring, 2009). Bail-outs of such systemically relevant institutions were largely viewed as inevitable to prevent greater disruptions and potentially a collapse of the financial system and unpredictable damage to the real economy. In this respect, the "too big to fail" expression has been popularized by referring to systemically important financial institutions that are usually large and deeply interconnected with others as well as the corporate sector (see Wigger and Buch-Hansen, 2014). Hence, should they fall into distress, they would create impacts on the real economy that are highly unpredictable but without doubt disastrous. For this reason, as an immediate response to the crisis, governments provided financial assistance to these institutions in

the form of bailouts, recapitalization, and purchases of distressed assets.

In the US, the Emergency Economic Stabilization Act of 2008 was signed into law including the Troubled Asset Relief Program containing USD 700 billions for emergency interventions intended for bail-outs and the purchase of distressed assets (see Webel and Murphy, 2008). In the EU, financial sector support in the form of capital injections and asset relief purchases amount to a similar volume. According to the European Commission, EUR 600 billions, which equals 4.6 % of the European GDP, has been spent by governments on financial sector support between 2008 and 2012 (Benczur et al., 2017).[18]

Bail-outs, however, do not come without criticism. Often, high costs for taxpayers (Benczur et al., 2017; Huertas, 2011), anti-trust (White, 2009a) and competition issues (Engel, 2020; Ojo, 2011; Mateus, 2009; Wigger and Buch-Hansen, 2014) as well as arising moral hazards (see Doyran, 2011; Kao, 2011; Avgouleas and Goodhart, 2016) are discussed in this respect. The symbolic message that globally leading institutions require lower business and risk management standards can create moral hazard (Ioannou et al., 2019). Essentially, financial institutions with insufficient risk management are bailed out at the taxpayers' expense, which means they are exempt from the main pillar of capitalism – failure (Umlauft, 2015). As a result, institutions may rely on such forms of governmental support and deliberately take risky positions in the hope of higher returns. Thus, implicit guarantees in the form of bail-outs of financial institutions may set wrong incentives undermining self-discipline and effective risk management (Crotty, 2009; Umlauft, 2015). Simultaneously, in the EU, the high costs associated with bail-outs enhanced fiscal difficulties of certain member states, such as Ireland and Cyprus, thus exemplifying the link between the financial and the sovereign debt crises (Werner, 2014). To overcome this problem, breaking up banks considered "too big to fail" (Umlauft, 2015; Basten and Sánchez Serrano, 2019) or introducing a bail-in mechanism (Avgouleas and Goodhart, 2015, 2016; Berger et al., 2019; Basten and Sánchez Serrano, 2019) were considered as potential solutions. Bail-in refers to bank creditors (i.e. the investors in their financial products) bearing the costs of failing institution's losses or the costs of the restructuring or liquidation in the event of impending insolvency (see Section 4.6.1).

3.3. Fiscal stimulus

To counteract declining consumption and decreasing economic activity, numerous governments considered the Keynesian concept of deficit spending and countercyclical spending programs as immediate responses to the ongoing crisis situation. A popular advocate of such measures has been Paul Krugman, who believes that such programs will prevent deflationary risks and a downward economic spiral (Krugman, 2009).

In Europe, the European Economic Recovery Plan (EERP) worth EUR 200 billions or 1.5 % of the EU GDP was launched in 2008 with the objective to support member states coping with the aftermath of the GFC. The instrument consisted of several different measures intended to revive the economy through short-term measures such as stimulating demand and long-term measures such as strategic investments. Precise measures have been undertaken at both the EU level and national level, which include allowing member states to break with the Stability and Growth Pact requirements, incentives for strategic investments such as energy efficient technologies, interest rate cuts, tax cuts on green technology, scrappage programs, increases in unemployment benefits amongst others (EC, 2008).

The US Congress passed the so-called Economic Stimulus Act of 2008 in the same year, which comprised USD 152 billions intended to avert recession. Measures mainly included tax rebates in the form of checks directly distributed to taxpayers (US-Congress, 2008). The American Recovery and Reinvestment Act of 2009 (more than EUR 787 billions) was launched by combining national stimulus measures, not only limited to tax rebates, but also including programs directed to support struggling homeowners (see Homeowner Affordability and Stability Plan) (US-Congress, 2009; Aubuchon, 2009; Wilson, 2012)

However, views on whether countercyclical fiscal spending managed to alleviate the effects of the 2008-2009 crisis diverge. Freedman et al. (2010) question the effectiveness in the short-run and investigate whether such policy measures yield GDP growth through multiplier effects. They conclude that multiplier effects arise more strongly if paired with supporting monetary stimulus measures and concurrently warn against dangers related to public spending getting out of hand. The above-mentioned European Economic Recovery Plan was quantitatively evaluated by Coenen and Warne (2014) prior to its implementation. It was found that such a fiscal stimulus package could increase the Eurozone GDP to a certain extent, but only for a limited time period and at the expense of further growing sovereign deficits. Fratianni and Marchionne (2009) look at fiscal policy measure announcements investigating the effects of such announcements of fiscal interventions on banks and shareholders by employing an event study methodology. They find that announcements of rescue plans directed at the banking system were associated with positive CRAs, but interventions targeting specific banks showed negative returns. This is attributed to spillover effects occurring in the former. These findings are complimented by Kollmann et al. (2013), who analyze the Eurozone's fiscal policy in the aftermath of the financial crisis from a more general perspective, including the impact of conventional fiscal stimulus measures as well as bank asset losses and government support for banks. They conclude that government support for banks stabilizes output, consumption, and physical investments, making it a promising tool for economic stabilization. Government purchases of goods and services, however, stabilized GDP while crowding out consumption and investment.

Scholars appear to agree that fiscal stimulus measures undertaken in the aftermath of the GFC only yield short term benefits. Ulrich (2011) goes further by claiming that such measures may not only be ineffective but may even encourage improper fiscal spending and endanger fiscal sustainability. Hence, he argues that the European Economic Recovery Plan encouraged member states to breach the EU's fiscal rules outlined in the Maastricht Treaty, resulting in the substantial public indebtedness of several member states. Eventually, this resulted in deteriorated public finances in the region, financial markets questioning the solvency of particularly indebted member states, and costly government bail-out programs, essentially triggering the SDC.

Thus, elevated debt levels as a consequence of fiscal policy measures puts the efficiency of such instruments into question. In particular, it is feared that governments may not be able to repay debts, which in turn would impact borrowing costs and potentially result in unsustainable debt levels and default. Addressing such concerns, Auerbach and Gorodnichenko (2017) find that an expansionary government spending shock does not persistently increase debt-to-GDP levels or borrowing costs. At the same time, the authors point towards the political risks and limits associated with disproportional, aggressive, and wasteful fiscal spending and present the case of Greece and other Southern European countries as examples. These warnings are further underpinned by Alesina et al. (2018), who undertake an empirical study using data from

[18] Wigger and Buch-Hansen (2014) cite the European Commission and mentions EUR 4.5 trillions or 37 % of the EU GDP had been mobilized between 2008 and 2010 in the form of state aid packages for the financial sector.

16 OECD nations for the time frame ranging from 1981 to 2014. They find that the composition of fiscal adjustments as well as the state of the business cycles are crucial when it comes to successfully launching fiscal stimuli programs.

It becomes evident that studies investigating impacts of fiscal policies find mixed results and tend to attribute some mostly short-term positive impacts to fiscal stimulus policies. A balanced, sustainable approach in the long run is recommended rather than haphazard and aggressive spending, which could result in excessive indebtedness.

3.4. Unconventional monetary policy

Similar to the aforementioned fiscal policy measures, extensive monetary policy measures were brought underway to mitigate the impacts of the crisis by preventing shortages of liquidity and declines in lending, thereby securing short term funding and stimulating the economy. Due to the unprecedented extent of the crisis and the limit of conventional monetary measures (i.e., interest rates reached zero), central banks reacted with hitherto unconventional monetary policy measures in order to safeguard financial and economic stability.

In the US, the so-called Term Asset-Backed Securities Loan Facility or Term Auction Facility had been launched whereby the Fed acted as "lender of last resort," supporting market liquidity with the objective to maintain the functionality of the economy. Through these facilities, a total amount of to USD 1.6 trillions in loans was provided to banks by November 2008. Moreover, credit easing measures were brought forward as the Federal Open Market Committee increased the Fed's balance sheet through extensive purchases of mortgage-backed securities. Similar measures were implemented in the European Union during the course of the GFC and the SDC, when some member states faced difficulties refinancing their government debt without third-party support. The primary objectives of monetary policy in the crisis context include lowering borrowing costs for indebted countries and avoiding insolvency of member states (see Buiter and Rahbari, 2012; Roman and Bilan, 2012). According to Dell'Ariccia et al. (2018), the ECB's monetary policy reactions can be divided into three phases: banking sector support as the lender of last resort (2008-2009), government bond purchases to restore the functioning of the market (2010-2012), and extensive asset purchases combined with forward guidance and negative interest rates (since 2013).

In short, both in the US and the EU, unconventional monetary policy measures include forward guidance, negative interest rates, and quantitative easing / credit easing in form of central bank asset purchase programs. The effectiveness of these measures has been evaluated in various studies.

3.4.1. Forward guidance

The term forward guidance refers to a central bank's process of providing market participants with clear information and transparency on intended monetary policy measures, particularly interest rate changes. In theory, clarity and commitment to the development of interest rates in the future will encourage commercial banks to lower their interest rates for an extended period of time as their future access to liquidity at low rates is secured. Consequently, the real economy should have improved access to funding, which encourages investment (See Adam and Billi, 2006; Nakov et al., 2008; Coenen et al., 2013). According to Evans et al. (2012) there are two different ways to communicate forward guidance: Either the central bank communicates its expectations regarding its economic outlook and in accordance with these expectations its monetary policy, or the central bank communicates its commitment to keeping the interest rate below a certain level, regardless of economic development.

In the EU, the ECB initially used forward guidance in July 2013, when the Governing Council informed market participants of its intention to keep the interest rate low for a longer period of time. The exact formulations have been adjusted over time, for example, it has been extended not only to provide information on interest rates, but also its asset purchase programs and general future paths (see Bletzinger and Wieland, 2016). Coenen et al. (2013) deem the approach as effective, as, according to their stochastic simulation, time-based forward guidance results in the desired stimulus. However, they also emphasize that forwarded guidance too far into the future comes with certain risks related to price stability. For this reason, they recommend incorporating a threshold condition for tolerable future inflation. To assess the case of the US and the Fed's forward guidance, Swanson (2017) considers the time period between January 2009 and October 2015, when the federal reserve rate was essentially zero and traditional monetary policy instruments were not applicable. It was found that this policy instrument was effective, particularly in moving Treasury yields and stock prices.

Naturally, forward guidance is not always effective or desirable. Additional communication by the central bank will not necessarily add transparency if market participants regard its commitment to low interest rates as not credible or if they already expect interest rates to remain below a certain level. Moreover, commitment to low interest rates may also signal market participants that the central banks may be concerned about the economic outlook, thereby weighing on sentiment and business confidence (see Dell'Ariccia et al., 2018; Issing, 2014; Gersbach and Hahn, 2008). Regarding the latter, it was shown that market participants view the ECB's forward guidance and communication more as an indication of the stance of the central bank's policy rather than negative macroeconomic outlooks of monetary policy makers (Hubert and Labondance, 2016).

3.4.2. Negative interest rates

With the aim to make borrowing less expensive, interest rates have been lowered in several steps. Moreover, central banks began to intentionally charge negative interest rates on commercial banks' reserves in order to incentivize reduced lending rates, resulting in increased credit supply and preventing liquidity shortages (see Dell'Ariccia et al., 2018; Rostagno et al., 2016; Lemke and Vladu, 2016). Negative interest rates, however, do not come without controversies: that is, they may hurt banks' profitability, which again results in restricted lending, thereby potentially outweighing the policy's benefits (see Bernanke and Reinhart, 2004; Cœuré, 2016). In this context, Cœuré (2016) argues that banks stay profitable through other income channels, such as increases in the value of their fixed income portfolio. Hutchinson and Smets (2017), who review the monetary policy measures implemented by the ECB, conclude that these unprecedented measures have proven to be exceptionally effective (see Turk, 2016; Ilgmann and Menner, 2011; Ait-Sahalia et al., 2012) and that potential side-effects of negative interest rates have been offset by positive effects in the macro-level, such as improved credit quality and intermediation activity.

3.4.3. Quantitative easing and asset purchase programs

In order to increase the pass-through of reduced borrowing costs for commercial banks to the private sector, several quantitative easing programs have been introduced by central banks. Central banks purchase extensive amounts of securities, which are often long-term government bonds. These purchases are financed through the reserve accounts that commercial banks hold at the central bank or new central bank reserves, thereby expanding the central bank's balance sheet. Thus, additional monetary stimuli encourage lending and investment. These purchases further contribute to lower interest rates as demand for fixed-income securities increases

(Dell'Ariccia et al., 2018).[19] The ECB introduced the longer-term refinancing operations (LTROs), the targeted long-term refinancing operations (TLTRO I), a third covered bond purchasing program (CSPP3) and the asset backed securities purchase program (ABSPP) (Hutchinson and Smets, 2017; Cour-Thimann and Winkler, 2012; Gibson et al., 2016). Additionally, the Securities Markets Program (SMP) was launched for sovereign and corporate bond purchases in secondary markets between 2010 and 2012 and had then been superseded by the Outright Monetary Transactions (OMT) program.[20] In the case of Italy, Albertazzi et al. (2014) support the ECB's policy measures, particularly the LTROs and the CBPP. The Euro system's 2011-2012 LTRO is further exploited by Andrade et al. (2019), who provide evidence that the central bank's liquidity injections through the commercial banks' lending channels enhanced credit supply to the real economy during the crisis. Importantly, the authors illustrate that the program did not encourage increased lending exposure to riskier firms. The impact of the ECB's asset purchases on the region's government bond yields are further quantified by De Santis (2020). It was found that the policy approach was indeed highly effective in influencing the financing conditions in the region. The program allowed the ECB to reduce the GDP-weighted 10-year Euro area sovereign yield by 72 basis points, particularly in favor of the more vulnerable member states. Pronobis (2014) compares the ECBs post-crisis non-standard monetary policy to approaches of other central banks. In this context, the ECB's measures are regarded as rather cautious and conservative, and deemed justified. One reason for this observation is the lower amount of assets purchased by the central bank. Furthermore, compared to other central banks, the ECB has been more reluctant to implement regular sovereign debt interventions (Pronobis, 2014; Gros et al., 2012). When quantifying the Fed's QE measures,[21] warrant empirical support for this policy reaction have been found as interest rates diminish, while stock prices, inflation, and economic activity increased (Swanson, 2017; Meinusch and Tillmann, 2016). Overall, because all European countries remained solvent while economic conditions improved, the ECBs' unconventional monetary policy measures were considered sufficient and justified.

3.5. Post-crisis regulatory reality

Besides immediate policy responses with direct damage containment and mitigation objectives, lasting regulatory changes and novelties were deemed indispensable in order to make financial institutions, the financial industry, and the financial system more resilient, particularly so that taxpayers will not have to bear the cost of a crisis in the future (Roncaglia, 2010). It was found that the severity of the crisis did not trigger regulatory reforms per se, but rather that strong state interventions during the crisis, amongst other factors, have been a precondition for extensive regulatory responses after the crisis (Young and Park, 2013).[22] In the EU, it was important to design appropriate but somewhat flexible rules adoptable to the transnational organization and its cross-border banking characteristics (Murgescu, 2011; De la Mata Muñoz, 2010). Therefore, laws have been adjusted, new guidelines and frameworks have been formulated, and over time, the architecture of the financial system has been redesigned (Daniela et al., 2010). At the EU level alone, more than forty pieces of legislation on the financial service sector were adopted between 2008 and 2018 (Emond and Kunertová, 2019).

In response to the economic and financial crisis, regulatory actions were discussed on a global level during the G20 summits in Washington (2008), London, and Pittsburgh (both 2009). It was decided to focus on six key policy areas (see Helleiner and Pagliari, 2009; Nolle, 2012; Véron, 2014; Negrilˇa, 2009; Avgouleas, 2009b; Davies, 2010; Sarcinelli, 2010; White, 2014; De Vincenzo et al., 2010; Duffie, 2018)

- Introduction of capital and liquidity standards to guarantee resilient financial institutions and to discourage excessive leverage
- Formulation of resolution regimes for systemically important banks to avoid the too-big-to fail view and unreasonable risk-taking
- Regulation of derivatives markets so that systematic risk related to Over-The-Counter (OTC) derivatives is eliminated
- Regulation of the shadow banking system including tax havens, money laundering, corruption etc.
- Implementation of new compensation standards that discourage excessive risk taking and instead encourage long-term value creation
- Implementation of high quality, global accounting standards

Reforms have been proposed by the Basel Committee on Banking Supervision in form of the Basel III Reform (2010) (see Peihani, 2015). In the United States, regulatory reforms were introduced in the same year through the Consumer Protection Act and the Dodd-Frank Wall Street Reform. In the European Union, comparable efforts were undertaken by the European System Risk Board and the European System of Financial Supervision in 2010. Importantly, these initiatives are consistent in their stance that imbalances between market discipline and supervisory oversight need to be overcome (see Panico et al., 2013).

3.5.1. The banking sector

To prevent costly government bail-out of distressed banks and ensure solvency of financial institutions and the financial system as a whole, this agenda has been implemented through a series of regulatory reforms (see Table 2). Therefore, policymakers, legislators, regulators, and supervisors proposed numerous measures of which the most important are listed below, mainly Basel III reforms (Baker et al., 2017; Isebor, 2014; Montalbano, 2015; Oliveira and Raposo, 2020), as well as several directives, such as the Capital Requirement Directive at the EU-level (Montalbano, 2015; Zapodeanu et al., 2010; Mihai Yiannaki, 2009) or the Dodd-Frank Act (Hoshi, 2011; Yellen, 2011; Eichengreen, 2010; Kao, 2011; Omarova, 2011; Rex, 2018; McNulty et al., 2019) and the Regulation SB SEF (Schuster, 2012) in the US. While internal control mechanisms and market discipline needed to be addressed (Couppey-Soubeyran, 2010), financial stability as a whole was of primary focus. Reforms in the banking sector and bank supervision are among the most visible following the financial crisis (Denk and Gomes, 2017).

