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The European Commission's learning capabilities in relation to the financial crisis of 2008

A case study on shadow banking

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Abstract

This research provides an answer to the question whether the European Commission (EC) has learned from the mistakes it has made in the past while handling threats coming from the shadow banking sector. By answering this question, the research deepens the knowledge on the learning capabilities of the EC, since this research focusses this time on the EC's behavior towards a high saliency topic whereas previous research focused only on low saliency topics. To discover the mistakes made in the past, specific attention is paid to the Money Market Funds that occupied a large share of the shadow banking sector in the years prior to the financial crisis. This analysis shows that the EC has made four main mistakes with the shadow banking sector in the run-up to the crisis: its regulatory framework was too inflexible to sufficiently respond to shadow banking threats, it insufficiently acted upon spill-over effects and possible systemic risks and lastly, it failed to adequately regulate risk diversification.

These mistakes are tested on a new subtype of the shadow banking sector that has occupied an increasing share of this sector over the past decade: crowdfunding FinTechs. Given the similarities between both subtypes of the shadow banking sector and the intensive research that has been conducted on the mistakes made in the past, it is expected that the EC will show learning capabilities in their approach to these crowdfunding FinTechs to prevent a new crisis. In order to see whether the EC has showed its knowledge based learning capabilities, first the lessons that the institution could have learned are derived through a secondary source analysis. Next, a primary source analysis based on the Framework Analysis Method analyses the inclusion of these lessons in the EC policies. The analysis conducted in this research shows that the EC proves to have learning capabilities, but only regarding some of the topics that were analyzed. It has based its new policies intensively on scientific and expert input, one of the necessities for knowledge based policy learning. Furthermore, the EC has improved its regulatory framework and made it more flexible to adequately respond to new threats. Additionally, it has signaled the need for portfolio risk diversification after an in-depth assessment on crowdfunding FinTechs. However, while it has signaled the need for these policies, it has not yet implemented clear measures that deliver sufficient risk diversification. Furthermore, I argue that the EC currently also overlooks the possible risks coming from the crowdfunding FinTechs for systemic risks and possible spill-over effects towards the traditional financial sector. It can therefore be concluded that the EC has only showed partial learning capabilities and future regulatory steps are necessary in order to prevent similar events from happening as occurred in the financial crisis of 2008 from.

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1. Introduction

The exact starting date of the financial crisis is difficult to pinpoint, but most experts consider the collapse of the American investment bank Lehman Brothers on September 15, 2008 as the start of the financial crisis (Bökkerink & De Horde, 2017). Therefore, we recently commemorated the 10th anniversary of the financial crisis. While most regulators, economist and employees working within the financial sector were surprised by the collapse of Lehman Brothers and the financial turmoil that spread throughout the financial system as a result of this collapse, some experts had already predicted the crisis in the years running up to Lehmans's collapse. Raghuram Rajan, a head economist at the International Monetary Fund (IMF), was one of the people who signaled the combination of deregulation and financial engineering, that resulted in a large shadow banking sector first (Neelakantan, 2018; Van Poll, 2017). He noticed this flaw in the financial system two years prior to the financial crisis of 2008 and already predicted the possible severe impact this shadow banking sector could have on the financial system.

Now, 10 years later, some of these flaws within the financial sector have changed for the better. Financial engineering activities have decreased, businesses in the financial sector take fewer risks and the traditional banks are stricter regulated (Van Poll, 2017). However, these changes have one big consequence; they reduce the risk-absorbing capacity of the secured and regulated financial system and shift these risks towards the shadow banking system, the less safe and regulated part of the system (Rixen, 2013). Since this shadow banking sector was one of the main triggers of the crisis of 2008, it is questionable if these seemingly good new regulations will not backfire in a later stage as the shadow banking sector grows larger (Bengtsson, 2013; Luck & Schempp, 2014; McCabe, Cipriani, Holscher & Martin, 2012).

Additionally, even though regulators improved some aspects of the financial system, other activities with corresponding risks that led to financial crisis of 2008 can still be practiced, albeit in a slightly different form. As signaled by the head of the European Banking Authority (EBA), Andrea Enria, banks are now complexly linked to FinTechs, a development in which he sees similarities with the shadow banking activities and its connection to the regular banking sector prior to 2008 (European Banking Authority, 2018). Since this connection eventually resulted in the crisis of 2008, Mr. Enria warned regulators to respond proactively to this new interconnectedness between the shadow and regulated banking sector in order to prevent a new

crisis in the near future (Bellavite Pellegrini et al., 2017; European Banking Authority, 2018; Meoli & Urga, 2017).

However, since experts such as Mr. Rajan warned regulators for possible risks in the years prior to 2008, it can be questioned whether such warnings as the one from Mr. Enria will this time be seriously considered or that regulators again discard these warning. In order to see if the regulators are seriously considering such warnings and are currently proactively approaching these possible threats, this research will analyze whether the European Commission (EC) has implemented the lessons that could have been learned from the EC's approach in events leading up to the crisis of 2008. Since the shadow banking sector was one of the main triggers for this crisis, specific attention will be paid to the EC's approach towards the shadow banking sector prior to the financial crisis and the EC's approach towards this sector in the past decade.

1.1. New threats of the shadow banking sector to the financial stability

The shadow banking sector includes all unregulated aspects of the financial system. This sector does not fall under the same regulatory obligations as traditional banks, such as the capital reserve requirements and MiFID, and is therefore not covered by a public safety net that protects the investors within this sector (Luck & Schempp, 2014; Rixen, 2013). However, while they are unregulated, the businesses that fall within the shadow banking sector often engage in similar activities as the traditional banks, such as credit intermediation [1] and maturity transformation[2].

Before the crisis of 2008 the growth of the shadow banking sector was accelerated by financial innovation, predominantly by so-called Money Market Funds (MMFs), investment funds that invest in highly liquid securities with a short-term maturity (Kocjan, Ogilvie, Schneidr & Srinivas, 2012). Such a possible disruptive financial innovation can currently again be witnessed in the shape of FinTechs (Demeritz, Merler & Wolff, 2017). These FinTechs – short for financial technologies – are internet-based technologies that have established business activities within the banking sector and enable financial innovation (Gomber, Koch & Sierling, 2017; Navaretti, Calzolari & Pozzolo, 2017).

[1] Banks lend money from depositors and simultaneously lend this money to other borrowers which results in a chain of debts. When the value of assets decline, the flow of credit from savers to spenders declines, resulting in a declining economic activity (Simpson, n.d.).
[2] The process where banks borrow short-term but lend long-term. Through this process, banks transform debts with short maturities, the so called deposits, into credits with long maturities (loans) and collect the difference in rates as profit. However, the short-term funding costs may rise faster that can be recouped through lending, resulting in losses for the financial institutions (Simpson, n.d.).

Prior to the last financial crisis, MMFs posed a threat to the financial system (Bengtsson, 2013). The current FinTech innovation shows many similarities on crucial aspects to the MMFs development prior to the crisis of 2008, such as high growth rates, unclear risks and close ties with the traditional banking system. Since crises often show similarities in their run up and there are similarities between the MMFs and FinTechs, some scholars argue that FinTechs can possibly trigger a new financial crisis if they are as insufficiently regulated as the MMFs were prior to 2008 (Claessen & Kodres, 2014, p. 30). However, the opposite might also be true; the similarities between the sectors could provide an advantage for regulators, since they might be better able to respond proactively to the current FinTech developments if they have learned from previous mistakes in their approach to the MMFs and apply it to the FinTech situation. In line with this second scenario, the EC currently argues that such a proactive approach to the FinTechs is one of their priorities (Dombrovski, 2018). However, many prominent scholars and politicians align themselves with the first scenario and question whether the EC has really adopted a proactive approach. According to these experts, past experience showed that even though similar threats to the financial stability are witnessed, regulators often either failed to notice these threats or failed to take sufficient measures to encounter these threats, ultimately resulting in a new financial crisis (Admati & Hellewig, 2013; Bos, 2018; Lautenschläger, 2017; Varoufakis, 2018; Van Poll, 2018).