Reviewing financial institutions' capital and liquidity requirements[23] revealed severe deficiencies in the financial system, as Basel II requirements had proven not to be expedient (see Daniela et al., 2010; Ashraf et al., 2020). For example, under Basel II, certain banks may apply internally developed risk models to determine their capital requirements. Considering that these models are often flawed, these requirements may not be sufficient

[19] Theoretical models have been proposed by: Gertler and Karadi (2011), Chen et al. (2012).

[20] An empirical analysis of the SMP's impacts is provided by Eser and Schwaab (2016) Gibson et al. (2014) and Gibson et al. (2016); the OMT programmer's impact has been reviewed by Falagiarda and Reitz (2015).

[21] Further details on the Fed's large-scale asset purchases (LSAP) and its effects in an international context are presented by Bauer and Neely (2014).

[22] Further research on the likelihood of reforms is provided by Agnello et al. (2015).

[23] Pre-crisis capital requirements have been presented by (Panico et al., 2013; Walter, 2019) for the case of the US and Heynderickx et al. (2016) for the case of the EU.

Table 2
Evolution of regulatory measures addressing the banking sector in the EU (2010–2017).

Year	Regulatory measure	Discussion in
2010	Establishment of the European System of Financial Supervision (EFSF) including: European Supervisory Authority, European Systemic Risk Board and Member States' Supervisory Authorities	Yurtsever (2011); Papadopoulos (2015)
2012	Introduction of European Market Infrastructure Regulation (EMIR) concerning derivate trading, especially so-called Over-the-Counter (OTC)	Quaglia (2013); Pagliari (2013); Gualandri et al. (2009); Ojo (2013); Gualandri et al. (2009); Murphy (2020)
2012	Establishment of the European Stability Mechanism (ESM) which replaces the European Financial Stability Facility	Bauer and Herz (2020); Howarth and Spendzharova (2019)
2013	Introduction of the Capital Requirements Regulation (CRR) and Capital Requirements Directive (CRD) IV in order to transpose the Basel III Accord into EU law	Benczur et al. (2017); Dietrich et al. (2014); Quaglia (2013); Tröger (2018)
2013	Implementation of the Single Supervisory Mechanism (SSM)	Kern (2013); Busch and Teubner (2019); Cassola et al. (2019); Babis (2014); Micossi et al. (2013)
2014	Release of the Bank Recovery and Resolution Directive (BRRD), which has to be implemented in national legislations by 2015	Benczur et al. (2017); Covi and Eydam (2018); Kern (2013); Micossi et al. (2013); Tröger (2018)
2014	Implementation of the Single Resolution Mechanism	Benczur et al. (2017); Howarth and Quaglia (2014)
2014	Introduction of the Markets in Financial Instruments Directive II (MiFID II), which became effective in 2017	Yeoh (2019), Gomber and Nassauer (2014)
2015	Specializations of the Minimum Requirement for Own Funds and Eligible Liabilities (MREL) are published	Tröger (2020); Best et al. (2017); Adolff and Häller (2019)
2017	Formulation of European Union Securitization Regulation and creation of a European framework for simple, transparent, and standardized securitization	Loukanari and Berardo (2019); Kravchuk et al. (2017); Schwarcz (2015)

(Gerding, 2009; Mihai Yiannaki, 2009). The approach of setting capital requirements laid out in Basel II depends on the proper behavior of banks and third parties like CRAs. However, this form of market-based risk assessment has proven to be insufficient as market participants have not been able to adequately manage their risk exposure (De Mendonca and Deos, 2009). Moreover, when comparing countries hit by the crisis to those impacted to a lesser extent, it becomes evident that the former group had much more stringent and lower capital ratios in place (Cihak et al., 2012). Imposing minimum capital requirements for financial institutions is believed to reduce their leverage and thus their risks of bankruptcies. Overall, stronger capital requirements are associated with greater stability in the banking sector (Lee and Lu, 2015). In this context, Basel III was introduced with the objective of imposing stricter capital requirements set by the regulator (Anagnostopoulos and Kabeega, 2019).

The costly bail-out and the lack of orderly resolution processes during the financial crisis made it clear to legislators that such processes needed to be formulated specifically for systemically important banks, which were considered "too big to fail" during the crisis. Improved resolution authority was especially demanded for the US, where the crisis originated and where some of the largest banks were based (Vaughan, 2009). One of the primary concerns was to shield taxpayer money from future crises (Panico et al., 2013; Carstensen, 2013; Sironi, 2018). Regulatory solutions on how to establish orderly resolution mechanisms were proposed in the so-called Squam Lake report and were later addressed in the Dodd Frank Act (Hoshi, 2011). In the EU, bank resolution policies were introduced through the establishment of the total loss absorbing capacity (TLAC) and Minimum Requirements for Own Funds and Eligible Assets (MREL) (Sironi, 2018; Quaglia and Spendzharova, 2018).

OTC derivatives do not just fulfill a useful role in capital markets to transfer risks, they were also used as speculative instrument and allowed for significantly increased leverages, thereby contributing to financial turmoil during the GFC. Because OTC derivatives in the pre-crisis period were commonly traded in the absence of clearing houses in the unregulated market, there was a great degree of opacity (Murphy, 2020). Comprehensive regulations of the derivatives market, as proposed during the G20 summit, were viewed as key points for reforms in the US and the EU (Mateus, 2009). For example, the use of central counterparties and the clearing of some OTC derivatives were established in an initial attempt to regulate the market. This reduced dealers' exposure to each other, but at the same time their exposure to the central counterparties was even greater, making this first regulatory approach insufficient (Murphy, 2020).

It was not only encouraged that regulatory reforms target the formal financial system, but also to touch upon the shadow banking system. Considering that financial intermediaries in the shadow banking system largely contributed to the expansion of housing credits prior to the crisis, it seems inevitable to regulate hitherto unregulated market participants such as hedge funds, as well as unregulated products like unlisted derivatives. However, the Dodd Frank Wall Street Reform and the Consumer Protection Act did not sufficiently address this problem (Tarullo, 2019; Tropeano, 2011).

Besides lax regulation and increased trading of derivatives, fair value accounting standards used in the US contributed to the turmoil of the crisis and consequently needed to be addressed by legislators (Masood et al., 2010). Additionally, executive compensation schemes have been reviewed with no less than seven different initiatives being discussed in the US (Verret, 2009) even though the sheer amount of salaries and bonuses played a subordinate role (Ashby, 2011; Simoneti, 2010; Ruppel, 2009). Compensation schemes were viewed critically, in particular regarding the incentives set by the system (Ellis et al., 2014). While both topics are widely recognized as crucial to efficient regulatory legislation, the literature in this respect is rather scarce.

Intending to publish a holistic assessment on the evolution of banking regulation in the post-financial crisis era, Sironi (2018) and Panico et al. (2013) provide a detailed analysis and discussion of the Basel III and the newly established bank resolution policies (TLAC and MREL).[24] According to the authors, these measures resulted in a significant increase in the amount and quality of equity capital for banks due to new liquidity and leverage requirements. Moreover, the methodology and instruments that calculate these requirements have been improved. Through the introduction of a bail-in mechanism for banks' liabilities, it is less likely that taxpayers will face the burden of a government bail-out. Threats to the stability of the financial system have not yet been fully eliminated. According to Sironi (2018), shortcomings are interlinked with the long-term sustainability of the financial industry, meaning that the overall profitability of banks is not sustainable. In this context, the author identifies the so-called sovereign-banks doom-loop describing the close connection between the two. A future recession threatening the well-being of the sovereign and the domestic economy could

[24] Overviews on the evolution of financial regulation covering both, the pre- and post-crisis period have been published by Oreiro (2013) and Forsyth (2015).

Table 3
The evolutionary stages in the transition from Solvency I to II (2001–2018).

Year	Regulatory measure	Discussion in
1970s	Introduction of Solvency I – insurance regulation across European member states	Ellis (1990); Finsinger and Schmid (1994); Konrath (1996)
2001	Solvency II process is launched by the European Commission with the aim to introduce a single solvency system applicable for European insurers across all member states and to incorporate new methods of risk assessment	Beckmann et al. (2003); Eling et al. (2007)
2002	Publication of the Sharma Report on various regulatory tools available to the regulator	London Working Group (2002); Eling et al. (2007); Doff (2008)
2007	Solvency II proposal is adopted by the European and is supposed to come into force in 2012	Doff (2008); Elderfield (2009); Schuckmann (2007)
2009	Report "Lessons learned from the crisis" is published suggesting that Solvency II must be adjusted due to recent developments	CEIOPS (2009)
2009	Official publication of a compromised Solvency II framework Directive text	EU (2009); Huerta De Soto (2009); Gatzert and Wesker (2012)
2011	The European Insurance and Occupational Pensions Authority (EIOPA) is established	Gal and Gründl (2017); Van Hulle (2011); Nouy (2012)
2011	Omnibus II Directive amending the Solvency II Framework Directive is adopted by the European Commission with the objective to align the Framework with the Lisbon Treaty and the new supervisory structure of the EU; the target date is revised to January 2013	Peleckienėa and Peleckisa (2014)
2014	Omnibus II is approved by the European Parliament	Doff (2016); Rae et al. (2018)
2016	Solvency II is implemented	Doff (2016); Rae et al. (2018); Pradier and Chneiweiss (2017); Swain and Swallow (2015)
2018	EIOPA proposes a review of Solvency II	EC (2019); Pelkiewicz et al. (2020)

still lead to a widespread banking crisis because bank profitability depends upon the well-being of the economy and its lending policy is aligned with economic cycles. Overall, the newly established regulatory requirements do not manage to curb this kind of procyclicality.

Despite numerous legislative changes, many critics argued at the time that the reforms were not strong enough. Generally, regulatory efforts are still ongoing, and certain topics have not been addressed yet, such as, shadow banking (see also Tarullo, 2019; Tropeano, 2011; Thiemann et al., 2018; Rixen, 2013), financial transaction tax (see Page, 2010), and the European deposit guarantee scheme. Whether the implementation of these newly established regulatory provisions is sufficient to prevent a financial crisis naturally depends on regulatory effectiveness and is thus up to debate.

3.5.2. *The insurance industry*

Even though the financial crisis is generally regarded as a banking crisis caused by flawed compensation schemes and weak banking regulations (see Ashby, 2011), the insurance industry and their clients were deeply affected by the crisis through their large investment portfolios (particularly portfolios of life insurances), rating downgrades, as well as credit, market and systemic risks (Schich, 2010). For this reason, the aim was to improve the regulatory frameworks of the insurance industry and protect the sector from systemic risks (Eling and Schmeiser, 2010). In view of the recent crises, it must be noted that the extremely low long-term interest rates that are also a result of the monetary policy measures to combat the problems have created some problems for the life insurance industry in Europe (Basse et al., 2014; Berdin and Gründl, 2015). However, these developments also seem to show that Solvency II is a huge step in the right direction (at least in comparison to Solvency I) (see Table 3).

Prior the establishment of Solvency II, the framework in place was Solvency I (enforced in the 1970s), which was largely criticized for not properly accounting for different types of risks, such as market, operational, or credit risks in capital requirements. This resulted in inaccurately assessed risks and, consequently, problems related to optimal capital allocation in relation to risks taken by insurers. Moreover, there is no harmonized methodology among EU member states on how to adequately assess such risks (Rae et al., 2018). Therefore, the EU renewed its legal frameworks with the Solvency II directive superseding Solvency I. Solvency II was initially passed in 2009 by the European Parliament, but changes were made in 2016 after some of the program's shortcomings became evident. In 2014, the Omnibus II Directive was passed by the European Parliament as an amendment to Solvency II, which defined the role of the European Insurance and Occupational Pension Authority (EIOPA) to guarantee law enforcement as well as accounting and valuation technicalities. Details on the evolution of the Solvency II Framework Directive have been presented by Eling et al. (2007), Jones (2014), and Rae et al. (2018). In short, Solvency II seeks four main objectives: the establishment of a greater degree of integration and harmonization in the European insurance market, the improvement the protection of policyholders and beneficiaries, effective general risk management, and a greater degree of financial stability (Doff, 2016; Rae et al., 2018; Hopt, 2013).

4. Recommendation to prevent future crisis

In order to reduce the risk of similar crisis scenarios, it is necessary to consider what changes in existing regulations are needed. Otherwise, confidence in the stability of financial markets is threatened. When considering the present economic situation, this appears to be of utmost importance: high indebtedness and rising government budget deficits due to increased public spending as a response to the COVID-19 pandemic (see Hale et al., 2020; Fornaro and Wolf, 2020), the technical recession in Italy, the contracting economy in Germany since the second quarter of 2019, and stagnating growth in other parts of Europe are warning signals for an upcoming economic downturn. An economic environment with low inflation, low growth rates, and ultra-low interest rates intensifies these risks and pose serious difficulties to the banking and financial service industry. Thus, a robust regulatory framework for the financial and insurance industries is crucial. This article showed that the pre-crisis financial market architecture, immediate market movements, and market participants' reactions to a crisis impact regulators' agendas and inspire new regulatory frameworks. Academic literature addresses the remaining regulatory shortcomings, which urgently need to be addressed to prevent crisis in the future. Fig. 1 clusters these regulatory shortcomings and presents an overview of fields of research in this context while linking recommendations to causes of the crisis and policy reactions. In the following, important policy recommendations to overcome these shortcomings are presented.

4.1. *International cooperation*

Undoubtedly, the outlined crisis is of global scope, even though it originated in the US subprime market. Through contagion effects,

severe economic harm hit foreign financial institutions, insurers, investors, and economies. However, despite the cross-border effects of the crisis, consolidated trans-national actions during the crisis were rare. For example, the resolution of Lehman Brothers and Fortis as well as the bailouts of Bear Stearns and RBS were all carried out by the home country of the respective institutions (Avgouleas et al., 2013; Davidoff and Zaring, 2009). Even at the EU level, rescue operations were initially driven by national efforts, as the EU did not have sufficient financial resources (Dabrowski, 2010; Posner and Véron, 2010). Owing to its unprecedented scale, a joint and coordinated international response as well as expanded international cooperation to regulate financial markets, including the banking and the insurance sector, were proposed (Langevoort, 2010; Leong, 2010; Masciandaro and Quintyn, 2010). The G20 emerged as a key body of discussion among heads of state, making the forum stronger than before (Moshirian, 2011). Addressing the financial architecture jointly and setting transnational regulatory frameworks became apparent and essential to impede loopholes and regulatory arbitrage (Masera, 2010). This is important since most regulatory novelties introduced in the preceding century followed a national approach. Additionally, a greater degree of globally integrated financial markets, including internationally ratified agreements and a sufficient international exchange of information, is desirable to achieve transnational financial stability (Moshirian, 2011; Von Bomhard, 2010).

Aiming to unify banking supervision at EU level, the Banking Union was created and included the establishment of the Single Supervisory Mechanism (SSM) (Laguna De Paz, 2019). Still, not all supervisory tasks have been transferred to the European level; instead, national authorities also supervise parts of the financial sector, adding a great degree of complexity to the new system (Laguna De Paz, 2019). With a focus on integration and through its single rulebook, the SSM's design intends to limit national supervisors' tendencies to favor their domestic banks. Self-interest of member states and their domestic banks is viewed as problematic when aspiring an effective and legitimate European financial and economic system based on shared interests (Groenleer et al., 2014). However, the single rulebook consists of different directives, still allowing room for national legislation and essentially different level playing fields (Laguna De Paz, 2019). Therefore, creating fairer competition in a single market is desirable (Monnet et al., 2019).

An important step in the direction of harmonized financial markets in the EU was achieved through the European passport system, which allows dually licensed financial intermediaries of one member state to operate in another member state without the need to obtain additional regulatory approval. Therefore, market access within the region is made easier and the regulatory burden on companies is reduced (Pistor, 2010). Granting similar privileges to non-EU countries, however, bears the risk of importing instabilities in the case of less stringent regulatory standards in the foreign country. For this reason, many of the EU's post-crisis financial regulations contain so-called equivalence clauses guaranteeing that foreign companies providing services in the EU or working with EU counterparts will be subject to EU regulation in addition to their domestic regulatory requirements. As EU legislation may be more comprehensive, equivalence clauses were drafted to promote equal competition and to shield the region from foreign financial instability (Quaglia, 2015). Clearly, with financial institutions and intermediaries operating transnationally, these risk patterns need to be addressed (Pistor, 2010).

At the international level, there is a lack of incentives for deep and binding international financial regulation. Insufficient commitments toward institution building or enforcement mechanisms at the international level as well as dominant domestic political positions, in the US for example, prevent the passing of genuine reforms (Leong, 2010). Similarly, the UK and the City of London prevented several strategic reforms, and the EU was not willing to actively expend its political control in international finance (Bieling, 2014). Moreover, the sheer mass of the existing complex and diverse legal structures that control bank solvency hinder harmonization (Avgouleas et al., 2013). As full-fledged integration appears to be unattainable, softer and more flexible efforts may still advance transnational financial regulation (Leong, 2010). Pistor (2010) proposes cooperative regulation of international financial markets with emphasis on effect-based jurisdiction. Certain risks are unique to specific markets and are thus unlikely to be regulated in internationally operating financial institutions' domestic laws. Through effect-based regulation, the jurisdiction where foreign financial intermediaries operate would have the power to regulate their activities, particularly if these activities have systemic effects on the local financial system.

Calls for global solvency standards have also been proposed with respect to the insurance sector, because like financial institutions, these companies provide their services across several jurisdictions. For this reason, domestically driven regulatory reforms may not be sufficient to adequately protect against the contagion effects of a future crisis on the scale of the 2008 great financial crisis. The European Solvency II approach may function as a starting point for a potential global solvency standard (Von Bomhard, 2010).

4.2. EMU governance and supervisory architecture

The incomplete governance architecture of the EU and EMU became especially apparent over the course of the financial crisis initially when member states could not bail-out distressed domestic institutions due to insolvency risks. Holding on to the idea of a single currency, economic integration was gradually deepened through sequentially adopted incremental reforms (see Jones et al., 2016). To meet expectations for extensive architectural and governance reform in the EMU, great efforts have been made to align regulatory frameworks of member states and strengthen a centralized institutional set-up for banking regulation, thereby progressing towards deeper financial integration in the region (see Masciandaro, 2010; Lannoo, 2011).

Considering that supervisory failure has been identified as one of the prime factors contributing to the crisis and that supervisory unification, amongst other factors, bolsters the soundness of financial institutions (Doumpos et al., 2015), the importance of a financial system's architecture is an important factor of safeguarding financial stability (Allen et al., 2012b). Admittedly, views on the optimal supervisory set-up and especially the role of central banks are divided (Masciandaro and Quintyn, 2016). While De Grauwe et al. (2017) argues for the involvement of central banks in bank supervision, Brunnermeier et al. (2009) and Sohn and Vyshnevskyi (2017) advocate for a so-called "twin peak model" thus essentially entrusting central banks with macroprudential regulation. Masciandaro et al. (2013) conclude that consolidation in supervision is negatively correlated with economic resilience, while central bank involvement in supervision has no significant impact on such. In this respect, the crisis triggered reforms in the EMU architecture because of shortcomings in microprudential regulation (Harnay and Scialom, 2016). To ensure microprudential regulation at the EU level, three supranational bodies were created: the European Banking Authority (EBA) (formed in 2011), the European Securities and Markets Authority (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA). The European Systemic Risk Board (ESRB) has been entrusted with macroprudential supervision (Curcio et al., 2017). Creating such an institutional triangle is sometimes viewed as a simple upgrade of the existing supervisory system, missing the opportunity to move to a truly holistic regulatory regime at the EU level. Cross-sectoral risk may remain undetected (Ringe et al., 2019). Moreover, due to multilevel

complexity, banks tend to engage more closely with national regulators instead of the European Banking Authority, which may limit the efficacy of agency governance for banks in the EU and hamper the development of appropriate EU regulatory standards (Coen and Salter, 2020). For this reason, a greater degree of collaboration at the EU level between different national and regional bodies is recommended to ensure smooth and efficient operation of the supervisory system (Lener, 2013).

Besides the integration efforts taken in the aftermath of both crisis, reforms remain largely incomplete and comprehensive as far reaching solutions have not been established in many areas. Jones et al. (2016) explains that even though flaws of the EMU governance architecture became evident during the crisis period, diverse preferences of member states and intergovernmental bargaining often only resulted in a lowest common denominator agreement resulting in partial solutions and a still incomplete EMU. European integration may have advanced during the crisis, but it clearly did not use it to its fullest potential.

Effective regulatory governance ensuring enforcement of compliance with regulatory requirements presents a challenge, particularly considering the growing number and complexity of applicable regulations which evolved after the great financial crisis. It should be noted that compliance and effective enforcement of regulatory frameworks are just as important as how the frameworks work to maintain financial stability; otherwise, the stability of the banking system is at stake (Chaikovska, 2019a,b).

4.3. Fiscal discipline

Debates surrounding the resolution of the sovereign debt crises repeatedly centered around the topic of whether austerity policies offer the solution or aggravate the problem (Begg, 2013; Bergman and Hutchison, 2015). Clearly, in the EMU, the importance of a sustainable growth model, sufficient fiscal rules combined with fiscal discipline as well as fiscal consolidation is recommended to prevent spikes in public debt levels (Anderson et al., 2014; Bergman et al., 2016). However, putting too much pressure on countries facing deficits bears risks, such as the creation of a downward spiral and lack of focus on the injection of structural reforms targeting the causes of imbalances (Begg, 2013). There is a fine line between encouraging fiscal consolidation of public finances designed in a growth-friendly manner and creating an overly harsh disciplinary force (De Grauwe and Ji, 2014; De Grauwe and Foresti, 2016). While some find that nations' debt-to-GDP levels exceeding 90 per cent are affected by impeded growth rates (see Reinhart and Rogoff, 2010), recent works suggest that higher debt levels do not automatically reduce economic activity (see Amann and Middleditch, 2020). Essentially, considering the nature of budget cuts and fiscal consolidation measures seems crucial. For example, it was found that cuts in public sector salaries as well as increased public investments had expansionary effects (Maşca et al., 2015) Examples of appropriate policy recommendations include the use of VAT taxes, transfers, and government absorptions, all of which combined with growth-oriented structural reforms in all member states (Anderson et al., 2014; Maşca et al., 2015). As Catrina (2012) highlights, uncoordinated budget cuts could do more harm than good. It is recommended to opt for a more stabilized and balanced structure of public expenditure instead of a maintaining the public debt level at zero at all costs. This means finding a way of sustainably managing public expenditure over the economic cycle with targeted fiscal stimulus packages. Any abrupt adjustment would undermine the catching-up process, that especially newer European member states are still going through. Similarly, Freedman et al. (2010) cautiously selected fiscal stimulus packages combined with supporting monetary measures in times of acute stress. In the medium-term, budget deficits and public debt should not get out of hand, so short-term benefits are in line with the long-term costs of these measures. It was even found that the importance of fiscal discipline may have been overstated during the debate on the SDC. Empirical evidence on a negative causal link between sovereign debt levels and economic growth is mixed.

Due to the severity of the SDC and the unprecedented circumstances, solutions discussed also go beyond the suggestion to combine well-balanced public finances with greater fiscal discipline and sustainable growth measures. Following the concept of unconventional monetary policy, Werner (2014) calls for unconventional fiscal measures to be considered in sovereign debt management. In contrast to the lending approach taken by the Troika, the so-called enhanced debt management accounts for demand simulation components through alternative funding tools, such as issuing non-tradable debt, which in essence is equivalent a bank loan contract. Using such an instrument could offer a number of advantages, among them being the ability to raise borrowed funds at cheaper interest rates compared to regular sovereign bonds. It would also not have to be marked by the market, and such an instrument would not require a rating from a CRA. In addition to stimulating domestic demand, it is proposed to issue such a debt instrument solely domestically to exclude foreign investors. Consequently, when governments borrow through these kinds of domestic bank loans, lending banks earn returns so that credit creation may boost nominal GDP growth, which is then associated with improving debt-to-GDP ratios. If such a mechanism could be successfully implemented and used by EU member states' debt management offices, it may solve the funding problems of crisis-affected countries while stimulating demand and stabilizing banking.

4.4. Credit rating agencies

Even though CRAs are considered an essential element of regulatory frameworks in the banking sector (Liapis, 2012), they and ratings themselves played a role in the development of the crisis, resulting in criticism towards their business models and methodology (as discussed in Duan and Van Laere, 2012; Eijffinger, 2012; Papaikonomou, 2010). However, besides criticism, CRAs still do not disclose their methodology or explain how they reach their conclusions (Thalassinos and Thalassinos, 2018). It is argued that CRAs may be more lenient before markets become distressed but become more severe afterwards. For instance, with regard to the SDC, it is argued that CRAs did not appropriately account for fundamentals such as public finance imbalances, and that assigned rating downgrades were arbitrary and did not properly reflect reality (Gärtner and Griesbach, 2017). Hence, downgrades assigned during crises have not been transparent (Eijffinger, 2012). Avoiding another financial crisis clearly requires transparent, reliable, and sustainable rating assignments (Papaikonomou, 2010). For this reason, CRAs business models, transparency regarding their methodology, and their objectivity is deemed necessary. Based on this argument, policy recommendations target increased competition in the CRA industry (Utzig, 2010), which could be achieved through the establishment of a greater number of smaller CRAs, an internationally competitive European rating agency, or delegating sovereign credit ratings to the ECB. Each of these options has their pros and cons, but according to Thalassinos and Thalassinos (2018), establishing a European rating agency is the only feasible option that could improve both transparency and rating quality. In this context, Drago and Gallo (2016) emphasize the importance of accounting for rating changes from a public finance view and with regard to overall financial stability, which also supports the argument outlined above.

Similar recommendations are provided by Rötheli (2010), who points out that CRA initially conveyed a false sense of security prior

to the crisis. They also recommend that CRA should be required to provide investors with more transparency, for example, by publishing measures of accuracy of individual estimates. This would allow investors to improve their own risk evaluation of increasingly more complex financial products.[25]

4.5. Contagions effects and systemic risk

The GFC and the SDC made market participants even more aware of the internationally interconnected financial systems (Yadav, 2010) and systemic risk spillovers between financial institutions (see Pino and Sharma, 2019; Echevarria Icaza, 2017; Omarova, 2012), financial intermediaries (see Begg, 2009), insurers (Düll et al., 2017; Bernal et al., 2014) as well as sovereigns (see Fasiangova and Haiss, 2009) and vice versa. Consequently, policymakers urged regulators to focus on systemic risk and contagion effect mitigation, including both the financial and insurance industries (Vaughan, 2009; Avgouleas, 2009a; Abolo, 2008). This is of predominant importance for the member states of the Eurozone, which are highly interconnected through their common currency and monetary policy. However, this should not discourage regional integration in the European financial sector. Policy makers should still be aware of risks related to financial contagions (Drago and Gallo, 2017; Masciandaro et al., 2013). Relevant measures and tools to address systemic risk include sufficient liquidity buffers, as well as macroprudential supervision.

Policy recommendations aiming to reduce contagion effects and system risk spillovers advocate sufficient liquidity buffers of high-quality assets. However, the results of whether the provisions implemented under Basel III are sufficient vary. Additionally, the regulatory set up and supervisory architecture is reviewed, with scholars pointing out that the transnational character of financial markets should be reflected here (see sections 4.2 and 4.3 of this article).

De Bruyckere et al. (2013) outline three areas of action to alleviate contagion effects between financial institutions and sovereign states. First, banks should be more robust. Second, public finances should be more durable. Finally, action should be taken to weaken the links between financial institutions and sovereign states. Essentially, the Basel III directive has been formulated with these points in mind, which is why the authors support the directive as well as stricter capital requirements in general. Moreover, they advocate the establishment of a Banking Union in the EMU (for example, joint bank supervision, deposit insurance, a bank resolution mechanism, and burden sharing arrangements (see Goodhart, 2014; Honkapohja, 2014; Howarth and Quaglia, 2015; Lannoo, 2013; Prisecaru, 2014; Véron and Wolff, 2013; Constâncio, 2014; Kudrna, 2016). Paltalidis et al. (2015) partly disagree. According to their empirical analysis, the new capital requirements did not achieve the intended reduction of systemic risk contagion effects. For this reason, it is suggested to introduce additional policies that make the financial sector more resilient, particularly in southern Europe. Similarly, Reichlin (2014) emphasizes that the Eurozone is characterized by an especially strong correlation between sovereign states and banks risks due to its supranational set up, making member states particularly vulnerable to contagion effects. Thus, it is recommended to develop tools that address solvency problems and safe assets more efficiently.

Simultaneously, as outlined in parts 4.2 and 4.3 of this article, scholars also recommend addressing the institutional set-up and design of regulatory agencies and financial institutions. With systemic failure of financial regulation and sweeping contagion effects contributing to the crisis, a review of the institutional set-up and design of regulatory supervision seems feasible (Avgouleas, 2009a; Masciandaro et al., 2011). Levine (2012) finds that a fundamental weakness lies in the absence of checks and balances for elected representatives and the public. Consequently, there is no mechanism to induce reforms and no incentive for regulators to act in the best interest of the public. While defining an effective supervisory system ex-ante is difficult, the importance of transparency and accountability of an independent supervisory body is crucial (Amri and Kocher, 2012; Sohn and Vyshnevskyi, 2017). In addition, more than 10 years after the crisis, the "too big to fail" predicament has not been properly addressed for banks, resulting in large interconnected banks still being able to trigger the same avalanche effects as in 2008, although governments are now aware of these increasing systemic risks (Ioannou et al., 2019; Quaglia, 2015; Gordon and Ringe, 2015).

In the pre-crisis period, banking supervision did not explicitly account for these above mentioned form of interconnected financial markets and instead focused on the supervision of individual institutions, thus neglecting macroprudential supervision (Den Butter, 2010). Following the financial crisis, preventive measures in the form of macroprudential policies, however, became much more prominent compared to the prevailing view of the pre-crisis period favoring ex-ante crisis interventions (Jeanne and Korinek, 2020). However, Stellinga (2020) emphasizes that macroprudential and countercyclical policy measures, which have been widely viewed as solutions to boom-bust patterns in financial markets (see Baker, 2015; Yellen, 2011; Di Iasio, 2013; Eidenberger et al., 2014; Suarez, 2010; Lothian, 2012; Ojo, 2016; Zamorski and Lee, 2015; Galati and Moessner, 2013; Staikouras and Triantopoulos, 2016; Pooran, 2009; Mertzanis, 2010; Garicano and Lastra, 2010; Ruščáková and Semančíková, 2016), are an improvement, but have not been sufficiently incorporated in regulatory reforms. Partly because there are no criteria on when to activate or deactivate specific instruments and partly because policy makers have failed to clearly delegate responsibilities to supervisors and firms. In the case of the US Financial Stability Oversight Council, it was found that its macroprudential regimes are not sufficiently equipped to prevent a crisis similar to the GFC because of its limited ability to react to fast paced financial sector developments (Aikman et al., 2019). Ultimately, macroprudential policy, in its current position, is unlikely to fully mitigate systemic risk and thus prevent a crisis meltdown. For this reason, a combination of coherent policies, including macroprudential, microprudential, and monetary measures as well as socioeconomic policies, is advised (Stellinga, 2020). Newly developed and reliable forecasts of economic crises (see Papadopoulos et al., 2019) may help to adequately deploy sufficient macroprudential policies as a precautionary measure. Furthermore, the institutional set-up of microprudential (i.e., supervision of banks) and macroprudential supervision may be crucial, including providing the relevant institutions with sufficient power and a clear mandate, while also making them accountable for their use of policy tools (Stellinga, 2020; Aikman et al., 2019; Begg, 2009). In this context, centralization of regulatory power is viewed as a possible solution (Lupo-Pasini and Buckley, 2015). In particular, countries with deeper financial markets may benefit from delegating macroprudential supervision to central banks. Thereby, policy makers will gain a deeper understanding of the financial system's microstructure, allowing them to better safeguard financial stability (Melecky and Podpiera, 2015).

4.6. Regulatory frameworks

Corresponding to Section 3.5 of this article, recommendations to prevent a financial crisis in the future are intricately

[25] Such recommendations are also made by Papaikonomou (2010) who additionally advises to establish alternative models to the "issuer pays" concept and reducing regulatory reliance on external ratings.

connected to regulatory regimes of the financial sector and the insurance industry. For this reason, the literature discussing shortcomings and weaknesses of the current regulatory environment will be presented in the following sections. These works often consider regulatory novelties introduced in the light of the crisis, their implementation, and provide valuable indications on existing weaknesses legislation, which should be addressed in order to prevent and mitigate a crisis in the future (see White, 2014). One central challenge when redesigning regulatory reforms is safeguarding against reforms which may create additional problems, either because they are too complex or too costly (see Weber, 2010).

4.6.1. The banking sector

Regulatory novelties have been diligently developed as response to the financial crisis, thereby following the objective of establishing a more resilient, solvent and stable financial system, preventing costly bail-outs and in particular offsetting Basel II's shortcomings (see Table 2; Adrian et al., 2018). Insufficient capital requirements were identified as a major deficiency in the post-crisis regulatory framework, which was then addressed in the Third Basel Accord. As the successor of Basel I and II, Basel III predominantly aimed at strengthening capital requirements for financial institutions as new liquidity and leverage rules were introduced. Therefore, speculative bank investments and excessive risk exposure may be prevented (Benhabib et al., 2016). For example, when examining regulatory capital ratios of banks in Europe and Central Asia, it was found that these banks are much better capitalized today, 10 years after the GFC (Anginer et al., 2020). Moreover, better capitalized banks manage to maneuver financial turmoil better (Hoque et al., 2015). A quantitative analysis of the cumulative effects of the safety measures implemented at the EU level finds that these measures should reduce potential costs for public finances if another financial crisis of similar magnitude hit the region again. In fact, if all safety-net measures (including increased capitalization, capital conservation buffers, and bail-in) are applied, financing needs could be reduced by 90 per cent compared to a scenario with no new measures in place (see Tanasie et al., 2015). However, some scholars argue that the newly introduced capital requirements may be too harsh and may limit economic activity, thereby hurting the real economy (see Philipponnat, 2019; Næss-Schmidt et al., 2019; Caprio et al., 2014; Dermine, 2013; Buck and Schliephake, 2013). Empirical evidence, however, suggests that this is not necessarily the case. Higher capital buffers, in combination with strengthened supervisory independence, did not have inimical effects on credit provision (see Fratzscher et al., 2016). Similarly, Barth et al. (2013) find that greater capital regulations as well as stronger supervision, at least in countries with independent supervisory authorities, are positively associated with bank efficiency. Capital requirements and regulations, as laid out in Basel III, are not the only factors determining financial institutions' capital structure, but macroeconomic prospects on GDP growth or inflation also play a vital role (Teixeira et al., 2014). In short, defining sufficient capital requirements and ensuring adequate capital buffers while preventing overly tight regulation is crucial, prove that Basel III followed the right intentions (see Riccetti et al., 2018).

Allen et al. (2012a) analyze the economic impact of the reform and argue that a higher capital requirement does not pose a danger to economic activity, but rather that an inconsistent and uncoordinated transition and implementation process does. Basel III requires complex and costly operational changes in banks' business models and governance systems, which need to be managed cautiously. Otherwise, smaller institutions may face funding shortages resulting in reduced credit supply to the real economy, and consequently decreased economic activity. Hence, the difficulty is not so much in higher capital requirements, but rather the implementation process of these requirements. Depending on the underlying risk model, the minimum capital requirements under Basel III may not be significantly higher than those under Basel II (Kinateder, 2016).

The newly introduced capital requirements are widely viewed as a step towards a more resilient financial system (see Rubio and Carrasco-Gallego, 2016; Krug et al., 2015). Therefore, it can be concluded that Basel III introduced several stabilizing mechanisms. On the other hand, not all shortcomings of Basel II were properly addressed in the new directive, and the Basel III standards made an already complex structure even more so (Balseven, 2016). Schwerter (2011) and Caprio (2013) point out that the new accord still does not adequately dampen systemic risk or interconnectedness of the global financial system. Hence, among other aspects, it is suggested to selectively adjust risked-weighted leverage ratios and opt for a more in-depth treatment of procyclicality. Dermine (2013) proposes a privately based mechanism to share risk among all creditors, including short-term interbank creditors, as these other banks can best assess counterparty risks and process information on potential insolvencies. It is argued that banks will intentionally monitor and diversify their risk exposure in the interbank market. In short, Basel III generally contributed towards a more stable financial system, but the Directive's ability to mitigate systemic risk is questioned in academic literature, which is why regulators and policy makers are well advised to take up this topic.