Some EC publications already reflect a picture that aligns with this expectation, for example the Vice-Present of the Directorate General for Financial Stability, Financial Services and Capital Markets Union's (DG FISMA) speech on FinTechs in which he calls for a proactive approach on possible threats and opportunities coming from these new innovations. Since both scenarios outlined above are real possibilities, with the first having severe effects on the financial stability, it is important to see whether the EC has learned from its past mistakes and is proactively approaching new threats coming from the shadow banking sector through FinTechs.

Previous research on the learning capabilities of the EC has showed that the EC has improved its policies for low-saliency topics, such as the Better Regulation Agenda and Innovation policy, and that is has based these improvements on scientific research and professional experiences (Tamtik, 2016; Zito & Schout, 2009). No research has yet been conducted on the EC's learning capabilities on a high saliency topic, despite the fact that it is even more important to improve policies on high saliency topics, given their societal impact. This impact on society also often motivates scholars to study these policy areas in order to derive past mistakes and best practices

for the future. Due to this importance for the society and the availability of knowledge on what went wrong, combined with the EC's learning capacity in low-saliency policy areas, this research expects that the EC will show learning capabilities in this high saliency policy area as well. The hypotheses is therefore that the EC will proactively detect possible future risks to the financial system and sufficiently acts upon the risks through the implementation of the key takeaways regarding the shadow banking sector from the run-up to the financial crisis of 2008.

1.2. The shadow banking sector

In order to answer the question on the EC's learning capabilities regarding the financial crisis of 2008, this thesis analyzes two subsections of the shadow banking system. One represents the "old" shadow banking system that co-triggered the financial crisis of 2008: the MMFs. The other represents the current challenge for the EU's financial stability, the newest type of shadow banking: FinTechs (Nash & Beardsley, 2015). Within the FinTech sector there are still many different subtypes, such as crowdfunding, payment systems, digital currencies, Robo-advice and insurance. This research pays specific attention to crowdfunding FinTechs, since this type of FinTech occupies one of the largest shares within the FinTech sector and has a large growth potential (Claessens & Kodres, 2014; Demertzis, Merler & Wolff, 2017). Given its current and potential growth rate and current size, it functions as a representative case for possible new threats to the financial system and is therefore comparable with the MMFs.

The "old" type of shadow banking activities, the MMFs, are the activities from which the EC should have learned. These MMFs are shared investment schemes and invest in money market instruments such as short-term securities[3]. The investors that participate in MFFs get their return based on the gains and losses of the funds mutual investment portfolio (Bellavite Pellegrini et al., 2017, p. 164). In times of financial turmoil, MMFs can experience a liquidity problem since they cannot adequately respond to its investors' demands to pay out their shares, due to the MMFs reliance on the sale of assets on the market (Bellavite Pellegrine et al., 2017, p. 166). If all investors want to retrieve their money at the same time, MMFs have to sell almost all of their shares on the market, resulting in a lower price per share that makes them unable to fulfill all the payout requests. These liquidity problems caused a share dump on the market, resulting in dropped the prices of all market shares. Given MMFs crisis triggering role in this market due

[3] Investments (most often in equity and debt securities) of which is expected that they are converted into cash within one year (or one business cycle) (Kenton, 2018).

to the shared price drops and the interconnectedness within the financial system, MMFs were considered to be one of the main causes for the financial crisis of 2008 (Bellavite Pellegrine et al., 2017; Kacperczyk & Schnabl, 2013).

After the financial crisis, the shadow banking sector has developed itself and new innovations came up such as crowdfunding FinTechs. These platforms match borrowers and lenders directly; some companies allow the lenders to choose the borrowers, while others compose packages of loans that are often sold through online auctions (Dermine, 2016; Nash & Beardsley, 2015). These type of lending platforms allow borrowers to have their loans approved faster and funds dispersed quicker than when a borrower would apply for a loan from a traditional bank and are often considered to be the next new thing within the shadow banking sector (Douglas, 2016).

1.3. Thesis outline

This thesis provides a comprehensive overview of the attitude of the EU towards the new type of shadow banking: the FinTechs. The main research question of this thesis is: has the European Commission applied the lessons learned – if any – from the rise of the MFFs from 2000-2008, resulting in the European banking crisis of 2008, for the rise of crowdfunding FinTechs from 2010-2018?

In order to answer this comprehensive question, this research addresses two different sub questions. The first sub-question is: what was the role of MMFs in the occurrence of the financial crisis of 2008 and which lessons can be learned from the EC's approach towards the growth of MMFs prior to this crisis? After the overview of the current literature and the methodology used in this research, the research provides an answer to this first sub-section. In order to generate the lessons learned, a secondary source analysis based on documents from both scholars and financial institutions is conducted with a specific focus on lessons that fall within the context of shadow banking and FinTech risks.

The second sub-question is formulated as follows: has the EC implemented the lessons learned from the past crisis to the current challenge coming from the (crowdfunding) FinTechs? A primary source document analysis based on the Framework Analysis method will answer this second question. The results found in this document analysis are later discussed with experts in the field through semi-structured interviews to generate additional knowledge on the topic. The next section of the thesis considers the results of both methods combined. The final section of the thesis entails a conclusion on the research, its limitations and possibilities for future research.

2. Literature review

2.1. Institutional learning

This research focusses on the question whether the EC has learned from the mistakes that were made in its approach towards the shadow banking sector in the period prior to the financial crisis of 2008. The theory that tries to explain if and how organizations have learned from past mistakes is the theory of institutional learning, as first described and studied by Deutsch (1963, as mentioned in Moyson, Scholten & Weible, 2017; Zito & Schout, 2009). This theory used the concept of the learning capabilities within an organization to derive whether learning can take place (Zito & Schout, 2009). According to Deutsch, the learning capacity of an institution is dependent on the constant process of steering and feedback through which the government operates, resulting in new policy. A difficulty within this definition is the fact that policy processes aren't designed within a vacuum; the policy process consists of different policy actors, all affected by the institutional systems and different pressures and political games (Daft & Weick, 1984; Goyal & Howlett, 2018; Moyson et al., 2017).

Other scholars have improved Deutsch's first description of institutional learning, a concept that is nowadays called "policy learning" (Zito & Schout, 2009, p. 1107). This type of learning specifies an organization's ability to learn in relation to changing policy, which is reflected in a different policy outcome than what would have been the outcome without learning. For the EC, policy learning entails the process where a judgement by the EC is based on external input (experience, science), which results in the EC adopting another approach than it would have done without this input (Zito & Schout, 2009, p. 1104). This type of learning can be noticed in some EU policy areas in which the EU has invested in both internal and external knowledge collectives. While policy learning is visible in different occasions, studies also pointed towards the fact that policy learning is not always visible. The most recent addition to this theory of policy learning is therefore the concept of non-learning, studied by Hecklo, acknowledging the possible unwillingness or inability of policy makers to accept new information that ultimately results in a status quo (1974, as cited in Zito & Schout, 2009).

While some scholars transformed Deutsch's theory of institutional learning into policy learning, his study also functions as the basis for further institutional learning theories. One of them is the theory of "organizational learning" (Zito & Schout, 2009). This includes the sociological notion of a limited rationality and the incompleteness of knowledge, which allows institutions to go beyond these individual limitations by building behavior guiding structures. This concept

emphasizes the interaction between the individual and the organization. Both these concepts are built upon by the concepts of "diffusion", "the spread of knowledge between organizations and political systems" and "(international relations) network learning", the latter introducing the importance of international relations within decision-making (Tamtik, 2016; Zito & Schout, 2009).

The third sub-type of institution learning that can be distinguished is constructivist learning (Rietig, 2018). Within this learning type, the normative understandings and beliefs of an individual or organization are changed. This leads to a shift in the perception of the saliency of some policy problems and the appropriateness of some policy instruments, eventually resulting in regulators implementation of new policy measures.

While the EC might have changed its beliefs and normative understanding or the knowledge diffusion throughout the organization, this falls outside the scope of interest of this research. Both the second and third sub-types of institutional learning mentioned here focus on the internal process within an organization, while this research is interested in the output of the EC; its policy approach toward shadow banking. Therefore, the first approach to institutional learning – policy learning – is most helpful in deriving a conclusion on the question whether the EC has learned from past mistakes and is therefore used in this research.