Not only Basel III itself is reviewed critically; a vast amount of literature focuses on the translation of Basel III into national legislations. For instance, Ayadi et al. (2012) argue that the Capital Requirements Directive and Regulation (CRD IV-CRR), which is supposed to translate Basel III into European law, is not as far-reaching as claimed. According to their analysis, there is a lack of commitment regarding strict and binding leverage ratios and long-term liquidity requirements. Hence, systemic risk mitigation may not be properly addressed under the regulatory rules alleviating the effectiveness of the EU's macroprudential policy. For a sample of 921 western European banks, Dietrich et al. (2014) analyze the implementation of the new liquidity rules, aiming to provide insights on how new regulatory requirements are realized. Historically, most banks have not fulfilled the NSFR minimum requirements, and at the time of the study (2014), about 60 % still did not meet the criteria. Consequently, they would have to improve their funding profile and maintain higher liquid assets and improve their management of liquidity risk. These arguments support the findings of Quaglia (2013), who compares the new legislation to the pre-crisis setup, and concludes that there were no substantial differences between the two.

Another important element of the post-financial crisis regulatory regime in the EU is the Bank Recovery and Resolution (BRRD) Directive EU (2014a), which established arrangements on how to deal with failing financial institutions at the European level. One prime motivation behind this directive was the reduction of bail-out costs for taxpayers, as public funds had been previously used to bailout distressed banks. Benczur et al. (2017) reviews the effectiveness of the newly established CRR and CRD IV directive, the BRRD directive as well as the Single Resolution Mechanism (SRM). They quantify the effect of the adoption of these measures and find that the new regulatory framework can significantly decrease bailout costs. Similarly, the study by Covi and Eydam (2018) evaluates the effectiveness of the BRRD directive and comes to a supportive conclusion. Looking at the period 2012-2014 prior its implementation, and 2015-2016 after its implementation, they investigate whether a transfer of risk from sovereign states to banks or from banks to sovereign states has taken place. They identify a feedback loop between banks and sovereign states for the period between 2012-2014, but this effect decreased significantly for the 2015-2016 period, when the BRRD was effective. Based on their results,

they confirm the effectiveness of the BRRD in tackling spillover effects between financial institutions and sovereign states.

As part of the BRRD/SRM, a bail-in tool has been developed according to which bank creditors bear the costs of failing institutions and tax payers are not hold accountable. To realize this concept, banks must fulfill the so-called MREL quotas, which are supposed to function as a solvency buffer so that there are sufficient liabilities to absorb a bank's losses when the institution falls into difficulties and enters resolution. While this concept has been extensively praised, practical implementation at the EU level does not come without criticism (Tröger, 2018). Importantly, Avgouleas and Goodhart (2015) presents the advantages and disadvantages of bail-in tools and stress that the implementation of such does not completely eliminate the possibility that capital injections from public funds may be needed in the future, particularly in case of a systemic collapse. For the sake of wide financial stability, bail-outs shall not be ruled out per se; instead, they should be seen as a complementary tool to bail-in mechanisms, which particularly become relevant in times of extreme economic stress (Dewatripont, 2014). Tröger (2020) finds substantial shortcomings the EU level bail-in tool and argues that MREL specifications are too complex with too many rules and exceptions to effectively prevent taxpayer and public fund involvement (Table 3).

The GFC triggered the revision of another regulatory directive, which entered into force just one year prior the outbreak of the crisis: the Markets in Financial Instruments Directive (MiFID I) had been revised and came into effect as MiFID II (EU, 2014b) on January 3, 2018. Targeting investor and consumer protection, MiFID II is supposed to increase market transparency, to guarantee that potentially harmful financial products do not come to the market, and to ensure adequate investor protection, for example, complex products can only be marketed to professional investors (Busch, 2017; Prorokowski, 2015; Inderst, 2009). Considering that the directive itself comprises 148 pages and the framework package more than 20,000 pages, it is unsurprising that this regulatory novelty is regarded as far too complex. The criticism by Yeoh (2019) targets this complexity[26] and finds that only half of the EU's member states were able to implement MiFID II provisions when it became effective. Moreover, at the practical level, Schaeken Willemaers (2014) observes that the complicated disclosure obligations required under MiFID II may not fulfill their purpose, as many consumers do not understand them. Colaert (2016) finds that the comprehensive MiFID II framework is inconsistent with other pieces of EU legislation on investor protection. In addition to the complexity of MiFID II, the costs of implementation pose a challenge, particularly for smaller institutions (Prorokowski, 2015). Consequently, in order to ensure straightforward investor protection, it might be worth reviewing the MiFID II framework even after its implementation to reconsider how it could be designed in a more straightforward manner without sacrificing the intended consumer protection. Following the analysis by Colaert (2016), harmonization of EU legislation on consumer protection appears to be advisable.

Overall, it becomes evident that the GFC triggered and inspired the establishment of a complex regulatory framework. However, whether these novelties will manage to prevent a crisis in the future remains to be seen. It becomes evident that academic studies on the implementation and effectiveness of the new regulatory framework cover many diverse and detailed aspects, often coming to mixed results. However, critiques are often directed towards the tendency to draft extremely detailed and intricate directives, which are too complex and hence difficult to effectively transpose into practice.

4.6.2. The insurance industry

As outlined above, the financial crisis triggered the adoption of Solvency II, the EU's harmonized insurance industry regulatory framework. Generally, Solvency II and its risk-based approach are regarded as critical steps in the right direction and an important advancement compared to Solvency I (Gatzert and Wesker, 2012; Rae et al., 2018; Doff, 2016). The European Commission reviewed Solvency II ("2018 Interim Review") regarding methods and standard parameters when calculating the Solvency Capital Requirements (SCR) under the standard formula in 2018. Moreover, by the end of 2020, Solvency II is to be further reviewed ("2020 Full Review") and EIOPA is supposed to deliver in-depth input to guarantee a "holistic and thorough assessment of the framework" (EC, 2019). Revision of the interest rate risk sub-module is expected, potentially including increases in capital requirements in case stress scenarios are adjusted. Moreover, simplification and proportionate application of rules are reviewed.

After it came into effect in 2016, the majority of academic works on this topic confirm that the Solvency II framework through its rules and requirements, notably the newly introduced capital requirements, make the European insurance industry as a whole more resilient, hence the main goal of the framework has been achieved (see Section 3.5, as well as Doff, 2016). The new framework has since been critically reviewed, with most works focusing on the entire framework, while others concentrate on individual aspects. A holistic analysis of the effectiveness of Solvency II is provided by Doff (2016). Using 12 different criteria to systematically test the effectiveness of Solvency II, the author finds that the new framework sets the right incentives for insurers to fulfill the above-mentioned objectives of Solvency II. Hence, Solvency II was found to be effective overall. Only a few works (Huerta De Soto, 2009) question legislative reform in its entirety, most works address specific aspects of the framework while at the same time providing approaches for improvement. With an extensive review of Solvency II coming up in 2020, these aspects may function as inspiration to further enhance the framework and ensure regulatory objectives are met while guaranteeing applicability across EU member states. After consulting literature published on this topic, two main areas of criticism can be identified:

Firstly, as a general point of criticism, the sheer complexity and costs of the framework are mentioned. To ensure consumer protection, the cost appropriateness of regulation needs to be guaranteed. Otherwise, if insurers are required to hold more capital reserves than is efficient for their risk level, these costs will be passed on to consumers, who will face unnecessarily high insurance costs (Eling et al., 2007). While the first frameworks on insurance industry solvency published in the 1970s amounted to as little as 30 pages, the current Solvency II framework comprises 155 pages, plus another 50 pages for the Omnibus amendment. Moreover, the implantation mechanism is outlined in the writing of roughly another 1,000 pages. Hence, the pure length of the framework depicts its complexity, which also functions as an indicator for the compliance cost the insurance industry faces (see Monkiewicz, 2013). The direct costs related to the implementation of Solvency II were estimated at around EUR 25 millions for each large European insurance company (Accenture, 2010). In addition, it was estimated that IT spending of EUR 700-900 millions across the industry was necessary to comply with the directive (Monkiewicz, 2013). Hence, criticizing the costs of implementation based on absolute numbers seems feasible, but essentially, the balance between the cost of implementation, regulatory benefits, and policy makers' willingness to pay for higher safety levels is decisive. In their analysis, Lorson et al. (2012) addressed this aspect and concluded that this is not necessarily the

[26] Further studies suggesting that regulatory novelties may have limited effects due to their complexity, inconsistency, and in-transparency include Anagnostopoulos and Kabeega (2019), Bradley (2011a,b), Morais and Feteira (2018), Blair (2017), Baber (2013), Peretz and Schroedel (2009), Ruppel (2009), Turk (2014).

case. With regard to Solvency II, Gatzert and Wesker (2012), and Pradier and Chneiweiss (2017) conclude that the new framework incentivizes insurers to better assess and evaluate their risk picture, but at the same time, the authors underline the great complexity of the framework and regulatory bureaucracy.

One aspect that could potentially reduce costs for insurers is the integration of an illiquidity premium on the liability side of the balance, which was already suggested by representatives of the insurance industry when Solvency II was initially underway. The argument was based on the claim that long-term assets, due to their illiquid characteristics, have a predictable cash flow profile. However, as outlined by Danielsson et al. (2011) and Wüthrich (2011), there is no inherently scientific basis for the determination of these illiquidity premiums as uncertain gains in the future are shifted to the starting point. Furthermore, including such would contradict the market-consistence actuarial valuation in the insurance industry. The debate on whether theoretical considerations are sufficient to include a discount rate for illiquid long-term liabilities is still ongoing, and this topic is likely to also be discussed during the Solvency II 2020 review (Bulpitt and Fulcher, 2019). All in all, policy makers are well-advised to reconsider the cost and complexity of the framework when reviewing Solvency II.

Secondly, arguments pointing to shortcomings of Solvency II often concern specifics, for example, aspects concerning the standard formula and asset requirements. Applying a standard formula aims at establishing a systemic procedure to measure insurance companies' risks. Developing an appropriate, universal formula is of great importance, so it adequately reflects the solvency requirements and objectives outlined in the underlying regulatory framework. Regarding Solvency II, the underlying standard formula has been a point of debate. For example, Arias et al. (2010) point out that, even though Solvency II's risk-based approach is a step in the right direction, developing and implementing a standard formula is a delicate and sensitive operation. According to their research, equity classes are inappropriately represented. Detailed criticism has also been raised by Mittnik (2016), who argues that the two-step calibration of the standard formula for the assessment of equity risk gives rise to spurious correlations. The calibration of the equity-risk model, which is the most significant component of the formula, is flawed, and implantation poses significant risk. For this reason, the author advises to reconsider the calibration for equity risk to prevent volatile capital requirements.

The Value-at-Risk (VaR)-based capital requirements are criticized by Floreani (2013) who concludes that contrary to the intent, these requirements could even increase fragility in the insurance industry. It is argued that the VaR capital requirement seeks to incentivize better risk management through a "more risk/more capital"- risk management approach. While this approach is valid, VaR is considered the wrong risk measure because it simply measures risk and does not account for the different kinds of risk, namely systemic risk and diversifiable risk. However, highly diversified insurance companies are more exposed to systemic risk and, in turn, will be hit harder in times of global crisis. Hence, as Solvency II encourages diversification, growth in size, and systemic risk assumption, it is argued that larger and more diversified insurance companies are potentially hit harder in the case of market shortfalls. Based on this argument, suggestions on how to improve the Solvency II framework are outlined, such as introducing a quota for diversifiable risk. Scholars like Floreani (2013) question the VaR-based approach, while others find that the approach would be practical if subjected to some adjustments. With a more practical focus on Solvency II's impact on insurance companies' investment strategies, Höring (2013) compares the capital requirements for market risk under Solvency II with the S&P rating model's requirements. It is shown that the S&P model requires more capital than the Solvency II model for the same market risks and comparable levels of confidence. This leads to the conclusion that the Solvency II capital requirements would not bind additional capital and, consequently, are unlikely to cause significant restructuring of investment portfolios. Against this background, the author does not see the impact of Solvency II requirements on insurance companies' investment strategies. In short, disruptions in capital markets due to alterations of insurances' investment strategies because of Solvency II are not expected.

To summarize, in order to make the existing Solvency II framework more resilient for future crises, academic literature provides the following germane starting points: reconsideration of the balance between cost and complexity on the one hand and appropriateness of regulation on the other hand, the impact of private rating agencies on regulation and lastly, technical aspects related to solvency capital requirements.

5. Conclusion

A lot has happened with respect to regulatory novelties triggered by the GFC and SDC, but not all aspects addressed in this survey have been put into practice yet. Of course, the risk of a financial crisis can probably never be completely excluded by regulatory authorities, and thus some authors, such as Grosse (2017), for instance, argue that the occurrence of financial shocks has to be accepted. However, to improve the safety and robustness of the global financial system and to reduce systemic risk, numerous policy measures, regulatory directives, and frameworks have been proposed. Simultaneously, numerous academic works critically reviewed these developments. Therefore, this article intends to structure the multitude of publications and provide a comprehensive overview of post-crisis regulatory research publications. First, we examined the causes for the emergence of the US subprime mortgage crisis and the EMU sovereign debt crisis as the two most important crisis events in recent years. Both discussed events resulted from a combination of different factors - precipitating as well as more fundamental, or deep-rooted causes (see, for instance, Park, 2015). Second, policy responses as well as regulatory reforms triggered by crisis events have been clustered and presented. The initial responses to the crisis were intended to stabilize the situation. Thereafter, a series of regulatory reforms has been gradually launched to make the financial sector more resilient, some targeting individual institutions' stability, while others were directed to stabilize the whole financial system. Third, the literature critically reviewing these developments investigates whether these reforms fit their purpose and present recommendations to prevent a crisis in the future. To summarize, while many works find that the reforms adopted have been effective in many ways and thus contributed to make the financial system more resilient, essential recommendations found in the literature include:

1. Fiscal stimulus packages combined with proven growth stimulating measures need to correspond to the given economic situation. This means that in economically prosperous times, adequate fiscal discipline is advisable. This applies particularly to the EU to foster fiscal consolidation.
2. Due to the global interconnectedness of financial markets, a greater degree of consolidated international cooperation and harmonization of regulatory frameworks would be desirable. This applies for both the banking and insurance sectors.
3. Flaws in the EMU architecture should be actively addressed to move away from the present regulatory hodgepodge by gradually establishing a harmonized, holistic regulatory regime.[27]

[27] For instance by forming an European state or harmonizing wage and labor markets or tax systems in Europe (Ruščáková and Semančíková, 2016).

4. Considering that CRA played a dominant role in the debate surrounding the causes of the GFC and the SDC, little has happened since. It may be time to rethink the CRAs' business models, the issuer pays principal, how to add a great degree of transparency to the methodology as well as competition in the industry.
5. It is also recommended to critically address the "too big to fail" difficulties as large, internationally operating financial institutions are still likely to trigger similar avalanche effects to those experienced in 2008.
6. For both regulatory frameworks in the financial and insurance industries, it is suggested to asses simplification potential and whether the complexity of regimes are adequate with respect to implementation potential, practicability, as well as costs and benefits. In short, it is recommended to review whether regulatory compliance costs could be partially reduced without compromising on stability.
7. Ultimately, rationale-based economic theory failed to address the important aspects of human behavior. Therefore, many studies recommend more focus on a behavioral economic perspective, in both academic theory and regulatory practice.[28]

Even though strengthened prudential measures, higher liquidity, and capital standards as well as new resolution mechanisms have been enacted in the aftermath of the GFC and SDC, it is still important for policy makers and regulatory and supervisory authorities to scrutinize the impact of regulatory innovations in the current market environment as well as in stress scenarios. Without claiming to have covered all aspects of the topic, this literature review has demonstrated the importance of a holistic approach to financial regulatory discussions. However, because regulatory frameworks are always a work-in-progress, it is of utmost importance to continuously question the status quo.

This work provides a first effort to review the large body of literature in a structured approach. Further work for a better understanding of crisis management could be based on this overview. Other factors for further analyses could be the empirical analysis of the long-term effects of measures in fiscal and monetary policy and on regulatory changes. Further research in the field "smart regulation" could also be very promising. This theory is based on the idea of flexible regulatory standards that depend on economic indicators, the so-called "financial automatic stabilizers"' (see Gokhale and Van Doren, 2009).

References

Abolo, E.M., 2008. Banking Regulation and Global Financial Crisis: Issues. Implications & Way Forward, Available at SSRN 1321483.

Accenture, 2010. Most European Insurers Say Compliance With Solvency II Will Cost More Than Originally Expected.

Acharya, V.V., Richardson, M., 2009. Causes of the financial crisis. Crit. Rev. 21, 195–210.

Acosta-González, E., Fernández-Rodíguez, F., Sosvilla-Rivero, S., 2012. On factors explaining the 2008 financial crisis. Econ. Lett. 115, 215–217.

Adam, K., Billi, R.M., 2006. Optimal monetary policy under commitment with a zero bound on nominal interest rates. J. Money Credit Bank., 1877–1905.

Adolff, J., Häller, J., 2019. Bail-In Im Lichte Des EU-Bankenpakets: Das Zusammenspiel Von MREL, TLAC und TLOF. Zeitschrift für Bankrecht und Bankwirtschaft 31, 369–378.

Adrian, T., Kiff, J., Shin, H.S., 2018. Liquidity, leverage, and regulation 10 years after the global financial crisis. Annu. Rev. Financ. Econ. 10, 1–24.

Afonso, A., Furceri, D., Gomes, P., 2012. Sovereign credit ratings and financial markets linkages: application to European data. J. Int. Money Finance 31, 606–638.

Agnello, L., Castro, V., Jalles, J.T., Sousa, R.M., 2015. What determines the likelihood of structural reforms? Eur. J. Polit. Econ. 37, 129–145.

Aikman, D., Bridges, J., Kashyap, A., Siegert, C., 2019. Would macroprudential regulation have prevented the last crisis? J. Econ. Perspect. 33, 107–130.

Ait-Sahalia, Y., Andritzky, J., Jobst, A., Nowak, S., Tamirisa, N., 2012. Market response to policy initiatives during the global financial crisis. J. Int. Econ. 87, 162–177.

Aizenman, J., 2009. Financial Crisis and the Paradox of Under-And Over-Regulation, NBER Working Paper No. 15018.

Aizenman, J., Hutchison, M., Jinjarak, Y., 2013. What is the risk of European sovereign debt defaults? Fiscal space, CDS spreads and market pricing of risk. J. Int. Money Finance 34, 37–59.

Albertazzi, U., Ropele, T., Sene, G., Signoretti, F.M., 2014. The impact of the Sovereign debt crisis on the activity of Italian banks. J. Bank. Finance 46, 387–402.

Alesina, A., Azzalini, G., Favero, C., Giavazzi, F., Miano, A., 2018. Is it the "how" or the "when" that matters in fiscal adjustments? IMF Econ. Rev. 66, 144–188.

Allen, B., Chan, K.K., Milne, A., Thomas, S., 2012a. Basel III: is the cure worse than the disease? Int. Rev. Financ. Anal. 25, 159–166.

Allen, F., Gu, X., Kowalewski, O., 2012b. Financial crisis, structure and reform. J. Bank. Finance 36, 2960–2973.

Alsakka, R., Ap Gwilym, O., Vu, T.N., 2014. The Sovereign-bank rating channel and rating agencies' downgrades during the European debt crisis. J. Int. Money Finance 49, 235–257.

Alter, A., Beyer, A., 2014. The dynamics of spillover effects during the European sovereign debt turmoil. J. Bank. Finance 42, 134–153.

Alter, A., Schüler, Y.S., 2012. Credit spread interdependencies of European states and banks during the financial crisis. J. Bank. Finance 36, 3444–3468.

Amann, J., Middleditch, P., 2020. Revisiting reinhart and rogoff after the crisis: a time series perspective. Camb. J. Econ. 44, 343–370.

Amri, P.D., Kocher, B.M., 2012. The political economy of financial sector supervision and banking crises: a cross-country analysis. Eur. Law J. 18, 24–43.

Anagnostopoulos, Y., Kabeega, J., 2019. Insider perspectives on European banking challenges in the post-crisis regulation environment. J. Bank. Regul. 20, 136–158.

Anderson, D., Hunt, B., Snudden, S., 2014. Fiscal consolidation in the euro area: how much pain can structural reforms ease? J. Policy Model. 36, 785–799.

Andrade, P., Cahn, C., Fraisse, H., Mésonnier, J.-S., 2019. Can the provision of long-term liquidity help to avoid a credit crunch? Evidence from the eurosystem's LTRO. J. Eur. Econ. Assoc. 17, 1070–1106.

Andritzky, J., Christofzik, D.I., Feld, L.P., Scheuering, U., 2019. A mechanism to regulate sovereign debt restructuring in the euro area. Int. Finance 22, 20–34.

Anginer, D., Bertay, A.C., Cull, R., Demirgüç-Kunt, A., Mare, D.S., 2019. Bank Regulation and Supervision Ten Years After the Global Financial Crisis. The World Bank.

Anginer, D., Demirgüç-Kunt, A., Mare, D.S., 2020. Bank Capital and Risk in Europe and Central Asia Ten Years After the Crisis. The World Bank.

Arce, O., Mayordomo, S., Peña, J.I., 2013. Credit-risk valuation in the sovereign CDS and bonds markets: evidence from the euro area crisis. J. Int. Money Finance 35, 124–145.

Arezki, R., Candelon, B., Sy, A., 2011. Sovereign Rating News and Financial Markets Spillovers: Evidence from the European Debt Crisis. CESifo Working Paper: Monetary Policy and International Finance.

Arias, L., El Hedi Arouri, M., Foulquier, P., Gregoir, S., 2010. On the Suitability of the Calibration of Private Equity Risk in the Solvency II Standard Formula. Publication of the EDHEC Financial Analysis and Accounting Research Centre.

Ashby, S., 2011. Risk management and the global banking crisis: lessons for insurance solvency regulation. Geneva Papers Risk Insur. – Issues Pract. 36, 330–347.

Ashraf, B.N., Zheng, C., Jiang, C., Qian, N., 2020. Capital regulation, deposit insurance and bank risk: international evidence from normal and crisis periods. Res. Int. Bus. Finance 52.

Athavale, S., Chowdhury, A.K., 2015. Global financial crisis and the regulation of credit rating business. Vinimaya 36, 17–44.

Attinasi, M.G., Checherita-Westphal, C.D., Nickel, C., 2009. What Explains the Surge in Euro Area Sovereign Spreads During the Financial Crisis of 2007–09?, ECB Working Paper.

Aubuchon, C.P., 2009. What's under the TARP? Econ. Synop., 2009.

Auerbach, A.J., Gorodnichenko, Y., 2017. Fiscal Stimulus and Fiscal Sustainability. National Bureau of Economic Research.

Avgouleas, E., 2009a. The global financial crisis and the disclosure paradigm in European financial regulation: the case for reform. Eur. Co. Financ. Law Rev. 6, 440–475.

Avgouleas, E., 2009b. The global financial crisis, behavioural finance and financial regulation: in search of a new orthodoxy. J. Corp. Law Stud. 9, 23–59.

Avgouleas, E., Goodhart, C., 2015. Critical reflections on bank bail-ins. J. Financ. Regul. 1, 3–29.

Avgouleas, E., Goodhart, C., 2016. An anatomy of bank bail-ins – why the eurozone needs a fiscal backstop for the banking sector. Eur. Econ. 2, 75–90.

Avgouleas, E., Goodhart, C., Schoenmaker, D., 2013. Bank resolution plans as a catalyst for global financial reform. J. Financ. Stab. 9, 210–218.

Ayadi, R., Arbak, E., Pieter De Groen, W., 2012. Implementing Basel III in Europe: Diagnosis and Avenues for Improvement, CEPS Policy Brief.

Baber, G., 2013. A critical examination of the legislative response in banking and financial regulation to issues related to misconduct in the context of the crisis of 2007–2009. J. Financ. Crime 20, 237–252.

Babis, V.S., 2014. European bank recovery and resolution directive: ecovery proceedings for cross-border banking groups. Eur. Bus. Law Rev. 25, 459–480.

[28] See, for instance, Rannou (2010), Buttimer (2011) or Avgouleas and Goodhart (2015).

Baker, A., 2015. Varieties of economic crisis, varieties of ideational change: how and why financial regulation and macroeconomic policy differ. New Polit. Econ. 20, 342–366.
Baker, C., Cummings, C., Jagtiani, J., 2017. The impacts of financial regulations: solvency and liquidity in the post-crisis period. J. Financ. Regul. Compliance 25, 253–270.
Ball, R., 2009. The global financial crisis and the efficient market hypothesis: what have we learned? J. Appl. Corp. Finance 21, 8–16.
Balseven, H., 2016. The political economy of financial regulation policies following the global crisis. Int. J. Econ. Financ. Issues 6, 607–616.
Banerjee, S., 2011. Macro Prudential Supervision and the Financial Crisis of 2007: the Aegis of the Central Banks, Available at SSRN 1827088.
Barrios, S., Iversen, P., Lewandowska, M., Setzer, R., et al., 2009. Determinants of Intra-Euro Area Government Bond Spreads During the Financial Crisis. Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.
Barth, J.R., Lin, C., Ma, Y., J. Seade, J., Song, F.M., 2013. Do bank regulation, supervision and monitoring enhance or impede bank efficiency? J. Bank. Finance 37, 2879–3289.
Basse, T., Friedrich, M., Kleffner, A., Graf von der Schulenburg, J.-M., 2014. Are interest rates too low? Empirical evidence and implications for German life insurers. Zeitschrift für die gesamte Versicherungswissenschaft 103, 31–43.
Basten, M., Sánchez Serrano, A., 2019. European banks after the global financial crisis: a new landscape. J. Bank. Regul. 20, 51–73.
Bauer, C., Herz, B., 2020. Reforming the European stability mechanism. J. Common Market Stud. 58, 636–653.
Bauer, M.D., Neely, C.J., 2014. International channels of the feds unconventional monetary policy. J. Int. Money Finance 44, 24–46.
Beckmann, R., Eppendorfer, C., Neimke, M., 2003. Financial integration within the European union: towards a single market for insurance. In: The Incomplete European Market for Financial Services. Springer, pp. 1–29.
Begg, I., 2009. Regulation and supervision of financial intermediaries in the EU: the aftermath of the financial crisis. J. Common Market Stud. 47, 1107–1128.
Begg, I., 2013. Are better defined rules enough? An assessment of the post-crisis reforms of the governance of EMU. Transf.: Eur. Rev. Labour Res. 19, 49–62.
Beirne, J., Fratzscher, M., 2013. The pricing of Sovereign risk and contagion during the European sovereign debt crisis. J. Int. Money Finance 34, 60–82.
Benczur, P., Cannas, G., Cariboni, J., Di Girolamo, F., Maccaferri, S., Giudici, M.P., 2017. Evaluating the effectiveness of the new Eu bank regulatory framework: a farewell to bail-out? J. Financ. Stab. 33, 207–223.
Bengtsson, E., 2013. Shadow banking and financial stability: European money market funds in the global financial crisis. J. Int. Money Finance 32, 579–594.
Benhabib, J., Miao, J., Wang, P., 2016. Chaotic banking crises and regulations. Econ. Theory 61, 393–422.
Berdin, E., Gründl, H., 2015. The effects of a low interest rate environment on life insurers. Geneva Papers on Risk and Insurance-Issues and Practice 40, 385–415.
Berger, A.N., Himmelberg, C.P., Roman, R.A., Tsyplakov, S., 2019. Bank Bailouts, Bail-Ins, or No Regulatory Intervention? A Dynamic Model and Empirical Tests of Optimal Regulation, Available at SSRN 3179226.
Bergman, U.M., Hutchison, M., 2015. Economic stabilization in the post-crisis world: are fiscal rules the answer? J. Int. Money Finance 52, 82–101.
Bergman, U.M., Hutchison, M.M., Hougaard Jensen, S.E., 2016. Promoting sustainable public finances in the European union: the role of fiscal rules and government efficiency. Eur. J. Polit. Econ. 44, 1–19.
Bernal, O., Girard, A., Gnabo, J.-Y., 2016. The importance of conflicts of interest in attributing sovereign credit ratings. Int. Rev. Law Econ. 47, 48–66.
Bernal, O., Gnabo, J.-Y., Guilmin, G., 2014. Assessing the contribution of banks, insurance and other financial services to systemic risk. J. Bank. Finance 47, 270–287.
Bernanke, B.S., Reinhart, V.R., 2004. Conducting monetary policy at very low short-term interest rates. Am. Econ. Rev. 94, 85–90.
Bernoth, K., Erdogan, B., 2012. Sovereign bond yield spreads: a time-varying coefficient approach. J. Int. Money Finance 31, 639–656.
Best, S., Read, O., et al., 2017. MREL and TLAC: the path from bail-out to bail-in for banks creditors in the European union. Credit Cap. Mark. 50, 337–362.
Bieling, H.-J., 2014. Shattered expectations: the defeat of European ambitions of global financial reform. J. Eur. Public Policy 21, 346–366.
Biener, C., Eling, M., 2012. Insurability in microinsurance markets: an analysis of problems and potential solutions. Geneva Papers Risk Insur. – Issues Pract. 37, 77–107.
Biener, C., Eling, M., Wirfs, J.H., 2015. Insurability of cyber risk: an empirical analysis. Geneva Papers Risk Insur.-Issues Pract. 40, 131–158.
Bijlsma, M., Vermeulen, R., 2016. Insurance companies' trading behaviour during the european sovereign debt crisis: flight home or flight to quality? J. Financ. Stabil. 27, 137–154.
Binney, M.F., 2010. A Brief Look at the Sub-Prime Crisis: Was It a Regular Business Cycle, the Result of Lax Supervision and/or a Regulatory Failure?, Available at SSRN 1669051.
Blair, M.M., 2017. A simple fix for a complex problem? Comments on morgan ricks, the money problem: rethinking financial regulation. Account. Econ. Law: Conviv. 8.
Blanchard, O.J., Cottarelli, C., Spilimbergo, A., Symansky, S., 2009. Fiscal Policy for the Crisis, CEPR Discussion Paper No. DP7130.
Bletzinger, T., Wieland, V., 2016. Forward Guidance and "Lower for Longer": the Case of the ECB, IMFS Working Paper Series No. 102.
Blundell-Wignall, A., 2012. Solving the financial and sovereign debt crisis in Europe. OECD J.: Financ. Market Trends 2011, 201–224.
Blundell-Wignall, A., Atkinson, P., 2009. Origins of the financial crisis and requirements for reform. J. Asian Econ. 20, 536–548.
Board Of Governors Of The Federal Reserve System (US), 2019. Effective Federal Funds Rate [FEDFUNDS]. https://fred.stlouisfed.org/series/FEDFUNDS.
Boumparis, P., Milas, C., Panagiotidis, T., 2017. Economic policy uncertainty and sovereign credit rating decisions: panel quantile evidence for the eurozone. J. Int. Money Finance 79, 39–71.
Bradley, C., 2011a. Transparency and financial regulation in the European union: crisis and complexity. Fordham Int. Law J. 35, 1171–1206.
Bradley, C., 2011b. Transparency is the new opacity: constructing financial regulation after the crisis. Am. Univ. Bus. Law Rev. 1, 7–32.
Bradley, C.M., 2009. Rhetoric and the Regulation of the Global Financial Markets in a Time of Crisis: the Regulation of Credit Ratings, University of Miami Legal Studies Research Paper No. 2009-24.
Brunnermeier, M., Crocket, A., Goodhart, C., Persaud, A.D., Shin, H., 2009. The Fundamental Principles of Financial Regulation, vol. 11. ICMB, Internat. Center for Monetary and Banking Studies.
Brunnermeier, M.K., 2009. Deciphering the Liquidity and Credit Crunch 2007–2008. J. Econ. Perspect. 23, 77–100.
Buck, F., Schliephake, E., 2013. The regulator's trade-off: bank supervision vs. minimum capital. J. Bank. Finance 37, 4584–4598.
Buiter, W.H., 2007. Lessons from the 2007 Financial Crisis, CEPR Discussion Paper No. DP6596.
Buiter, W.H., Rahbari, E., 2012. The ECB as Lender of Last Resort for Sovereigns. The Euro Area, CEPR Discussion Paper No. DP8974.
Bulpitt, T., Fulcher, P., 2019. Illiquid Liabilities: A Myth or a reality?
Busch, D., 2017. Product Governance and Product Intervention Under MiFID II/MiFIR. Oxford University Press, Oxford, pp. 123–146.
Busch, D., Teubner, A., 2019. Fit and Proper Assessments Within the Single Supervisory Mechanism, EBI Working Paper Series 2019/34.
Buttimer Jr., R.J., 2011. The financial crisis: imperfect markets and imperfect regulation. J. Financ. Econ. Policy 3, 12–32.
Cabral, R., 2013. A perspective on the symptoms and causes of the financial crisis. J. Bank. Finance 37, 103–117.
Calabrese, R., Elkink, J.A., Giudici, P.S., 2017. Measuring bank contagion in Europe using binary spatial regression models. J. Operat. Res. Soc. 68, 1503–1511.
Calabria, M.A., 2009. Did deregulation cause the financial crisis. Cato Policy Rep. 31, 1–8.
Caprio Jr., G., 2009. Financial Regulation in a Changing World. Center for Development Economics, Working Papers Series.
Caprio Jr., G., 2013. Financial Regulation After the Crisis: How Did we Get Here, and How do we Get Out?, Available at SSRN 2350564.
Caprio Jr., G., D'Apice, V., Ferri, G., Puopolo, G.W., 2014. Macro-financial determinants of the great financial crisis: implications for financial regulation. J. Bank. Finance 44, 114–129.
Carstensen, M.B., 2013. The role of special resolution regimes in post-crisis nancial regulation: four Danish lessons. Politik 16.
Caruso, A., Reichlin, L., Ricco, G., 2019. Financial and fiscal interaction in the Euro area crisis: this time was different. Eur. Econ. Rev. 119, 333–355.
Case, K.E., Shiller, R.J., 2003. Is There A Bubble In The Housing Market? Brookings Papers On Economic Activity., pp. 299–362.
Cassola, N., Kok, C., Mongelli, F.P., 2019. The ECB After the Crisis: Existing Synergies Among Monetary Policy, Macroprudential Policies and Banking Supervision, ECB Occasional Paper.
Catrina, I.L., 2012. The failure of fiscal consolidation through "budget cuts". Proc. Econ. Finance 3, 367–374.
Cecchetti, S.G., Schoenholtz, K.L., 2017. Regulatory Reform: A Scorecard, CEPR Discussion Paper No. DP12465.
CEIOPS, 2009. Lessons to Be Learned from the Crisis – Solvency II and Beyond.
Chaikovska, I., 2019a. Enforcement actions of banking supervision authorities in European union: non-compliance with post-crisis banking regulations. Int. J. Arts Sci. 12, 107–112.
Chaikovska, I., 2019b. The role of post-crisis banking regulations in maintaining the security of the banking system. Int. J. Arts Sci. 12, 165–175.
Chaudary, S., Salvador-Adebayo, D., 2014. Why regulate financial markets? The underlying rationale for financial regulation in the wake of the current crisis. J. Eur. Stud. 30.
Chen, H., Cúrdia, V., Ferrero, A., 2012. The macroeconomic effects of large-scale asset purchase programmes. Econ. J. 122, 289–315.
Cheng, J., Dai, M., Dufourt, F., 2017. Banking and sovereign debt crises in a monetary union without central bank intervention. J. Math. Econ. 68, 142–151.
Cihak, M., Demirgüç-Kunt, A., Martinez Peria, M.S., Mohseni-Cheraghlou, A., 2012. Bank Regulation and Supervision Around the World: A Crisis Update. The World Bank.
Coen, D., Salter, J.-P., 2020. Multilevel regulatory governance: establishing bank-regulator relationships at the European banking authority. Bus. Polit. 22, 113–134.
Coenen, G., Straub, R., Trabandt, M., 2013. Gauging the effects of fiscal stimulus packages in the euro area. J. Econ. Dyn. Control 37, 367–386.
Coenen, G., Warne, A., 2014. Risks to price stability, the zero lower bound, and forward guidance: a real-time assessment. Int. J. Central Bank.
Cœuré, B., 2016. Assessing the implications of negative interest rates. Speech at the Yale Financial Crisis Forum, vol. 28. Yale School of Management, New Haven, pp. 2016.