2.2. Policy learning analysis

Policy learning can be analyzed on three different levels: micro-, meso-, and macro-level (Moyson et al., 2017; Zito & Schout, 2009). The micro-level analyzes the individual actors within the policy making process. A meso-level analyzes focusses on the increase in knowledge and changes in the effectiveness of resolving problems on the organizational level. The macro-level studies the sequence of the policy-making decisions in one or several institutional systems, for example cross-country.

Learning within an organization has a strategic character, because it involves the organization's ability to identify, react and adapt to changes in their environment (Argyris, 1976; Moyson et al., 2017). This can affect the organization through two different mechanisms: single-loop learning and double-loop learning (Argyris, 1976; Koch & Lindenthal, 2011; Moyson et al., 2017). Single-loop learning focusses on the organizations' ability to implement their objectives and norms (Moyson et al., 2017, p. 163). Koch and Lindenthal add to the single-loop mechanism that it is often triggered by a mismatch between the expectations of an organization's actions and the actual outcome, but that it does not question the fundamental

design, goals and activities of the organization (2011, p. 983). Single-looped learning is mostly applicable to policy learning, whereas double-looped learning can be identified within organizational learning. The double-loop mechanism focusses besides the implementation of norms and objectives, as identified in the single-loop mechanism, on the organizations ability to modify these norms and objectives and therefore questions the fundamental design of the organization (Koch & Lindenthal, 2011; Moyson et al., 2017). Since this research focusses on the policies for FinTechs the EC has implemented and not on changing norms and objectives within the organization, the research only pays attention to the single-loop learning processes within the organization.

Knowledge utilization

Institutional learning is based on knowledge utilization; the use of recent acquired knowledge in policy (Koch & Lindenthal, 2011; Moyson et al., 2017; Zito & Schout, 2009). There are two different forms of knowledge utilization: instrumental knowledge (knowledge as the main input for policy-making) and symbolic knowledge (knowledge as legitimization for policy actors or -objectives) (Bennet & Howlett, 1992; Moyson et al., 2017). This research focuses on the institutional knowledge utilization, due to the EC's increasing emphasis on evidence-based policy (European Commission, n.d.b.; Tamtik, 2016).

Institutional policy learning connects to changes in policy outputs such as new legislations, regulations and policy proposals (Bennet & Howlett, 1992; Koch & Lindenthal, 2011). When this is placed in the context of the knowledge utilization these new policy outputs should be derived from (scientific) knowledge, and not from other aspects as a changing political environment or new personal beliefs. Since these policy outputs are well observable in documentation and the sources used for new policies can often be traced back, policy learning can best be observed through the study of these policy documents (Schout, 2009, p. 1125).

2.3. European Commission

The European Union has three core institutions that cooperate in the legislative process: the Council of the EU, the European Parliament and the European Commission (European Union, n.d.). The EC is the only institution with the right of initiative which makes it the legislative organ within the European Union and is therefore the institution of interest within this research (European Union, n.d.a).

The EC consists of 28 commissioners, one representative for each EU member state. The daily activities of the EC are divided over different departments, the so-called Directorate-Generals

(DG). Each DG has one of the 28 commissioners as the chair and its employees need to report to this commissioner. Every DG is specialized in one specific policy area, such as environment, competition, agriculture and research. While the general line of the EU's policy is drafted by the College of Commissioners, the policy proposals are prepared by the DG(s) within the relevant specialization(s). The DG of interest within this research is the DG for Financial Stability, Financial Services and Capital Markets Union (DG FISMA) and has subdivisions specialized in, among others, financial supervision and risk management, the Banking Union and FinTechs.

Since the DG FISMA is the DG that will create (most of) the policies relevant for crowdfunding FinTechs, the topic of interest in this research, attention is paid to the DG FISMA. However, this specific case can also function as a representative case for the entire EG, since all different DGs are organized and function in a similar way and all have to comply with the broader EC vision on regulation, such as the Better Regulation Agenda (European Commission, n.d.d). Therefore, while this research only considers the DG FISMA, the results and conclusions on the DG FISMAs learning capabilities in high saliency policy areas can be generalized towards to the other DGs and the EC as a whole.

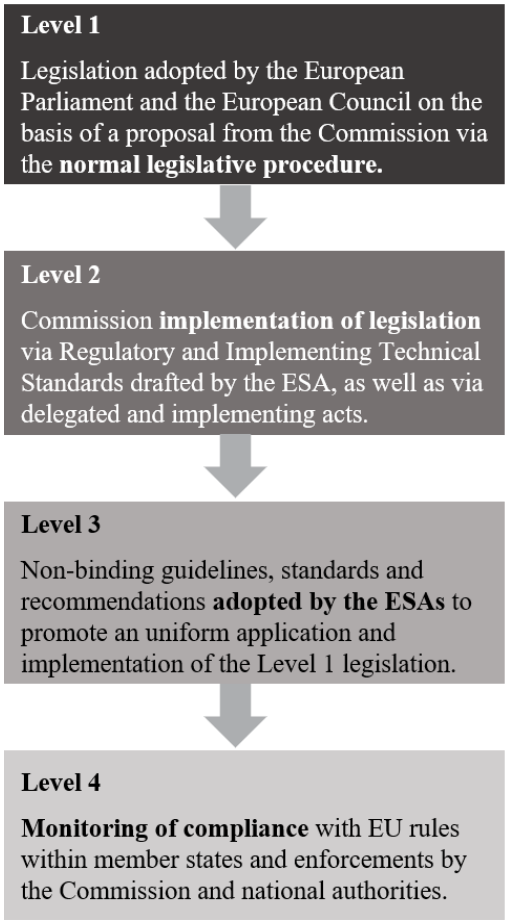
The EC's regulatory process

The separate DG's draft their policy based on a number of different inputs. According to Montalbano, in the years after the crisis, DG FISMA showed a higher use of external non-governmental and high-level stakeholders expertise (2017, p. 155). As shown in his research, 57 expert groups, of which 31 are external, provided the DG with research reports or position papers. Furthermore, the EC generates information from the *High Level Expert Group on Financial Supervision in the EU*, created by the Commission to advise on financial reform of the EU and the *Expert Group on a Debt Redemption Fund and Euro Bills*, created to advice on the feasibility of the European burden sharing mechanism for the Eurozone countries with the highest depts. These expert groups consist of members from public authorities or public agencies, business interest groups, non-business interest groups, academia thinktank members and scholars, individual experts and several members with other backgrounds. Most non-governmental experts and high-level stakeholder originate from European business related organizations (Montalbano, 2017, p. 156). The Commission selects some of these groups on initiative, others after calls for nomination.

The stakeholder consultation follows the trend of the number of reforms implemented by the DG FISMA with a peak between 2009 and 2012 (Montalbano, 2017, p. 157). After the crisis, the DG had drafted many different policy proposals, and launched public consultations to generate input for these proposals in line with the requirements of the EC's Better Regulation Agenda. Different stakeholders participated in these consultations with predominantly public authorities and business interests in the early years after the crisis and a higher participation of citizens in 2013 and 2014. After this peak between 2009-2012 the number of new proposed regulations dropped, followed by a drop in the number of consultations until it reached the pre-crisis level again. This increased use of expert input for policy proposals through consultations provides a promising picture for the knowledge usage of the DG FISMA on FinTech policies, as knowledge usage is a necessary requirement for policy learning. However, the documental analysis and the interviews are needed to derive at an answer to the question whether the consultation procedure was also used for policies on crowdfunding FinTechs and whether the information generated through the consultation was indeed put to uses for the new policy.