Coffee Jr., J.C., 2009. What went wrong? An initial inquiry into the causes of the 2008 financial crisis. J. Corpor. Law Stud. 9, 1–22.
Colaert, V., 2016. MiFID II in relation to other investor protection regulation: picking up the crumbs of a piecemeal approach. In: Busch, D., Ferrarini, G. (Eds.), Regulation of the EU Financial Markets: MiFID II and MiFIR.
Constâncio, V., 2014. The European crisis and the role of the financial system. J. Macroecon. 39, 250–259.
Cotterli, S., Gualandri, E., 2010. Financial Crisis and Supervision of Cross-Border Groups in the EU.
Couppey-Soubeyran, J., 2010. Financial regulation in the crisis regulation, market discipline, internal control: the big three in turmoil. Int. Econ. 123, 13–29.
Cour-Thimann, P., Winkler, B., 2012. The ECB's non-standard monetary policy measures: the role of institutional factors and financial structure. Oxf. Rev. Econ. Policy 28, 765–803.
Coval, J., Jurek, J., Stafford, E., 2009. The economics of structured finance. J. Econ. Perspect. 23, 3–25.
Covi, G., Eydam, U., 2018. End of the sovereign-bank doom loop in The European union? The bank recovery and resolution directive. J. Evol. Econ., 1–26.
Croci Angelini, E., Farina, F., Valentini, E., 2016. Contagion across eurozone's sovereign spreads and the core-periphery divide. Empirica 43, 197–213.
Crotty, J., 2009. Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture'. Camb. J. Econ. 33, 563–580.
Crowley, P.M., Lee, J., 2009. Evaluating the Stresses from ECB Monetary Policy in the Euro Area, Bank of Finland Research Discussion Paper.
Curcio, D., De Simone, A., Gallo, A., 2017. Financial crisis and international supervision: new evidence on the discretionary use of loan loss provisions at euro area commercial banks. Br. Account. Rev. 49, 181–193.
Dabrowski, M., 2010. The global financial crisis: lessons for European integration. Econ. Syst. 34, 38–54.
Dagher, J., Fu, N., 2017. What fuels the boom drives the bust: regulation and the mortgage crisis. Econ. J. 127, 996–1024.
Daniela, Z., Mihail-Ioan, C., Anatol, C., Sebastian, M.D., 2010. New international financial regulation: necessity or required by crisis. Annals of the university of Oradea. Econ. Sci. Ser. 19, 456–461.
Danielsson, J., De Jong, F., Laeven, R., Laux, C., Perotti, E., Wüthrich, M., 2011. A Prudential Regulatory Issue at the Heart of Solvency II, VOX Policy Note, March.
Davidoff, S.M., Zaring, D., 2009. Regulation by deal: the government'S response to the financial crisis. Adm. Law Rev. 61, 463–542.
Davies, H., 2010. Global financial regulation after the credit crisis. Global Policy 1, 185–190.
De Bruyckere, V., Gerhardt, M., Schepens, G., Vander Vennet, R., 2013. Bank/sovereign risk spillovers in the European debt crisis. J. Bank. Finance 37, 4793–4809.
De Grauwe, P., 2011. The banking crisis: causes, consequences and remedies. In: Systemic Implications of Transatlantic Regulatory Cooperation and Competition. World Scientific, pp. 23–46.
De Grauwe, P., Foresti, P., 2016. Fiscal rules, financial stability and optimal currency areas. Econ. Lett. 145, 278–281.
De Grauwe, P., Ji, Y., 2013. Self-fulfilling crises in the eurozone: an empirical test. J. Int. Money Finance 34, 15–36.
De Grauwe, P., Ji, Y., 2014. How much fiscal discipline in a monetary union? J. Macroecon. 39, 348–360.
De Grauwe, P., Ji, Y., Steinbach, A., 2017. The EU debt crisis: testing and revisiting conventional legal doctrine. Int. Rev. Law Econ. 51, 29–37.
De la Mata Muñoz, A., 2010. The future of cross-border banking after the crisis: facing the challenges through regulation and supervision. Eur. Bus. Organ. Law Rev. 11, 575–607.
De Mendonca, A.R., Deos, S., 2009. Crises in the financial regulation of finance-led capitalism: a Minskyan analysis. Rev. Regul. 6.
De Michelis, A., 2009. Overcoming the Financial Crisis in the United States, OECD Economics Department Working Papers.
De Santis, R.A., 2012. The Euro Area Sovereign Debt Crisis: Safe Haven, Credit Rating Agencies and the Spread of the Fever from Greece, Ireland and Portugal, ECB Working Paper.
De Santis, R.A., 2014. The euro area sovereign debt crisis: identifying flight-to-liquidity and the spillover mechanisms. J. Empir. Finance 26, 150–170.
De Santis, R.A., 2020. Impact of the asset purchase programme on euro area government bond yields using market news. Econ. Model. 86, 192–209.
De Vincenzo, A., Freni, M.A., Generale, A., Nicoletti-Altimari, S., Quagliariello, M., 2010. Lessons Learned From the Financial Crisis for Financial Stability and Banking Supervision, Bank of Italy Occasional Paper.
Dell'Ariccia, G., Rabanal, P., Sandri, D., 2018. Unconventional monetary policies in the euro area, Japan, and the United Kingdom. J. Econ. Perspect. 32, 147–172.
Demirgüç-Kunt, A., Servén, L., 2010. Are all the sacred cows dead? Implications of the financial crisis for macro and financial policies. World Bank Res. Obs. 25.
Den Butter, F.A., 2010. The Macroeconomics of the Credit Crisis: In Search of Externalities for Macro-Prudential Supervision, Tinbergen Institute Discussion Paper 2010-052/3.
Denk, O., Gomes, G., 2017. Financial Re-Regulation Since the Global Crisis?: An Index-Based Assessment, OECD Economic Department Working Papers 1396.
Dermine, J., 2013. Bank regulations after the global financial crisis: good intentions and unintended evil. Eur. Financ. Manag. 19, 658–674.
Dewatripont, M., 2014. European banking: bailout, bail-in and state aid control. Int. J. Ind. Organ. 34, 37–43.
Dewing, I.P., Russell, P.O., 2016. Whistleblowing, governance and regulation before the financial crisis: the case of HBOS. J. Bus. Ethics 134, 155–169.
Di Iasio, G., 2013. Incentives and financial crises: microfounded macroprudential regulation. J. Financ. Intermed. 22, 627–638.
Dietrich, A., Hess, K., Wanzenried, G., 2014. The good and bad news about the new liquidity rules of basel Iii in western European countries. J. Bank. Finance 44, 13–25.
Doff, R., 2008. A critical analysis of the solvency II proposals. Geneva Papers Risk Insur. – Issues Pract. 33, 193–206.
Doff, R., 2016. The final solvency II framework: will it be effective? Geneva Papers Risk Insur. – Issues Pract. 41, 587–607.
Doumpos, M., Gaganis, C., Pasiouras, F., 2015. Central bank independence, financial supervision structure and bank soundness: an empirical analysis around the crisis. J. Bank. Finance 61, 69–83.
Doyran, M.A., 2011. The contradictions of state regulation of the banking sector: the challenge of moral hazard during the sub-prime mortgage crisis. Int. J. Econ. Bus. Res. 3, 72–92.
Drago, D., Gallo, R., 2016. The impact and the spillover effect of a sovereign rating announcement on the euro area CDS market. J. Int. Money Finance 67, 264–286.
Drago, D., Gallo, R., 2017. The impact of sovereign rating changes on the activity of European banks. J. Bank. Finance 85, 99–112.
Drew, M.E., 2010. The future of financial regulation: lessons from the global financial crisis. Griffith Law Rev. 19, 1–5.
Duan, J.-C., Van Laere, E., 2012. A public good approach to credit ratings – from concept to reality. J. Bank. Finance 36, 3239–3247.
Duffie, D., 2018. Financial regulatory reform after the crisis: an assessment. Manag. Sci. 64, 4835–4857.
Düll, R., König, F., Ohls, J., 2017. On the exposure of insurance companies to sovereign risk-portfolio investments and market forces. J. Financ. Stabil. 31, 93–106.
EC, 2008. Communication From the Commission to The European Council. A European Economic Recovery Plan.
EC, 2019. Formal Request to EIOPA for Technical Advice on the Review of the Solvency II Directive.
Echevarria Icaza, V., 2017. The literature on the interaction of fiscal risk and financial stability – a survey. Cuadernos De Economía 40, 177–190.
Eichengreen, B., 2010. International financial regulation after the crisis. Daedalus 139, 107–114.
Eidenberger, J., Liebeg, D., Schmitz, S.W., Seliger, R., Sigmund, M., Steiner, K., Strobl, P., Ubl, E., et al., 2014. Macroprudential supervision: a key lesson from the financial crisis. Financ. Stabil. Rep. 27, 83–94.
Eijffinger, S.C., 2012. Rating agencies: role and influence of their sovereign credit risk assessment in the eurozone. J. Common Market Stud. 50, 912–921.
Elderfield, M., 2009. Solvency II: setting the pace for regulatory change. Geneva Papers Risk Insur. – Issues Pract. 34, 35–41.
Eling, M., Lehmann, M., 2018. The impact of digitalization on the insurance value chain and the insurability of risks. Geneva Papers Risk Insur. – Issues Pract. 43, 359–396.
Eling, M., Schmeiser, H., 2010. Insurance and the credit crisis: impact and ten consequences for risk management and supervision. Geneva Papers Risk Insur. – Issues Pract. 35, 9–34.
Eling, M., Schmeiser, H., Schmit, J.T., 2007. The solvency II process: overview and critical analysis. Risk Manag. Insur. Rev. 10, 69–85.
Eling, M., Schnell, W., 2016. What do we know about cyber risk and cyber risk insurance? J. Risk Finance 17.
Ellis, H., 1990. Government regulation of insurance companies. In: A Guide to Insurance Management. Springer, pp. 277–289.
Ellis, L., Haldane, A., Moshirian, F., 2014. Systemic risk, governance and global financial stability. J. Bank. Finance 45, 175–181.
Emond, I., Kunertová, T., 2019. European union regulation of insurance industry in the aftermath of the financial crisis. Lawyer Q. 9.
Engel, J., 2020. Regulation, financialization and fraud in Chinese commodity markets after the global financial crisis. Reg. Stud. 54, 219–228.
Erb, C.B., Harvey, C.R., Viskanta, T.E., 1996. Political risk, economic risk, and financial risk. Financ. Anal. J. 52, 29–46.
Eser, F., Schwaab, B., 2016. Evaluating the impact of unconventional monetary policy measures: empirical evidence from the ECB's securities markets programme. J. Financ. Econ. 119, 147–167.
EU, 2009. Directive 2009/136/EC of the European parliament and of the council. Off. J. Eur. Union 337, 11.
EU, 2014a. Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms.
EU, 2014b. Directive 2014/65/EU Of The European Parliament and the Council of 15 May 2014 on Markets in Financial Instruments.
European Commission, 2011. Proposal for a Regulation of the European Parliament and of the Council Amending Regulation (EC) no 1060/2009 on Credit Rating Agencies.
European Parliament, 2016. The Case for a European Public Credit Rating Agency. http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589865/EPRS_BRI(2016)589865_EN.pdf.
European Securities and Markets Authority, 2017. Guidelines On The Application Of The Endorsement Regime Under Article 4(3) Of The Credit Rating Regulation 1060/2009. https://www.esma.europa.eu/sites/default/files/library/esma33-9-205_final_report_on_the_application_of_the_cra_endorsement_regime_1.pdf.
Evans, J.R., Campbell, C.L., Justiniano, J.D., Fisher, A., 2012. Macroeconomic effects of FOMC forward guidance. Brook. Papers Econ. Act., 1–80.

Fabozzi, F.J., Giacometti, R., Tsuchida, N., 2016. Factor decomposition of the eurozone sovereign CDS spreads. J. Int. Money Finance 65, 1–23.
Falagiarda, M., Reitz, S., 2015. Announcements of ECB unconventional programs: implications for the sovereign spreads of stressed euro area countries. J. Int. Money Finance 53, 276–295.
Fasiangova, L., Haiss, P.R., 2009. Lessons from the financial crisis: is national supervision of international markets to blame? Wirtschaftspolitische Blätter 3, 389–405.
Ferran, E., 2011. The Regulation of Hedge Funds and Private Equity: A Case Study in the Development of the EU's Regulatory Response to the Financial Crisis, University of Cambridge Faculty of Law Research Paper.
Finsinger, J., Schmid, F.A., 1994. Prices, distribution channels and regulatory intervention in European insurance markets. Geneva Papers Risk Insur. – Issues Pract., 22–36.
Floreani, A., 2013. Risk measures and capital requirements: a critique of the solvency II approach. Geneva Papers Risk Insur. – Issues Pract. 38, 189–212.
Forbes, W., O'Donohoe, S., Prokop, J., 2013. Financial Regulation and Nation State Crisis Management: Evidence from Germany, Ireland and The UK, ZenTra Working Paper in Transnational Studies No. 18/2013.
Fornaro, L., Wolf, M., 2020. Covid-19 Coronavirus and Macroeconomic Policy, CEPR Discussion Paper No. DP14529.
Forsyth, D.J., 2015. Financial Innovation, Regulation and Crises in History. Enterp. Soc. 16, 716–719.
Fratianni, M.U., Marchionne, F., 2009. Rescuing Banks From the Effects of the Financial Crisis, Available at SSRN 1476786.
Fratzscher, M., Konig, P.J., Lambert, C., 2016. Credit provision and banking stability after the great financial crisis: the role of bank regulation and the quality of governance. J. Int. Money Finance 66, 113–135.
Freedman, C., Kumhof, M., Laxton, D., Muir, D., Mursula, S., 2010. Global effects of fiscal stimulus during the crisis. J. Monet. Econ. 57, 506–526.
French, A., Vital, M., Minot, D., 2015. Insurance and financial stability. Bank Engl. Q. Bull. Q3.
Gajewski, P., 2014. Monetary Policy Stress in Emu During the Moderation and the Global Crisis. Faculty of Economics and Sociology of the University of Lodz.
Gal, J., Gründl, H., 2017. The Recalibration of the European System of Financial Supervision in Regard of the Insurance Sector: from Dreary to Dreamy or Vice Versa?, SAFE Policy Letter.
Galati, G., Moessner, R., 2013. Macroprudential policy – a literature review. J. Econ. Surv. 27, 846–878.
Garicano, L., Lastra, R.M., 2010. Towards a new architecture for financial stability: seven principles. J. Int. Econ. Law 13, 597–621.
Gärtner, M., Griesbach, B., 2017. Rating agencies, self-fulfilling prophecy and multiple equilibria? An empirical model of the European sovereign debt crisis 2009–2011. Bus. Econ. Res. 7, 199–226.
Gärtner, M., Griesbach, B., Jung, F., 2011. PIGS or lambs? The European sovereign debt crisis and the role of rating agencies. Int. Adv. Econ. Res. 17, 288.
Gatzert, N., Wesker, H., 2012. A comparative assessment of basel II/III and solvency II. Geneva Papers Risk Insur. – Issues Pract. 37, 539–570.
Gerard, D., 2009. Financial crisis remedies in the European union: balancing competition and regulation in the conditionality of bailout plans. The future of retail banking in Europe: competition and regulatory challenges. In: Jentzsch, N., Wey, Ch. (Eds.), ECRI/CEPS.
Gerding, E.F., 2009. Code, crash, and open source: the outsourcing of financial regulation to risk models and the global financial crisis. Wash. Law Rev. 84, 127–198.
Gersbach, H., Hahn, V., 2008. Forward Guidance for Monetary Policy: Is It Desirable?, Economics Working Paper Series 8.
Gertler, M., Karadi, P., 2011. A model of unconventional monetary policy. J. Monet. Econ. 58, 17–34.
Giani, L., 2010. The complementarity between financial supervision and crisis resolution: a gap in the EU framework at the time of the crisis. Law Financ. Mark. Rev. 4, 421–427.
Gibson, H.D., Hall, S.G., Tavlas, G.S., 2014. Fundamentally wrong: market pricing of sovereigns and the Greek financial crisis. J. Macroecon. 39, 405–419.
Gibson, H.D., Hall, S.G., Tavlas, G.S., 2016. The effectiveness of the ECB's asset purchase programs of 2009 to 2012. J. Macroecon. 47, 45–57.
Giordano, R., Pericoli, M., Tommasino, P., 2013. Pure or wake-up-call contagion? Another look at the emu sovereign debt crisis. Int. Finance 16, 131–160.
Glod, A., 2018. European sovereign and private debt crisis what should we learn? Acta Univ. Danubius. Œconomica 14.
Gokhale, J., Van Doren, P., 2009. Would a stricter fed policy and financial regulation have averted the financial crisis? Cato Policy Anal. Ser. 648.
Gomber, P., Nassauer, F., 2014. Neuordnung Der Finanzmärkte In Europa Durch MiFID II/MiFIR, SAFE White Paper.
Gómez-Puig, M., Sosvilla-Rivero, S., 2016. Causes and hazards of the euro area sovereign debt crisis: pure and fundamentals-based contagion. Econ. Model. 56, 133–147.
Goodhart, C.A., 2014. Lessons for monetary policy from the euro-area crisis. J. Macroecon. 39, 378–382.
Goodstadt, L.F., 2009. The Global Crisis: Fatal Decisions – Four Case Studies in Financial Regulation, HKIMR Working Paper No. 33/2009.
Gordon, J.N., Ringe, G., 2015. Bank Resolution in Europe: The Unfinished Agenda of Structural Reform. Oxford University Press, United Kingdom, pp. 500–523.
Gorton, G., Metrick, A., 2012a. Getting up to speed on the financial crisis: a one-weekend-reader's guide. J. Econ. Lit. 50, 128–150.
Gorton, G., Metrick, A., 2012b. Securitized banking and the run on repo. J. Financ. Econ. 104, 425–451.
Grammatikos, T., Vermeulen, R., 2012. Transmission of the financial and sovereign debt crises to the EMU: stock prices, CDS spreads and exchange rates. J. Int. Money Finance 31, 517–533.
Groenleer, M.L., Mijs, A., Ten Heuvelhof, E., Van Meeuwen, B., Van der Puil, J., 2014. Strategic Behaviour and Crisis-Driven Change in Regulation and Governance of the European Financial and Economic System: From Networks to Hybrids, Jerusalem Papers in Regulation & Governance Working Paper 63.
Gros, D., Alcidi, C., Giovannini, A., 2012. Central Banks in Times of Crisis: The FED Vs. The ECB, CEPS Policy Briefs.
Grosse, R., 2017. The global financial crisis – market misconduct and regulation from a behavioral view. Res. Int. Bus. Finance 41, 387–398.
Gualandri, E., Landi, A., Venturelli, V., 2009. Financial crisis and new dimensions of liquidity risk: rethinking prudential regulation and supervision. J. Money Invest. Bank., 25–42.
Guerreiro, D., 2014. Is the European debt crisis a mere balance of payments crisis? Econ. Model. 44, 50–56.
Hale, T., Petherick, A., Phillips, T., Webster, S., 2020. Variation in Government Responses to COVID-19. Blavatnik School Of Government, Working Paper 31.
Harnay, S., Scialom, L., 2016. The influence of the economic approaches to regulation on banking regulations: a short history of banking regulations. Camb. J. Econ. 40, 401–426.
Harrington, S.E., 2009. The financial crisis, systemic risk, and the future of insurance regulation. J. Risk Insur. 76, 785–819.
Haspolat, F.B., 2015. Analysis of moody's sovereign credit ratings: criticisms towards rating agencies are still valid? Proc. Econ. Finance 30, 283–293.
Hauptmeier, S., Sanchez-Fuentes, A.J., Schuknecht, L., 2011. Towards expenditure rules and fiscal sanity in the euro area. J. Policy Model. 33, 597–617.
Helleiner, E., Pagliari, S., 2009. Towards a new bretton woods? The first G20 leader summit and the regulation of global finance. New Polit. Econ. 14, 275–287.
Heynderickx, W., Cariboni, J., Petracco Giudici, M., 2016. Drivers Behind the Changes in European Banks' Capital Ratios: A Descriptive Analysis, JRC Working Papers in Economics and Finance.
Honkapohja, S., 2014. The euro area crisis: a view from the North. J. Macroecon. 39, 260–271.
Hopt, K.J., 2013. Corporate governance of banks and other financial institutions after the financial crisis. J. Corp. Law Stud. 13, 219–253.
Hoque, H., 2013. From the credit crisis to the sovereign debt crisis: determinants of share price performance of global banks. Int. Rev. Financ. Anal. 30, 334–350.
Hoque, H., Andriosopoulos, D., Andriosopoulos, K., Douady, R., 2015. Bank regulation, risk and return: evidence from the credit and sovereign debt crises. J. Bank. Finance 50, 455–474.
Höring, D., 2013. Will solvency II market risk requirements bite? The impact of solvency II on insurers' asset allocation. Geneva Papers Risk Insur. – Issues Pract. 38, 250–273.
Hoshi, T., 2011. Financial regulation: lessons from the recent financial crises. J. Econ. Lit. 49, 120–128.
Howarth, D., Quaglia, L., 2014. The steep road to European banking union: constructing the single resolution mechanism. J. Common Market Stud. 52, 125.
Howarth, D., Quaglia, L., 2015. The New Intergovernmentalism in Financial Regulation and European Banking Union, The New Intergovernmentalism: States and Supranational Actors in the Post-Maastricht Era 146.
Howarth, D., Spendzharova, A., 2019. Accountability in post-crisis eurozone governance: the tricky case of the European stability mechanism. J. Common Market Stud. 57, 894–911.
Hubert, P., Labondance, F., 2016. The Effect of Ecb Forward Guidance on Policy Expectations.
Huerta De Soto, J., 2009. The fatal error of solvency II. Econ. Aff. 29, 74–77.
Huertas, T.F., 2011. The Road to Better Resolution: From Bail-Out to Bail-in. The Euro Area and the Financial Crisis, pp. 243.
Hutchinson, J., Smets, F., 2017. Monetary policy in uncertain times: ECB monetary policy since June 2014. Manch. School 85, 1–15.
Ilgmann, C., Menner, M., 2011. Negative nominal interest rates: history and current proposals. Int. Econ. Econ. Policy 8, 383–405.
Inderst, R., 2009. Retail finance: thoughts on reshaping regulation and consumer protection after the financial crisis. Eur. Bus. Organ. Law Rev. 10, 455–464.
International Monetary Fund, 2010. Global Financial Stability Report: Sovereigns, Funding, and Systemic Liquidity.
Ioannou, S., Wójcik, D., Dymski, G., 2019. Too-Big-To-Fail: why megabanks have not become smaller since the global financial crisis? Rev. Polit. Econ. 31, 356–381.
Isebor, J.E., 2014. The future of international banking regulations in response to the financial crisis of 2007/2009: after basel III then what next? Risk Gov. Control: Financ. Mark. Inst. 4, 27–52.
Issing, O., 2014. Communication and transparency – the example of the ECB. J. Econ. Dyn. Control 49, 70–73.
Jeanne, O., Korinek, A., 2020. Macroprudential regulation versus mopping up after the crash. Rev. Econ. Stud. 87, 1470–1497.
Jones, E., Kelemen, R.D., Meunier, S., 2016. Failing forward? The euro crisis and the incomplete nature of European integration. Comparat. Polit. Stud. 49, 1010–1034.
Jones, O., 2014. Solvency II: the journey so far. In: Doff, R. (Ed.), Solvency II Handbook: Practical Approaches to Implementation. , pp. 7–26.
Jost, K., 2008. Financial Crisis: Did Lax Regulation Cause a Credit Meltdown?, vol. 18. Congressional Quarterly.