Information generated by a consultation procedure, combined with the internal expertise and policy views, eventually leads to a policy proposal. In order to have a quick and efficient regulatory process, in 2001 the EC installed the Lamfalussy architecture for policymaking procedures for policies that affect the financial services sector. This Lamfalussy architecture is therefore applicable to the DG FISMAs policy focus (European Commission, n.d.a). In this process, as shown in Figure 1, four different institutional levels are involved. Within the first level, the EU Parliament and the Council adopt the basic laws as proposed by the Commission through a co-decision procedure. Since the Lamfalussy procedure is very time-consuming and complex, regulators often use this procedure solely for the generation of framework principles. In the second institutional level, the Commission can adopt, adapt and update technical measures that the EU countries' representatives then implement. This procedure provides the Council and the

Figure 1. The Lamfalussy architecture



Source : European Commission, n.d.a

Parliament the opportunity to exclusively focus on the political aspects of the decision, since the Commission and the corresponding DGs will later focus on the technical details.

Ever since the financial crisis, the third level includes the three European supervisory authorities: the European Banking Authority (EBA), European Securities and Market Authority (ESMA) and the European Insurance and Occupational Pensions Authority (EIOPA). They are responsible for advising the Commission on the proposal adopted in the first two levels. Furthermore, they issue guidelines for the implementation of the rules on a national level and prepare the technical standards of the regulation. The final level is about the enforcement of the rules. The Commission needs to actively ensure that the national governments enforce the rules as imposed by the Commission.

Within this policy making process, there is an increasing focus on long-term policy making focusing on periods of ten to twenty years (Hauser, 2017, p. 34). To create this forward-looking policy, scientific evidence based on future analyses is used in order to address complex issues and provide strategic policy options. This increased focus on the necessity of anticipatory regulation derives from the government's increased awareness that the complex policy issues need a holistic, systemic, forward-looking and broader policy approach, rather than temporal ad-hoc solutions. Whereas a regulation or directive is often used as ad-hoc solution, strategy plans are designed to communicate a more permanent ten to twenty years plan (Hauser, 2017).

Policy learning capabilities of the Commission

Several scholars have already studied the policy learning capabilities of the European Commission and its different DGs, all focusing on low-saliency topics (Gormley, 1986, p. 225). Whereas the first scholars on this topic took a theory generating approach, recent scholars applied the theory of institutional learning, both policy and organizational learning, on a specific case (Bennet & Howlett, 1992; Schout, 2009; Tamtik, 2016). Tamtik finds policy learning capabilities regarding stakeholder ownership for the EC's DG for Research and Innovation (2016). Similar to Tamtik, Schout also applies the second, theory testing approach in his case study regarding the learning capabilities of the EC towards the Better Regulation Agenda (2009). He finds that the EC has shown substantial policy learning capabilities by improving the already existing legislation based on better planning and the discussion of new proposals (Schout, 2009, p. 1141). These studies focus on different policy topics and on different DGs, but show a similar picture regarding the EC's policy learning capabilities; the EC is capable of knowledge based policy learning.

However, no scholars have yet conducted research on the DG FISMA or the EC's learning capabilities on high-saliency topics. Since the crisis has affected a large number of people in a significant way, it can be considered a high-saliency topic (Gormley, 1986; Hobolt & Wratil, 2015; Nezi, 2012). By exploring the EC's learning capabilities with respect to the mistakes made in the run-up to financial crisis of 2008 – a high saliency topic –, this research tries to add to the already existing knowledge on the EC's learning capabilities and contribute to a broader applicable theory.

2.4. Other relevant EU institutions

While the institution of interest in this research is the EC, other institutions have an influence on the EC's current policies and approaches to the financial sector. One of these institutions is the European Central Bank (ECB). The ECB was created in 1988 and functions as the central bank for the entire Eurozone (European Central Bank, n.d.a). It manages the European currency, the euro, and defines the monetary policy for all the countries within the Eurozone. Its main objective is to maintain price stability without limiting the general economic policies of the EU. Apart from monetary policies, the ECB also monitors the developments within the EU banking sector and the other aspects of the financial sector (European Central Bank, n.d.e). It tries to identify vulnerabilities of the sector and checks the flexibility of the financial systems. The ECB collaborates closely with the EC, in order to coordinate economic policies related to the Economic and Monetary Union (European Central Bank, n.d.e). The EC regularly consults the ECB to gain information on financial legislative proposals and other EC initiatives. Both institutions are in contact with each other in different EU and Euro area body meetings and one representative from the EC can attend the meetings of the ECB's Governing Council, but is not allowed to cast a vote.

As response to the financial crisis of 2008, the EU has founded three additional supervisory authorities on an EU level: the EBA, ESMA and the EIOPA (Bauer & Becker, 2014; Masera, 2010). For this research, the ESMA has a significant role, since the EC shifted some of its responsibilities, such as supervisory duties, towards this institution. The ESMA's focus is on European securities markets and has as primary objective to promote investor protections and enable orderly markets and financial stability (Armstrong, 2018). Additionally, ESMA is in charge of establishing a coordinated regulatory and supervisory approach to new or innovative financial activities, such as FinTech. ESMA shares the responsibility to supervise these financial innovations with the EC. On the topic of FinTechs, ESMA has opted for a "wait and see" tactic. This leaves room for the EC to generate its own position on how these FinTechs

should be approached. A vision from the EC is necessary due to the possible disruptive influence the FinTechs might have to the financial stability (Demeritz, Merler & Wolff, 2017).

Next to the new European institutions the EU founded as response to the financial crisis of 2008, the G20 created new international institutions as well, such as the Financial Stability Board (FSB). This institution descended from the Financial Stability Forum (FSF) and was created for coordinating the key actors involved in the emerging international standards regime (Helleiner, 2010, p. 284). One of the goals of the FSB is promoting compliance with international standards among non-member countries (Helleiner, 2010, p. 284-285). Furthermore, it holds a key role in maintaining global financial stability and in the preventing the same errors that preceded the crisis of 2008 from being repeated (Vinals, Fiechter, Pazarbasioglu, Kodres, Narain and Moretti, 2012, p. 13). In order to derive the previous mistakes that regulators need to prevent in the future, the FSB conducted several studies on these mistakes. In these studies, the FSB establishes clear guidelines, best practices and lessons learned that should guid regulators such as the EC, in its regulatory process towards new possible threats to financial stability. This research later uses these extensive reports from the FSB on the mistakes of the past to derive the lessons learned and best practices from the financial crisis of 2008.

3. Methodology

This research applied a single-case study design focusing on the EC's current policy approach towards crowdfunding FinTech. This design provides the opportunity to analyze a case in depth and can therefore uncover the different variables of influence in the case, in order to generate a clear picture on whether the EC has implemented the lessons that could be learned from the financial crisis of 2008 (Toshkov, 2016, p. 291). This single case-study collects in-depth information about the EC's learning capabilities, based on the institutional learning theory, but does not try to explain the exact mechanisms why the EC is responding in the way it does. The DG FISMA case functions as an exemplifying case, in which the objective of the case selection is to capture circumstances and conditions for a more general phenomenon, the EC's learning capabilities on high-saliency policy topics (Bryman, 2012, p. 7). Even though there are differences between the case of MMF and crowdfunding FinTechs, they show enough similarities on key aspects to generalize the lessons that could be learned from the MMF case towards the crowdfunding FinTechs. However, while this research compares the EC's current approach to its approach towards MMFs in the run-up to the past financial crisis, this study is not a comparative case study. This research only analyzes secondary sources on the MMF case, in order to derive the lessons learned and best practices concluded on by other scholars. This then functions as the theoretical background in which the single case, the EC's approach towards crowdfunding FinTechs, is studied. This research does not aim to compare the different mechanisms cross case in order to derive general causal effect, as is the aim of a comparative case study (Toshkov, 2016, p. 258).

3.1. Lessons learned

This research used a qualitative data collection approach in order to analyze the learning capabilities of the DG FISMA. The research was divided into two different sections. The first section analyzed the lessons that the EC could have learned from its approach towards the shadow banking sector, in particular the MMFs, in the run-up to the financial crisis of 2008 (hereafter shortly called "lessons learned"). Secondly, the research analyzes the EC's approach towards the rise of FinTechs. This approach is later compared to the lessons learned in order to conclude whether the EC has implemented some of the lessons on the new FinTech challenge. This would show institutional learning.

Due to the limited time available for data collection, the difficulty of interviewing employees working at the DG FISMA in the period prior to the crisis and the already adequately analyzed

approach of the Commission towards the MMFs, the lessons learned were derived through a secondary source analysis. The publications used for this analysis all include an in-depth analysis of the events leading up to the crisis and the regulators approach to these events. Furthermore, reputable journals or government publications published the studies. This research therefore assumes that these studies adequately derive the conclusions about the mistakes made by the regulators. In order to select the lessons learned that are relevant for this research topic from the different studies, this research pays attention to a few specific concepts while studying the secondary sources. These concepts include an analysis of the regulatory approach of the EC towards shadow banking, risks the regulators took while approaching the MMFs or risks the regulators did not signal in time, reasons for regulatory reforms or new regulation; all in relation to shadow banking. The lessons learned that were derived in this section were later used as a basis for examining the data generated from the primary source, the EC documents on FinTechs.

3.2. Deriving EC's position towards FinTechs

The first step of the data gathering process included all relevant documents concerning both the lessons learned of the EC's approach towards shadow banking in the crisis of 2008 and the EC's current attitude towards the rise of the FinTechs. This data was derived from different documents such as, but not limited to, policy reports, EC communications, policy statements and EC position papers. In order to derive the EC's position towards both matters and discover the main actions taken (or considered) by the EC, this research preforms a content analysis based on the Framework Analyses method.

This qualitative analytical approach "Framework", as developed by the National Centre for Social Research in the UK, is selected as the best method for this research for a variety of reasons (Bryman, 2012, p. 579). There are two often-used methods within qualitative research, ethnographic content analysis and qualitative content analysis. These methods are best used for respectively delineating patterns of human interaction and for deriving informational contents of textual data based on systematic, rule-guided techniques (Altheide, 1987; Forman & Damschroder, 2008). The study conducted in this thesis has no interest in human behavior nor in rule-guided techniques, which makes both research methods not appropriate to derive the EC's learning capabilities in this research. The Framework approach interprets qualitative data from different sources altogether by structuring and grouping it into broad concepts. These concepts allow for adjustments during the analysis of the documents, allowing for the inclusion of new concepts when necessary. Given the limited theoretical background of this specific case

and the exploratory approach of the research, this amendable Framework approach suits this research on the EC's learning capabilities best.

The Framework method consist of five different phases: familiarization, identifying a thematic framework, indexing, charting and mapping, and interpretation (Ritchie & Spencer, 1996). The first phase, familiarization, sifts and sorts the information coming from the documents in order to become familiar with the range and diversity of the gathered material. The information gathered in the first phase, combined with existing literature on learning capabilities and shadow banking, generated different concepts on which the thematic framework is based and through which the first documental examination took place. After this first phase, the process of abstraction and conceptualization that helped in identifying the framework began. In this first examination of (part of) the documents, reoccurring motifs, concepts and themes were identified that later functioned as guidance for the data analysis (Bryman, 2012, p. 579).

When this framework was finished, the indexing phase started. This indexing phase systematically applied the thematic framework to the documents. The parts of the documents that aligned with the concepts used in this indexing phase were gathered within a spreadsheet. To remain complete for further examination, the particular parts of the document that aligned with the concepts were one-on-one included in the spreadsheet. In this phase, all information retrieved from one single document was grouped within one column in order to retain the context of the document as far as possible and to be able to easily return to the original document when necessary.

Next, the charting phase began, in which the first picture of the data as a whole was built up. To generate a first picture, this method considers the data outside of its original context and reshuffled it based on the appropriate thematic reference. For this research, the four lessons that could be learned from the past crisis function as thematic reference in which the date is reshuffled. This provided a broad picture of the general ideas reflected in the different documents, without being limited by the context of the specific document (Bryman, 2012, p. 579). In the last phase of mapping and interpretation, the key characteristics where pulled from the data in order to interpret and map the broader picture of the data. To generate a comprehensive picture of all the relevant information within the documents, the broader dynamics and underlying ideologies or reasoning were also included in the analysis.

The second part of the research involved several semi-structured in-person interviews, with people from institutions involved in the policy making process. The aim of these interviews

was triangulation; the confirmation of the findings derived from the document analysis and gaining additional information about the position of the EC towards the FinTechs and its policy making process. The goal was to interview approximately three to five experts from different expertise's and organizations. However, while many representatives would be able to provide further knowledge of the matter and would be able to offer new insights, it was more important that representatives from the DG FISMA were interviewed in order to test the results found in the analysis and to see whether this DG agrees with these results.

The study then combines the two different steps in order to generate a clear picture on the EC's learning capabilities on each of the lessons individually. Since it is not possible to answer the question if the EC has learning capabilities with a simple yes or no, a scale was created to evaluate the amount to which the EC has learned and implemented the lessons from the past crisis. This also includes the amount to which the implemented policies (if any) are knowledge based. The conclusions on these individual lessons are then combined in order to derive a conclusion on the question whether the EC showed learning capabilities in this high-saliency policy topic. The scale on which the conclusion on the implementation of the different lessons learned is based is structured as follows: Not at all – Slightly – Moderately – Almost all – Totally.

Table 1. Characteristics of lessons learned scale

Item on the scale	Characteristics of item
Not at all	▪ No new policies are implemented, proposed or considered; ▪ No scientific/ expert input generated
Slightly	▪ No new policies are implemented or proposed, but they are considered by the regulators ▪ The considered policies are not, or only slightly, stemming from scientific/ expert input.
Moderately	▪ No new policies that touch upon the lessons learned are implemented or proposed, but they are seriously considered by the regulators ▪ The considered policies are intensively stemming from scientific/ expert input

Almost all	▪ New policies that partly touched upon the lessons learned are implemented or proposed ▪ The policies are partly based on scientific/ expert input.
Totally	▪ New policies that fully cover lessons learned are implemented/ proposed; ▪ The implemented policies are largely based on scientific and/or expert input

3.3. Validity

This research sought evidence to uncover whether the European Commission is capable of policy learning on a high-saliency topic. In line with the research question, the research paid attention to the question whether the EC implemented the lessons learned in its approach crowdfunding FinTech case. In particular, attention was paid to the single-loop learning procedure.

This evidence that results from this analysis is high in certitude; once the EC has implemented (some of) the take-aways from its approach towards MMFs prior to the crisis in its approach towards crowdfunding FinTechs, it is very likely that the EC has (partly) learned from previous events with the MMFs (Toshkov, 2016, p. 294-295). However, to conclude that the EC is capable of knowledge based policy learning it is also important that the documental analysis and interviews show that the EC has based its policies on scientific or expert input. This also works the other way around; once the lessons learned are not implemented, it can be concluded that the EC has not learned from its mistakes. If the EC has implemented some of the lessons, but they cannot be traced back to scientific or expert input, it cannot be concluded that the EC is capable of knowledge based policy learning. These new policies could then also be the result of other factors, such as external pressure to implement certain decisions, bolstering (a decision made based on shared rationalizations) or defensive avoidance, a form of psychological defense that interferes with information processing (Rietig, 2018). However, due to the process tracing approach these explanatory factors can be uncovered and can be weighted in in the final conclusion on the EC's learning capabilities if needed (Tansey, 2007).

3.4. Generalizability from results on MMFs to crowdfunding FinTechs

Many different financial institutions fall within definition of shadow banking that is used in this research, for example special purpose vehicles, MMFs, hedge funds, collective investment schemes and FinTechs (De Nederlandsche Bank, 2010; Nash & Beardsley, 2015). The lessons learned focus on one subsection of the shadow banking sector, namely the MMFs. These results cannot be generalized to all different business models within the shadow banking sector, but it is possible to generalize these lessons the crowdfunding FinTechs for reasons explained below.

First, they both occupy a large share of the shadow banking sector, but in different time periods. MMFs were a rather large supplier of short-term liquidity to the traditional banking sector in the period leading up to the (Bellavite Pellegrini et al., 2017; Parlatore, 2016; Kacperczyk & Schnabl, 2013). In more recent years, crowdfunding FinTechs have grown to occupy another significant share of the shadow banking sector. Within this FinTech sector, alternative financing is the largest subsector of FinTechs with an annual revenue of €366 million in Europe in 2015 and Peer-to-Peer business lending as second largest segment with an annual revenue of € 212 million in 2015 (Europe's Peer-to-Peer lending market, 2017; Deloitte Centre for Financial Services, 2017). Both MMFs and FinTechs occupied the largest section of innovative activities within shadow banking during the specific periods studied in this research. Another aspect both types of shadow banking have in common is a sharp rise in market share after their creation. For the MMFs this rise was especially stark since their initial appearance in 2000. For FinTechs this rise can be witnessed in the last decade (Claessens & Kodres, 2014; Arner, Barberis & Buckley, 2015).