Kantor, B., Holdsworth, C., 2010. Lessons from the global financial crisis (or why capital structure is too important to be left to regulation). J. Appl. Corp. Finance 22, 112–122.
Kao, E.S., 2011. Moral hazard during the savings and loan crisis and the financial crisis of 2008–09: implications for reform and the regulation of systemic risk through disincentive structures to manage firm size and interconnectedness. N. Y. Univ. Annu. Surv. Am. Law 67, 817–862.
Karagounis, K., Syrrakos, D., Simister, J., 2015. The stability and growth pact, and balanced budget fiscal stimulus: evidence from Germany and Italy. Intereconomics 50, 32–39.
Kern, A., 2013. Bank Resolution and Recovery in the EU: Enhancing Banking Union? In: ERA Forum, vol. 14. Springer, pp. 81–93.
Kinateder, H., 2016. Basel II versus III: a comparative assessment of minimum capital requirements for internal model approaches. J. Risk 18.
Klusak, P., Alsakka, R., Ap Gwilym, O., 2019. The impact of ESMA regulatory identifiers on the quality of ratings. Int. Rev. Financ. Anal. 66.
Kodres, L., Narain, A., 2012. Fixing the system-after a burst of effort to reform financial regulation widely perceived as contributing to the global crisis, pace has slowed. Finance Dev. 49, 14.
Kollmann, R., Ratto, M., Roeger, W., et al., 2013. Fiscal policy, banks and the financial crisis. J. Econ. Dyn. Control 37, 387–403.
Konrath, N., 1996. Solvency of insurance undertakings and financial groups. Geneva Papers Risk Insur. – Issues Pract., 22–35.
Kravchuk, I., et al., 2017. Assets securitization in European financial scope. Account. Finance, 91–98.
Kroszner, R.S., Strahan, P.E., 2011. Financial regulatory reform: challenges ahead. Am. Econ. Rev. 101, 242–246.
Kroszner, R.S., Strahan, P.E., 2014. Regulation and Deregulation of the U.S. Banking Industry: Causes, Consequences, and Implications for the Future. University of Chicago Press, pp. 485–543.
Krug, S., Lengnick, M., Wohltmann, H.-W., 2015. The impact of basel III on financial (In) stability: an agent-based credit network approach. Quant. Finance 15, 1917–1932.
Krugman, P., 2009. How did economists get it so wrong? New York Times 2, 2009.
Kudrna, Z., 2016. Financial market regulation: crisis-induced supranationalization. J. Eur. Integr. 38, 251–264.
Laguna De Paz, J.C., 2019. Administrative and judicial review of Eu supervisory decisions in the banking sector. J. Bank. Regul. 20, 159–173.
Lander, G.H., Barker, K., Zabelina, M., Williams, T.A., 2009. Subprime mortgage tremors: an international issue. Int. Adv. Econ. Res. 15, 1–16.
Lane, P.R., 2012. The European sovereign debt crisis. J. Econ. Perspect. 26, 49–68.
Langevoort, D.C., 2010. Global securities regulation after the financial crisis. J. Int. Econ. Law 13, 799–815.
Lannoo, K., 2011. The EU's Response to the Financial Crisis: A Mid-Term Review, CEPS Policy Brief.
Lannoo, K., 2013. The New Financial Regulatory Paradigm: A Transatlantic Perspective, CEPS Policy Briefs.
Lau, L.J., 2010. Financial Regulation and Supervision Post the Global Financial Crisis, IGEF Working Paper No. 2.
Lee, K., Lu, W., 2015. Do bank regulation and supervision matter? International evidence from the recent financial crisis. J. Financ. Econ. Policy 7, 275–288.
Lemke, W., Vladu, A.L., 2016. Below the Zero Lower Bound: A Shadow-Rate Term Structure Model for the Euro Area, Deutsche Bundesbank Discussion Paper No. 32/2016.
Lener, R., 2013. The revision of the supervision of professionals operating in the banking, financial and insurance sector in the context of the financial market crisis. Rivista Bancaria-Minerva Bancaria 69, 63–84.
Leong, J., 2010. Combating Financial Crisis: Building Super-Structures of International Financial Regulation, Available at SSRN 1690537.
Levine, R., 2012. The governance of financial regulation: reform lessons from the recent crisis. Int. Rev. Finance 12, 39–56.
Liapis, K., 2012. The regulation framework for the banking sector: the EMU, European banks and rating agencies before and during the recent financial and debt crisis. Int. J. Discl. Gov. 9, 301–330.
Liou, K.T., 2013. The financial crisis and the challenge of government regulation. Public Perform. Manag. Rev. 37, 208–221.
Lodge, M., Wegrich, K., 2011. Arguing about financial regulation: comparing national discourses on the global financial crisis. PS: Polit. Sci. Polit. 44, 726–730.
London Working Group, 2002. Prudential supervision of insurance undertakings (Sharma Report). Conference Of Insurance Supervisory Services Of The Member States Of The EU.
Lorson, J., Schmeiser, H., Wagner, J., 2012. J. Insur. Regul. 31, 125–156.
Lothian, T., 2012. Beyond macroprudential regulation: three ways of thinking about financial crisis. Regul. Reform. Global Policy 3, 410–420.
Loukanari, A., Berardo, C., 2019. LIBOR and EU securitization changes. J. Struct. Finance 25, 40–46.
Lupo-Pasini, F., Buckley, R.P., 2015. Global systemic risk and international regulatory coordination: squaring sovereignty and financial stability. Am. Univ. Int. Law Rev. 30, 665.
Maddaloni, A., Scopelliti, A., 2019. Rules and Discretion(s) in Prudential Regulation and Supervision: Evidence From EU Banks in the Run-Up to the Crisis, ECB Working Paper.
Mah-Hui, M.L., 2008. Old wine in new bottles: subprime mortgage crisis-causes and consequences. J. Appl. Res. Account. Finance 3, 3–13.
Malkiel, B.G., 2011. The efficient-market hypothesis and the financial crisis. Rethinking Finance: Perspectives on the Crisis (Proceedings of a Conference).
Maşca, S.G., Cuceu, I.C., Văidean, V.L., 2015. The fiscal policy as growth engine in Eu countries. Proc. Econ. Finance 32, 1628–1637.
Masciandaro, D., 2010. Reforming regulation and supervision in Europe: five missing lessons from the financial crisis. Intereconomics 45, 293–296.
Masciandaro, D., Pansini, R.V., Quintyn, M., 2013. The economic crisis: did supervision architecture and governance matter? J. Financ. Stabil. 9, 578–596.
Masciandaro, D., Quintyn, M., 2010. The Architecture of Insurance Supervision Before and After the Financial Crisis, PaoloBaffi Centre Research Paper.
Masciandaro, D., Quintyn, M., 2016. The governance of financial supervision: recent developments. J. Econ. Surv. 30, 982–1006.
Masciandaro, D., Vega Pansini, R., Quintyn, M., 2011. The Economic Crisis: Did Financial Supervision Matter?, pp. 1–47, IMF Working Papers.
Masera, R., 2010. Reforming financial systems after the crisis: a comparison of EU and USA. PSL Q. Rev. 63, 297–360.
Masood, O., Aktan, B., Pariente, G., 2010. A discussion of financial regulations' impact on the subprime crisis: implications for financial markets. Int. J. Bus. 15, 51–69.
Mateus, A.M., 2009. After the Crisis: Reforming Financial Regulation, Revista Finanças Publicas e Direito Fiscal.
Mayntz, R., 2013. Financial Market Regulation in the Shadow of the Sovereign Debt Crisis, MPIfG Discussion Paper.
Mazumder, M.I., Ahmad, N., 2010. Greed, financial innovation or laxity of regulation? A close look into the 2007–2009 financial crisis and stock market volatility. Stud. Econ. Finance 27, 110–134.
McNulty, J.E., Garcia-Feijoo, L., Viale, A., 2019. The regulation of mortgage servicing: lessons from the financial crisis. Contemp. Econ. Policy 37, 170–180.
Meinusch, A., Tillmann, P., 2016. The macroeconomic impact of unconventional monetary policy shocks. J. Macroecon. 47, 58–67.
Melecky, M., Podpiera, A.M., 2015. Placing Bank Supervision in the Central Bank: Implications for Financial Stability Based on Evidence from the Global Crisis. The World Bank.
Mertzanis, H., 2010. The financial crisis and the future of European financial supervision structures. J. Financ. Transform., 137–148.
Micossi, S., Bruzzone, G., Carmassi, J., 2013. The New European Framework for Managing Bank Crises, CEPS Policy Briefs.
Miele, M.G., Sales, E., 2011. The financial crisis and regulation reform. J. Bank. Regul. 12, 277–307.
Mihai Yiannaki, S., 2009. Regulatory failure and the subprime credit crunch-the importance of Basel Ii regulation/supervision. Icfai Univ. J. Bank. Law 2.
Mittnik, S., 2016. Solvency II Calibrations: Where Curiosity Meets Spuriosity, Preprints.
Monkiewicz, J., 2013. Dialectics of the current regulatory and supervisory developments in insurance. Geneva Papers Risk Insur. 38, 183.
Monnet, É., Pagliari, S., Vallée, S., 2019. Beyond Financial Repression and Regulatory Capture: The Recomposition of European Financial Ecosystems After the Crisis, LEQS Paper No. 147/2019.
Montalbano, G., 2015. Geopolitical economy and competing capitalist blocs in the EU post-crisis financial regulation: two cases from the reform of the banking sector. World Rev. Polit. Econ. 6, 498–521.
Morais, L.S., Feteira, L.T., 2018. All's well that ends well? Abuse regulation in the wake of the financial crisis: the interplay between regulation and the application of competition law to the financial sector. In: Abusive Practices in Competition Law. Edward Elgar Publishing, pp. 109–128.
Moshirian, F., 2011. The global financial crisis and the evolution of Mark. Inst. Regul. J. Bank. Finance 35, 502–511.
Murgescu, D.M., 2011. The influence of the economic crisis on EU financial regulations changes. Ann. 'Dunarea De Jos' Univ. Galati: Fascicle 1: Econ. Appl. Inform. 17, 91–94.
Murphy, D., 2020. Our Lessons Have Returned: Insights into Post-Crisis Financial Regulation from Mandatory OTC Derivatives Clearing Policy, LSE Legal Studies Working Paper No. 6/2020.
Næss-Schmidt, S., Bjarke, J., Ehmann, H., Christiansen, B., 2019. EU Implementation of the Final Basel Iii Framework – Impact on the Naking Market and the Real Economy. Copenhagen Economics.
Nakov, A., et al., 2008. Optimal and simple monetary policy rules with zero floor on the nominal interest rate. Int. J. Central Bank. 4, 73–127.
Negril˘a, A., 2009. The implementation of systemic risk management and the reinforcing of macro-prudential supervision – vital elements in avoiding the future occurrence of a financial crisis similar to the present one. Theor. Appl. Econ. 16, 17–30.
Noeth, B.J., Sengupta, R., 2011. Is shadow banking really banking? Reg. Econ. 10, 8–13.
Nolle, D.E., 2012. Global financial system reform: the dodd-frank act and the G20 agenda. J. Financ. Econ. Policy 4, 160–197.
Nouy, D., 2012. Is sovereign risk properly addressed by financial regulation? Banque France Financ. Stabil. Rev. 16, 95–106.
Nyborg, K.G., 2008. Bank Supervision After the Financial Crisis: Signals from the Market for Liquidity, NHH Department of Business and Management Science Discussion Paper 2015/14.
Obstfeld, M., Rogoff, K., 2009. Global Imbalances and the Financial Crisis: Products of Common Causes, CEPR Discussion Paper No. DP7606.
Ojo, M., 2011. The changing role of central banks and the role of competition in financial regulation during (And in the aftermath of) the financial crisis. Eur. Law J. 17, 513–533.