Another reason why these two types of shadow banking can be compered is because they fall within the same category as defined by Pozsar, Adrian, Ashcraft and Boesky (2010). Both types of shadow banking fall within the "independent shadow banking"- type, since they perform only shadow banking activities, without relying on deposits or a government safety net (Bellavite Pellegrini et al., 2017, p. 165). Next to this, both MMFs and FinTechs engage in a sponsor relationship, in which the shadow banking activity seeks a sponsor within the traditional banking sector to provide liquid means when their own liquidity is insufficient (Banken ontfermen zich over financiële start-ups, 2018; Bengsson, 2013).

Besides the many commonalities, there are also of course differences between MMFs and crowdfunding FinTechs. For this research, the most important variation is the different periods in which the two innovations have developed and grown. To analyze the lessons learned on

mistakes made in the regulators' approach to MMFs, this research focusses on the period from 2000-2008. For the crowdfunding FinTechs, the analysis is focused on the period from 2010-2018. In between these periods, the EU has implemented many institutional changes have occurred, some of them due to the effect of the crisis. This research has already discussed these new institutions and their role regarding the research topic. These new institutions and their functions can be kept in mind while interpreting the results from this research, which makes this problem sufficiently covered.

3.5. Advantages & Limitations

Even with single-case studies in which in-depth evidence is collected, the analysis cannot document all variables and collect all evidence. However, this data gathering method still ensure an extensive thoroughness in its exploration. Additionally, this research ensures triangulation through the combination of the documental analyses and the interviews to ensure an even more thorough examination. Conclusions that the analyses cannot with certainty acquire from the documents can be discussed in the interviews. Moreover, aspects that are not covered at all in the documents – but which are expected to have influenced the policy outcomes – can be discussed in the interviews, resulting in a detailed analysis.

Like all types of research designs, single-case studies do have a number of limitations. The most important one is the dubious possibility of generalization beyond the studied case. Since there is only one case under investigation, the research cannot guarantee external validity (Toshkov, 2016, p. 304). However, the DG FISMA is exemplary for the way the EC functions. All different DGs have to comply with EC policy procedures and function in a similar way. This research therefore assumes that that the results found on the DGs policy learning capabilities on this high saliency topic can be generalized towards the other DG's policy approach to high saliency topics, and therefore the EC as a whole as well. The combination of this research on a high saliency topic, combined with earlier results on the EC's learning capabilities on low saliency topics will provide an overview on the EC's learning capabilities as a whole. However, the results are not generalizable to other EU institutions or other regulating institutions anywhere, since the procedures within the EC are institution specific. Nevertheless, the results and method from this research can provide a foundation for other studies on the learning capabilities of other EU institutions on high-saliency topics, eventually generating a theory that is applicable on an EU level.

Another problem that might arise due to the limited scope of the research is that some of the actions in which the EC has showed learning can be overlooked. This might be the case when other institutions than the DG FISMA, for example other DG's or the FSB, have implemented new measures that relate to the mistakes made prior to the crisis. Since these institutions are left out of the scope, these improvements are overlooked, which affects the conclusion of this research. Another problem is the causality within the case. It is hard to connect various pieces of within-case material into compelling explanations and convincing causalities (Toshkov, 2016, p. 305). This uncertainty will never completely go away with individual cases, but since this research provides a valid explanation, this problem is severely limited. For this specific research, the validity is improved by the triangulation through interviews.

4. The case: Lessons learned from the shadow banking sector developments in the run-up to the financial crisis of 2008

After a long period of economic growth in almost all economies over the world, banks noticed a decrease in solvability – banks capability to return loans over the short and long term – from 2007 onwards. This decrease in solvability eventually proved to be the first trigger of the financial crisis of 2008. After people weren't able to repay their mortgages, the mortgage bubble, that had over the years built up in the real estate sector in the United States, burst (De Nederlandsche Bank, 2010; Terazi & Senel, 2011). The burst of this mortgage bubble then triggered the collapse of the investment bank Lehman Brothers in 2008 (Kacperczyk & Schnabl, 2013; Terazi & Senel, 2011). The Reserve Primary Fund, the MMF that held Lehman Brothers' dept securities, was unable to repay the shares to investors for the principal one dollar per share, which then triggered a severe outflow from this MMF and later spread to other MMFs as well (Schmidt et al., 2014; Wermers, 2010). Many experts consider the collapse of Lehman Brothers as the actual trigger of the global financial crisis, that primarily affected advanced and intertwined economies like the United States and Western Europe.

Every financial crisis is related to banking panic, includes losses in the financial sector, contains international market chaos, and creates stock market's downfall (Terazi & Senel, 2011). Additionally, a financial crisis has severe economic consequences such as inflation, unemployment, lower purchasing power and a growth of public depth; effects that can all be witnessed in the crisis of 2008 (Terazi & Senel, 2011). Within the different events that triggered the financial crisis of 2008, several factors were of influence, but one of the most important factors that triggered this crisis was the influence of the shadow banking sector.

4.1. Shadow Banking

A rise in the size of the shadow banking sector – a term first introduced by Paul McCulley during a speech at the Federal Reserve Conference – can be witnessed since approximately 1970, with a peak in 2007 (Adrian & Ashcraft, 2012; Ban & Gabor, 2017; Rixen, 2013). In the period from 2000 to mid-2007, the shadow banking system expanded to such proportions that it could bring down the entire financial system, which it eventually indirectly also did in the financial crisis of 2008 (Ban & Gabor, 2017; Buchak, Matvos, Piskorski & Seru, 2017; Lysandrou & Nesvetailova, 2014; Rajan, 2006). To put its size into context, the US shadow banking's liabilities where nearly $22 trillion in 2007, whereas the liabilities of the traditional banks in the US accounted for $14 trillion (Pozsar et al., 2013).

Shadow banking does not automatically threaten the financial stability; a relative small shadow banking sector appears to be relatively constant and might even stabilize the financial system in cases of limited financial turmoil (Bengtsson, 2013; Luck & Schempp, 2014; McCabe, 2010). If the shadow banking sector is small, it can sell its assets at face value in the case of a run which will provide enough liquidity to prevent a large financial unrest from spreading through the sector. However, if it grows too big compared to the traditional financial sector, the shadow banking sector cannot sell all its assets at face value, leading to depressed fire sale prices in case of a run, which increases the instability of the financial system (Luck & Schempp, 2014, p. 2).

4.1.1. MMFs

This second mechanism described above could be witnessed with the MMFs prior to the financial crisis. Scholars and financial professionals often considered MMFs to have a stabilizing effect on the financial system before the financial crisis of 2008. However, the MMFs role in the crisis showed that MMFs also have the ability to spark a crisis. In the run-up to the financial crisis, the MMF industry grew too large relative to the traditional sector and was, due to its vulnerability to runs and its crucial role within the credit chain as supplier of short-term liquidity to other institutions, capable of triggering the financial crisis (Bellavite Pellegrini, 2016; De Nederlandsche Bank, 2012; Parlatore, 2015).

Additionally, MMFs have a close relationship with traditional financial institutions; these traditional institutions function as fund sponsor (Kacperczyk & Schnabl, 2013, p. 1081). Most MMFs do not have their own capital or precautionary liquid reserves to prevent investor outflows (Parlatore, 2016, p. 596). In order to generate sufficient liquid reserves, they seek a sponsor within the traditional financial sector, often traditional banks. In return, these sponsors get to choose the asset portfolios, determine the MMF's risk and can transfer their outside funds to an MMF's balance sheet (Parlatore, 2016, p. 596). Prior to the financial crisis, the sponsorship provided high returns for the sponsor and posed limited risks. However, in the events leading up to the crisis of 2008 this sponsor relationship from the traditional banking sector towards the shadow banking sector proved to be risky. The MMFs experienced a severe drop in liquidity, which encouraged investors to demand a payout of their shares, resulting in even higher liquidity problems for the MMFs. This required the traditional financial institutions to infuse the MMFs with such a high amount of liquid assets that the stability of the sponsor was affected (Admati & Hellwig, 2013; Kacperczyk & Schnabl, 2013). Furthermore, this sale of assets resulted in low asset prices in the entire financial system, spreading the financial unrest

to the non-shadow banking parts of the financial system as well (Bellavite Pellegrine et al., 2017, p. 166).

After the bankruptcy of the US investment bank Lehman Brothers on September 15 2008, the financial turmoil spread quickly throughout the entire financial system, accelerated by the MMFs that intertwined large parts of the financial system (Schmidt, Timmermann & Wermers, 2014, p. 1). In a few days, the panic lead to an outflow of $300 billion of MMFs assets all over the world in just a weeks' time. In order to stop this run on the MMFs, the US Department of Treasury guaranteed investors an explicit deposit insurance (Kacperczyk & Schnabl, 2013, p. 1090). Even though this announcement was successful in stopping the run on the MMFs and investors dropped their withdrawal requests shortly after this announcement, the US government had insured the risk of $3 trillion in fund assets holding. In response to the actions taken by the US, EU regulators also begin to realize that they needed to take measures to guarantee the stability of the financial system (Bengtsson, 2013, p. 588). These actions where first taken on an individual member state level instead of the EU level. German regulators first announced to secure the liquidity of (near) MMFs through the temporary provision of special liquidity assistance for which the German Bundesbank functioned as collateral. Later, Luxembourgian and Irish regulators announced similar measures. Due to the spillover effects of these unilateral actions on other EU countries, the necessity to take action on an EU level was clear. The ECB therefore opted for a general approach on lowering the liquidity pressure by lowering interest rates and by increasing the scope of eligible collateral for banks level (Bengtsson, 2013, p. 589). Furthermore, the ECB introduced several asset types and lowered the threshold for credit rating from A- to BBB-, which acknowledged the possibility of investment losses (Bengtsson, 2013; European Central Bank, 2008). These measures were in force until the end of 2009.

This crisis highlighted the risks of the shadow banking sector on the traditional financial sector and forced the EC to take action. In March 2012, the EC published a green paper on shadow banking aiming to accumulate the current developments regarding shadow banking and to present a reflection on this subject (Simmons&Simmons, 2018.). A few months later, the EC published a consultation paper on this matter, which concluded that the best approach to deal with MMFs would be to draft regulation specific for this type of financial activity, rather than deal with it in a broader context. Eventually, in September 2013, the EC adopted regulation (EU) 2017/1131 specified to MMFs including, among others, restrictions on investment policies, risk management and external support (Simmons&Simmons, 2018.).

4.1.2. Regulating the shadow banking sector

In a direct response to the financial crisis, some measures have been taken to regulate the shadow banking sector and to restrict its risks. However, some of these measures, such as the regulation on securization, where only temporarily enforced (Bengtsson, 2013). Other regulation control a very specific section of the shadow banking sector. Having reflected on different approaches that are or could be adopted by regulators to prevent similar events from happening, scholars and experts argue the necessity of a different approach from regulators to the shadow banking sector than they have currently opted for.

Rixen proposes three different ways: 1) merge the traditional and shadow banking sector and treat it as one through direct regulation, 2) regulate each specific subtype of shadow banking separately and 3) create indirect regulation such as risk weights and additional capital buffers that links the traditional and the shadow banking sector (Rixen, 2013, p. 442). Lysandrou and Nesvetailove designed a different approach. Where Rixen focusses specifically on the division between the traditional and shadow banking sector, these scholars propose to regulate the entire financial sector as a whole instead of maintaining the division between shadow banking and traditional banking (Lysandrou & Nesvetailove, 2017, p. 20). With this approach, they want to prevent the development of a new regulatory gap, in which new shadow banking activities can emerge. However, while this approach sounds promising, it has not yet been implemented by the regulators, which might again leave parts of the financial sector unregulated with corresponding risks for the financial system. The IMF agrees with Lysandrou and Nesvetailove in a sense that regulation needs to capture the entire financial system to prevent the rise of a new regulatory gap or a new shadow banking sector (2014). They additionally state that non-regulatory measures need to be implemented in order to control the risks the shadow banking sector poses. Another important addition the IMF proposes is the evaluation afterwards. The IMF states that this evaluation is important in order to see whether the policy is effective in controlling the risks. While this might sound intuitive and logical, other authors fail to include this in their recommendations.

4.1.3. Expansion of the shadow banking sector

Two theories

The MMFs and other shadow banking activities proved to have a severe effect on the financial stability, mostly due to the size of the shadow banking sector within the financial system. But how could this sector have grown so large, without the regulators interfering in an earlier stage

than the ad-hoc solutions implemented after the events had already escalated? There are two main theories that provide an explanation on the decline of traditional banking and the rise in shadow banking (Buchak et al., 2017; De Nederlandsche Bank, 2010). The first explanation argues that an increased regulatory arbitrage for traditional banks due to deregulation urges the traditional banks to shift their risks to the shadow banking sector, resulting in a growth of the shadow banking sector. The second theory holds the rise of disruptive technologies responsible for the growth of the shadow banking sector. According to this theory, these new technologies are too innovative for the regulators to regulate them sufficiently. Due to this lack of regulation, these innovations are legally able to take more risks, often leading to higher returns for investors. These higher return rates attracted many investors, allowing these innovations to grow intensively.

To determine the cause of the crisis of 2008, most scholars align themselves with the 'regulatory arbitrage due to deregulation' -argument (Constancio, 2012; De Nederlandsche Bank, 2010; IMF, 2014; Lysandrou & Nesvetailova, 2014; Pozsar et al., 2010). Due to deregulation, the financial sector could design financial products, such as securizations[4], in which financial institutions could offer high risks product – which came with high return rates and therefore attracted many investors – without adequate supervision (De Nederlandsche Bank, 2010; Goldbach, 2015). Financial institutions created many of these innovations as response to the deregulations and regulators failed to signal and adequately respond to these unregulated, high-risk produces. This interaction eventually contributed to a large shadow banking sector with complementary risks, eventually resulting in the financial crisis of 2008 (Claessens & Kodres, 2014, p. 66).

FinTechs

The first theory of deregulation can explain the previous financial crisis of 2008, but it is also applicable to current events within the regulatory landscape. Again, a move towards deregulation – framed as the removal as barriers that might restrict innovations – can be witnessed (De Nederlandsche Bank, 2016). Where the second argument of financial innovation leading to instability was less applicable to the crisis of 2008, it is highly relevant in respect to

[4] Securization refers to a transaction that enables a lender to refinance a set of loans or assets by converting them into securities in which others can invest. The lender (often a bank, but not necessarily) pools a portfolio of its loans into a set of securities with a tailor-made risk, dependent on the investors' risk/reward characteristics. In the end, investors are repaid by the cash-flows that are generated from the underlying loans (the interest rates on the repayment of the loan) (European Commission, 2015).

current developments (Buchak et al., 2017; De Nederlandsche Bank, 2010; Schueffel, 2016). A sharp growth of a new possible disruptive development in the form of FinTechs is emerging and can currently already account for almost one of third of the shadow banking loans in developed countries (Bodoni & Gobbi, 2017). Crowdfunding FinTechs such as Peer-to-Peer lending FinTechs occupy the largest segment of the total FinTech sector, (Demertzis, Merler & Wolff, 2017). These crowdfunding FinTechs provide credit to businesses and individuals, without the intermediation of a bank (Dermine, 2016). These FinTechs' business models often consist of the provision of a platform that can match borrowers and lenders directly (Nash & Beardsley, 2017). Some companies allow lenders to choose their borrowers; some companies provide this choosing service to the borrowers and other companies form loan packages that these FinTechs often sell through online auctions. These type of lending platforms allow borrowers to have their loans approved faster and funds dispersed quicker than when a borrower would apply for a loan from a traditional bank and are therefore often considered to be the next new thing within the shadow banking sector (Douglas, 2016).