Ojo, M., 2013. Capital, Liquidity Standards and Macro Prudential Policy Tools in Financial Supervision: Addressing Sovereign Debt Problems, MPRA Paper.
Ojo, M., 2016. Redefining a Role for Central Banks: The Increased Importance of Central Banks' Roles in the Management of Liquidity Risks and Macro Prudential Supervision in the Aftermath of the Financial Crisis, Munich Personal RePEc Archive Paper No. 70905.
Oliveira, V.B., Raposo, C., 2020. How did regulation and market discipline influence banking distress in Europe? Lessons from the global financial crisis. Stud. Econ. Finance 37, 160–198.
Omarova, S.T., 2011. The dodd-frank act: a new deal for a new age. N. C. Bank. Inst. 15, 83.
Omarova, S.T., 2012. Bankers, bureaucrats, and guardians: toward tripartism in financial services regulation. J. Corp. Law 37.
Ongena, S., Popov, A., Udell, G.F., 2013. "When the cat's away the mice will play": does regulation at home affect bank risk-taking abroad? J. Financ. Econ. 108, 727–750.
Oreiro, J.L., 2013. Some notes on "The evolution of financial regulation before and after the crisis". Rev. Econ. 15, 51–54.
Overbeek, H., 2012. Sovereign debt crisis in euroland: root causes and implications for European integration. Int. Spect. 47, 30–48.
Pacces, A.M., 2010. Consequences of uncertainty for regulation: law and economics of the financial crisis. Eur. Company Financ. Law Rev. 7, 479–511.
Page, R.T., 2010. Foolish revenge or shrewd regulation? Financial-industry tax law reforms proposed in the wake of the financial crisis. Tulane Law Rev. 85, 191–214.
Pagliari, S., 2013. A wall around Europe? The European regulatory response to the global financial crisis and the turn in transatlantic relations. J. Eur. Integr. 35, 391–408.
Paltalidis, N., Gounopoulos, D., Kizys, R., Koutelidakis, Y., 2015. Transmission channels of systemic risk and contagion in The European financial network. J. Bank. Finance 61, 36–52.
Palvia, A.A., Patro, D.K., 2011. Re-Examining the Role of Market Discipline for Bank Supervision: Evidence From the Subprime Crisis, Available at SSRN 1593031.
Panico, C., Pinto, A., Puchet Anyul, M., Vazquez Suarez, M., 2013. The evolution of financial regulation before and after the crisis. Rev. Econ. 15, 9–40.
Papadopoulos, S., Stavroulias, P., Sager, T., 2019. Systemic early warning systems for EU14 based on the 2008 crisis: proposed estimation and model assessment for classification forecasting. J. Bank. Regul. 20, 226–244.
Papadopoulos, T., 2015. European System of Financial Supervision. Max Planck Encyclopedia of Public International Law.
Papaikonomou, V.L., 2010. Credit rating agencies and global financial crisis: need for a paradigm shift in financial market regulation. Stud. Econ. Finance 27, 161–174.
Park, K.H., 2015. Lessons and implications from the European sovereign debt crisis. J. Finance Econ. 3, 72–88.
Paudyn, B., 2013. Credit rating agencies and the sovereign debt crisis: performing the politics of creditworthiness through risk and uncertainty. Rev. Int. Polit. Econ. 20, 788–818.
Pavlat, V., 2009. Financial stability, world financial crisis and financial markets' regulation: some new issues. Econ. Stud. Anal./Acta VSFS 3, 48–61.
Peihani, M., 2015. The basel committee on banking supervision: a post-crisis assessment of governance and accountability. Can. Foreign Policy J. 21, 146–163.
Peleckienė, V., Peleckisa, K., 2014. Omnibus II effective measures in adjusting the current solvency II framework. Proc. – Soc. Behav. Sci. 110, 156–163.
Pelkiewicz, A.J., Ahmed, S.W., Fulcher, P., Johnson, K.L., Reynolds, S.M., Schneider, R.J., Scott, A.J., 2020. A review of the risk margin – solvency II and beyond. Br. Actuar. J. 25.
Peretz, P., Schroedel, J.R., 2009. PAR symposium on the financial crisis: financial regulation in the United States: lessons from history. Public Adm. Rev. 69, 603–612.
Philipponnat, T., 2019. How Can Safer Banks Hurt the Eu Economy? A Critical Analysis of the Report on the EU Implementation of the Final Basel III Framework by Copenhagen Economics for the European Banking Federation, Finance Watch.
Pino, G., Sharma, S.C., 2019. On the contagion effect in the US banking sector. J. Money Credit Bank. 51, 261–280.
Pistor, K., 2010. Host's Dilemma: Rethinking Eu Banking Regulation in Light of the Global Crisis. Columbia Law and Economics, Working Paper No. 378.
Pooran, P.N., 2009. Macro-prudential supervision – a panacea for the global financial crisis? Law Financ. Mark. Rev. 3, 534–538.
Posner, E., Véron, N., 2010. The EU and financial regulation: power without purpose? J. Eur. Public Policy 17, 400–415.
Pradier, P.C., Chneiweiss, A., 2017. The evolution of insurance regulation in the Eu since 2005. In: Financial Regulation in the EU. Springer, pp. 199–251.
Prisecaru, P., 2014. Banking union – an European project with certain success prospects. Proc. Econ. Finance 8, 582–589.
Pronobis, M., 2014. Is monetary policy of ECB the right response to the eurozone crisis? Proc. – Soc. Behav. Sci. 156, 398–403.
Prorokowski, L., 2015. MiFID II Compliance – are we ready? J. Financ. Regul. Compliance 23.
Quaglia, L., 2013. Financial regulation and supervision in the European union after the crisis. J. Econ. Policy Reform 16, 17–30.
Quaglia, L., 2015. The politics of 'Third country equivalence' in post-crisis financial services regulation in the European union. West Eur. Polit. 38, 167–184.
Quaglia, L., Spendzharova, A., 2018. The Challenges of Multi-Level Coordination In Post-Crisis Banking Regulation, CERiM Online Paper.
Rae, R.A., Barrett, A., Brooks, D., Chotai, M.A., Pelkiewicz, A.J., Wang, C., 2018. A review of solvency II: has it met its objectives? Br. Actuar. J. 23.
Ramos-Francia, M., Aguilar-Argaez, A.M., García-Verdú, S., Cuadra, G., 2014. Heading Into Trouble: A Comparison Of The Latin American Crises And The Euro Area's Current Crisis, Working Papers.
Rannou, Y., 2010. Banking regulation, behavioural finance and the financial crisis in Europe: looking to the kindleberger-minsky paradigm. J. Risk Manag. Financ. Inst. 3, 278–295.
Reichlin, L., 2014. Monetary policy and banks in the euro area: the tale of two crises. J. Macroecon. 39, 387–400.
Reinhart, C.M., Rogoff, K.S., 2010. Growth in a time of debt. Am. Econ. Rev. 100, 573–578.
Reinhart, C.M., Rogoff, K.S., 2011. From financial crash to debt crisis. Am. Econ. Rev. 101, 1676–1706.
Rex, J., 2018. Scoundrel or scapegoat? A reassessment of the office of thrift supervision's performance before the 2008 financial crisis. Adm. Soc. 50, 1396–1421.
Riccetti, L., Russo, A., Gallegati, M., 2018. Financial regulation and endogenous macroeconomic crises. Macroecon. Dyn. 22, 896–930.
Ringe, W.-G., Morais, L.S., Ramos Muñoz, D., 2019. A Holistic Approach To The Institutional Architecture Of Financial Supervision And Regulation In The EU. European Banking Institute, Working Paper Series.
Rixen, T., 2013. Why reregulation after the crisis is feeble: shadow banking. Offshore Financ. Centers Jurisd. Compet. Regul. Gov. 7, 435–459.
Roman, A., Bilan, I., 2012. The euro area sovereign debt crisis and the role of ECB's monetary policy. Proc. Econ. Finance 3, 763–768.
Roncaglia, A., 2010. Confronting the financial crisis: surveillance and regulation. PSL Q. Rev. 63, 293–296.
Rose, A.K., Spiegel, M.M., 2012. Cross-country causes and consequences of the 2008 crisis: early warning. Jpn. World Econ. 24, 1–16.
Rostagno, M., Bindseil, U., Kamps, A., Lemke, W., Sugo, T., Vlassopoulos, T., 2016. Breaking Through The Zero Line: The Ecb'S Negative Interest Rate Policy, Presentation at Brookings.
Rötheli, T.F., 2010. Causes of the financial crisis: risk misperception, policy mistakes, and banks' bounded rationality. J. Socio-Econ. 39, 119–126.
Rubio, M., Carrasco-Gallego, J.A., 2016. The new financial regulation in basel III and monetary policy: a macroprudential approach. J. Financ. Stabil. 26, 294–305.
Ruppel, C.C., 2009. Dimensions of the global financial crisis: the future of corporate governance and regulation. Int. J. Regul. Gov. 9, 71–98.
Ruščáková, A., Semančíková, J., 2016. The European debt crisis: a brief discussion of its causes and possible solutions. Proc. – Soc. Behav. Sci. 220, 399–406.
Sarcinelli, M., 2010. Past and future regulation to prevent a systemic financial crisis. PSL Q. Rev. 63, 101–127.
Schaeken Willemaers, G., 2014. Client Protection On European Financial Markets-From Inform Your Client To Know Your Product And Beyond: An Assessment Of The PRIIPs Regulation, MiFID II/MiFIR And IMD 2, Revue Trimestrielle De Droit Financier.
Schich, S., 2010. Insurance companies and the financial crisis. OECD J.: Financ. Market Trends 2009, 123–151.
Schuckmann, S., 2007. The Impact Of Solvency II On Insurance Market Competition – An Economic Assessment. Universidad De St. Gallen, St. Gallen, Suiza, 58.
Schuster, R.T., 2012. Sacrificing functionality for transparency: the regulation of swap agreements in the wake of the financial crisis. Syracuse Law Rev. 62, 385–404.
Schwarcz, S.L., 2015. Securitization and post-crisis financial regulation. Cornell Law Rev. 101, 115–139.
Schwerter, S., 2011. Basel III's ability to mitigate systemic risk. J. Financ. Regul. Compliance 19.
Sgherri, S., Zoli, E., 2009. Euro Area Sovereign Risk During The Crisis: "European Department". International Monetary Fund, European Department.
Siegel, J.J., 2009. Efficient market theory and the recent financial crisis. Wall Street J., A23.
Simoneti, M., 2010. Bankers' pay and the financial crisis: policy debate and new regulation. Bančni Vestnik 59, 55–65.
Sironi, A., 2018. The Evolution Of Banking Regulation Since The Financial Crisis: A Critical Assessment. Baffi Carefin Centre, Research Paper.
Sklias, P., Roukanas, S., Maris, G., 2014. Keynes and the Eurozone's crisis: towards a fiscal union? Proc. Econ. Finance 9, 66–73.
Slattery, D., Nellis, J.G., 2011. Rethinking the role of regulation in the aftermath of the global financial crisis: the case of the UK. Panoeconomicus 58, 407–423.
Sohn, W., Vyshnevskyi, I., 2017. The 'Twin Peaks' model of post-crisis banking supervision. Appl. Econ. Lett. 24, 571–574.
S&P Dow Jones Indices LLC, 2019. S&P/Case-Shiller U.S. National Home Price Index [CSUSHPINSA]. https://fred.stlouisfed.org/series/CSUSHPINSA.
Staikouras, P., Triantopoulos, C., 2016. Financial supervision after the crisis: the structures, the lessons, and the way forward. Eur. Bus. Law Rev. 27, 85–135.
Stellinga, B., 2020. The open-endedness of macroprudential policy. Endogenous risks as an obstacle to countercyclical financial regulation. Bus. Polit. 22, 224–251.
Suarez, J., 2010. The pending challenges in global financial regulation reform: liquidity insurance for systemic crises. Margin: J. Appl. Econ. Res. 4, 241–253.
Swain, R., Swallow, D., 2015. The Prudential Regulation Of Insurers Under Solvency II. Bank of England Quarterly Bulletin Q2.

Swamy, V., 2014. Bank Regulation, Supervision And Efficiency During The Global Financial Crisis, Available at SSRN: 2491413.
Swanson, E.T., 2017. Measuring The Effects Of Federal Reserve Forward Guidance And Asset Purchases On Financial Markets, National Bureau of Economic Research No. 23311.
Tanasie, A., Netoiu, L., Cîrciumaru, D., Netoiu, T., 2015. European Union's post crisis financial regulatory system – a brief analysis of existing options. Proc. Econ. Finance 22, 552–559.
Tarullo, D.K., 2019. Financial regulation: still unsettled a decade after the crisis. J. Econ. Perspect. 33, 61–80.
Taskinsoy, J., 2019. Higher Capital And Liquidity Regulations Of Basel Standards Have Made Banks And Banking Systems Become More Prone To Financial And Economic Crises, Available at SSRN 3401378.
Taylor, J.B., 2009a. Economic policy and the financial crisis: an empirical analysis of what went wrong. Crit. Rev. 21, 341–364.
Taylor, J.B., 2009b. How government created the financial crisis. Wall Street J. 9, A19.
Teixeira, J.C., Silva, F.J., Fernandes, A.V., Alves, A.C., 2014. Banks' capital, regulation and the financial crisis. N. Am. J. Econ. Finance 28, 33–58.
Thalassinos, E., Thalassinos, Y., 2018. How To Avoid Financial Crises. In: Al-Sharhan, S.A., Simintiras, A.C., Dwivedi, Y.K., Janssen, M., Mäntymäki, M., Tahat, L., Moughrabi, I., Ali, T.M., Rana, N.P. (Eds.), Challenges And Opportunities In The Digital Era. Springer International Publishing, Cham, pp. 232–243.
Thiemann, M., Birk, M., Friedrich, J., 2018. Much ado about nothing? Macro-prudential ideas and the post-crisis regulation of shadow banking. KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie 70, 259–286.
Toarna, A., Cojanu, V., 2015. The 2008 crisis: causes and future direction for the academic research. Proc. Econ. Finance 27, 385–393.
Trabelsi, M.A., 2012. The impact of the sovereign debt crisis on the eurozone countries. Proc. – Soc. Behav. Sci. 62, 424–430.
Trichet, J.-C., 2005. Financial stability and the insurance sector. Geneva Papers Risk Insur. – Issues Pract. 30, 65–71.
Tröger, T.H., 2018. Too complex to work: a critical assessment of the bail-in tool under the european bank recovery and resolution regime. J. Financ. Regul. 4, 35–72.
Tröger, T.H., 2020. Why MREL won't help much: minimum requirements for bail-in capital as an insufficient remedy for defunct private sector involvement under the european bank resolution framework. J. Bank. Regul. 21, 64–81.
Tropeano, D., 2011. Financial regulation after the crisis: where do we stand? Int. J. Polit. Econ. 40, 45–60.
Turk, M.C., 2014. Reframing international financial regulation after the global financial crisis: regional states and interdependence, not regulatory networks and soft law. Michigan J. Int. Law 36, 59–128.
Turk, R., 2016. Negative Interest Rates: How Big A Challenge For Large Danish And Swedish Banks? International Monetary Fund.
Ulrich, F., 2011. Fiscal Stimulus, Financial Ruin. Institutions In Crisis: European Perspectives On The Recession., pp. 142–163.
Umlauft, T.S., 2015. Regulators' irrational rationality and bankers' rational irrationality: too big to fail, self-regulation, moral hazard and the global financial crisis, 2007–2009. Aust. J. Hist. Stud. 26, 21–45.
Ureche-Rangau, L., Burietz, A., 2013. One crisis, two cris. The subprime crisis and the European sovereign debt problems. Econ. Model. 35, 35–44.
US-Congress, 2008. H.R. 5149 (110th): Economic Stimulus Act Of 2008.
US-Congress, 2009. H.R. 1 (111th): American Recovery And Reinvestment Act Of 2009.
Utzig, S., 2010. The Financial Crisis And The Regulation Of Credit Rating Agencies: A European Banking Perspective, ADBI Working Paper No. 188.
Van Hulle, K., 2011. Solvency II: state of play and perspectives. Zeitschrift für die gesamte Versicherungswissenschaft 100, 177–192.
Vaughan, T.M., 2009. The economic crisis and lessons from (and for) US insurance regulation. J. Insur. Regul. 28, 3–18.
Velinov, A., 2015. Assessing fiscal-policy sustainability: on the different states of the Debt-To-GDP process. Finanz-Archiv: Zeitschrift für das Gesamte Finanzwesen 71, 415.
Véron, N., 2014. The G20 Financial Reform Agenda After Five Years. Bruegel Policy Contribution.
Véron, N., Wolff, G.B., 2013. From Supervision To Resolution: Next Steps On The Road To European Banking Union. Bruegel Policy Contribution.
Verret, J.W., 2009. Unintended Consequences Of Executive Compensation Regulation Threatens To Worsen The Financial Crisis, George Mason Law & Economics Research Paper 09-34.
Von Bomhard, N., 2010. The advantages of a global solvency standard. Geneva Papers Risk Insur. – Issues Pract. 35, 79–91.
Waelti, S., 2015. Financial crisis begets financial reform? The origin of the crisis matters. Eur. J. Polit. Econ. 40, 1–15.
Wallison, P.J., 2009. Cause and effect: government policies and the financial crisis. Crit. Rev. 21, 365–376.
Walter, J.R., 2019. US bank capital regulation: history and changes since the financial crisis. Econ. Q., 1–40.
Webel, B., Murphy, E.V., 2008. The Emergency Economic Stabilization Act And Current Financial Turmoil: Issues And Analysis, CRS Report for Congress.
Weber, R.F., 2010. New governance, financial regulation, and challenges to legitimacy: the example of the internal models approach to capital adequacy regulation. Adm. Law Rev., 783–869.
Wegener, C., Kruse, R., Basse, T., 2019. The walking debt crisis. J. Econ. Behav. Organ. 157, 382–402.
Welfens, P.J., 2008. Banking crisis and prudential supervision: a european perspective. Int. Econ. Econ. Policy 4, 347–356.
Werkmeister, W., 2010. Financial crisis 101: a beginner's guide to structured finance, the financial crisis, and capital market regulation. Harv. Kennedy School Rev. 10, 92–98.
Werner, R.A., 2014. Enhanced debt management: solving the eurozone crisis by linking debt management with fiscal and monetary policy. J. Int. Money Finance 49, 443–469.
White, L.H., 2008. How Did We Get Into This Financial Mess?, Cato Institute Briefing Papers No. 110.
White, L.J., 2009a. Financial Regulation And The Current Crisis: A Guide For The Antitrust Community, Available at SSRN 1426188.
White, L.J., 2009b. The credit-rating agencies and the subprime debacle. Crit. Rev. 21, 389–399.
White, W.R., 2014. The Prudential Regulation Of Financial Institutions: Why Regulatory Responses To The Crisis Might Not Prove Sufficient, OECD Economics Department Working Papers 1108.
Wigger, A., Buch-Hansen, H., 2014. Explaining (missing) regulatory paradigm shifts: eu competition regulation in times of economic crisis. New Polit. Econ. 19, 113–137.
Wilson, D.J., 2012. Fiscal spending jobs multipliers: evidence from the 2009 American recovery and reinvestment act. Am. Econ. J.: Econ. Policy 4, 251–282.
Wüthrich, M.V., 2011. An academic view on the illiquidity premium and market-consistent valuation in insurance. Eur. Actuar. J. 1, 93–105.
Yadav, Y., 2010. Specter of sisyphus: re-making international financial regulation after the global financial crisis. Emory Int. Law Rev. 24, 83–118.
Yellen, J.L., 2011. Macroprudential supervision and monetary policy in the post-crisis world. Bus. Econ. 46, 3–12.
Yeoh, P., 2019. MiFID II key concerns. J. Financ. Regul. Compliance 27, 110–123.
Young, K.L., Park, S.H., 2013. Regulatory opportunism: cross-national patterns in national banking regulatory responses following the global financial crisis. Public Adm. 91, 561–581.
Yurtsever, Ş., 2011. Investigating the recovery strategies of European union from the global financial crisis. Proc. – Soc. Behav. Sci. 24, 687–695.
Zamorski, M.J., Lee, M., 2015. Enhancing Bank Supervision in Asia: Lessons Learned from the Financial Crisis. Asian Development Bank Economics, Working Paper Series 443.
Zapodeanu, D., Ioan, C., Cojocari, A., Sebastian, M., 2010. New international financial regulation: necessity or required by crisis. Ann. Univ. Oradea: Econ. Sci. Ser. 19, 456–461.