The fact that similar events of deregulation and financial innovation can be witnessed again might give reasons for distress, since crises often show similarities in their run-ups (Claessen & Kodres, 2014, p. 30). However, this also provides opportunities for regulators to prevent a new crisis. If regulators notice the warning signals in time, they can respond appropriately to curb the risks and prevent a new crisis. While for the past crisis knowledge on shadow banking might not have been sufficient for regulators to signal these warning signs and respond proactively to the shadow banking developments, current evens show enough similarities with the run-up to the past crisis which should enable regulators to take appropriate measures. Additionally, scholars and financial institutions acquired sufficient knowledge on these events, knowledge on which regulators can base their policies (Claessen & Kodres, 2014, p. 32). However, there are indications that regulators have not yet implemented such policies (Nash & Beardsley, 2015). This might mean that regulators currently fail to regulate FinTechs sufficiently, since only general, already implemented policies are applicable to thess innovations that do not pay attention to past mistakes perpetrated by the regulators while approaching shadow banking developments.

Moreover, experience shows that these FinTechs might even be designed from a point of regulatory arbitrage in which they exploit current regulatory gaps. Such a regulatory gap could also be witnessed prior to the financial crisis, in which shadow banking entities could develop risky products that weren't adequately regulated (Rixen, 2016). While the regulators later close

these past gaps, they often fail to include new developments and innovation in these new regulations, which leaves room for new regulatory gaps to occur. This principle of leaving new developments out of the regulatory scope when fixing past problems – in turn leaving regulators always behind on the most recent developments – can currently again be witnessed according to some scholars (Demertzis, Merler & Wolff, 2017; Kojcan et al., 2012; Nash & Beardsley, 2015). While current regulations such as MiFID can regulate some FinTech activities, new regulatory approaches are necessary for other types of FinTechs. As a defense for the insufficient policies, regulators often state that current developments are substantially different from past vulnerabilities, the so-called "this-time-it-is-different" –syndrome (Claessen & Kodres, 2014, p. 30). However, while regulators mostly highlight the differences between the past situation with MMFs and the current FinTech situation, several scholars state the contrary and argue that there are in fact many similarities between the different crises. Given these similarities, the mistakes made in (the period prior to) the past crisis can be used to derive lessons on how the regulators should respond to similar threats, in order to respond to these threats in a timely manner and prevent a new crisis.

4.2. Lessons learned

4.2.1. Lesson 1: Increase the adaptability of the EU regulatory framework

Financial innovation is necessary for the financial sector to develop and improve itself and move forward, but according to the experts, specific regulation should control these financial innovations. Many of these products are very instable and come with high risks. Regulation is necessary to restrain and control these risks and to protect the public from the possible disruptive effects of these products (Luttrell, Rosenblum & Thies, 2012, p. 20). The crisis showed that the EU regulatory framework was not sufficient to control all risks and to regulate institutions that pose a threat to the financial system and its stability (Perrut, 2012). Additionally, the framework was not able to facilitate an up-speed process for drafting new policy proposals and regulation. This speed necessary to respond to the fast technological changes. Banks – mostly investment banks – profit from these slow regulatory processes by exploiting the regulatory gaps through risky investments with fast profits.

Additionally, shadow banking entities cover a broad range of firms and they evolve over time, making it difficult to cover all risks these entities pose to the financial stability. These new shadow banking developments might lead to shocks which the financial system cannot control for (Financial Stability Board, 2012, p. 6). According to the FSB, in order to assess and detect

all the sources that pose a threat to the financial stability, the EC needs to adopt a high-level policy framework that makes it possible to take the appropriate policy measures and mitigate the risks. This allows the EC to assess the risks of the non-bank entities on the traditional banking sector, adopt the right policy tools to mitigate the risks and engage in an information-sharing process to maintain consistency across jurisdictions while applying the framework (Financial Stability Board, 2012, p. 6). In 2013, the FSB has proposed a policy framework consisting of three elements that regulators need to followed if they want to determine a non-bank financial institution's possible systemic risk and if it engages in regulatory arbitrage (Financial Stability Board, 2013, p. 3). These three elements are: the framework of five economic functions, the framework of policy toolkits and information sharing.

Within its assessment based on the five economic functions, the FSB recommends regulators to assess of non-bank financial entities based on their economic function or activities instead of their legal forms of names. This approach is able to capture new structures and innovations that create shadow banking risks at an early stage and allows for an international consistent approach in assessing these risks (Financial Stability Board, 2013, p. 6). One of the five economic functions is the provision of loans that are dependent on short-term funding. Whether these loans function on a secured or unsecured basis is irrelevant for the risk, both can give rise to maturity or liquidity transformation risks as well as excessive leverage risks. These risks are even more significant if the sector focusses on a cyclical nature (retail, real estate), the sector relies heavily on short-term funding or the non-banking entity relies heavily on a parent company for funding and this parent company is cyclical in nature as well(Financial Stability Board, 2013, p. 7-8).

Once a significant risk is identified, these shadow banking risks need to be mitigated from a financial stability perspective. The FSB has designed five policy principles that need to be taken into account: focus, proportionality, forward-looking and adaptable, effectiveness and assessment and lastly, review. After the regulators have applied the policy tools to the entity that poses a threat, they need to apply the information-sharing process. Information about which non-bank financial entities might pose risks and which policy tools the regulators adopted to curb these risks needs to be shared across jurisdictions (Financial Stability Board, 2013, p. 22).

Furthermore, the EC needs to improve its regulatory process in order for the EC to respond adequately to technological changes and challenges. Important is that this framework focusses on the broad financial sector, in order to uncover the weaknesses of the entire financial system

and to address them sufficiently (Viñals et al., 2012, p. 17). This means both the inclusion of the different aspects of the financial sector, as well as the different EU member states. Furthermore, this framework needs to be applied across different types of financial institutions in order to prevent these products and corresponding risks from shifting to the shadow banking sector in which they aren't regulated.

4.2.2. Lesson 2: Timely identify institutions that pose a systematic risk to the financial system

This lesson learned touches upon the institutions that pose a systemic risk to the financial system. The FSB describes systemic risks as "*the risk of widespread disruptions to the provision of financial services that have serious consequences for the economy at large*" (Financial Stability Board, 2011, as cited in Perrut, 2012). In more simple terms, systemic risk arise when multiple financial institutions fail at the same time (Sum, 2016, p. 30). Prior to the financial crisis of 2008, the shadow bank's liquidity problems and the off-balance sheets acted as channels through which the financial shocks could quickly spread throughout the entire financial system (McCabe et al., 2012; Perrut, 2012). Furthermore, these already perilous financial institutions designed complex financial products that lead to even more risk for the financial system once the liquidity problems occurred. The FSB encourages the authorities to reduce these liquidity risks in one of their five policy principles by imposing liquidity buffer requirements on these shadow banking entities (Financial Stability Board, 2013, p. 15). These highly liquid cash or near-cash instruments can mitigate the impact of increased reclamations when the market is stressed, lowering the chances of a run.

Given the large amount of leverage that both shadow banks and traditional banks could employ with the overnight repro markets, they had incentives to hold these assets in order to maximize short-term profits (Luttrell, Rosenblum & Thies, 2012, p. 21). However, these incentives could increase the probability of simultaneous action when systemic stress arises. Therefore, regulators should be more sensitive to business models or funding techniques that are based on a positively sloped yield curve, reflecting the investors' expectations for a growing economy in the future with an increasing inflation – a goal that cannot always be reached – to acquire probability and regulate these businesses accordingly

In order to contain these risks in the future, regulators need to actively and timey identify and supervise the institutions that present a severe risk to the financial system (Perrut, 2012; Carvajal et al., 2012). Perrut has developed different criteria to determine which institutions require action by the supervisor (2012). These criteria include the size of the institutions, the

interconnectedness with other institutions, the scope of the activity of the institution and the complexity of its products.

4.2.3. Lesson 3: Limit the spill-over effects of the shadow banking sector to the traditional banking system

The non-bank financial system is a valuable addition to the traditional banks for the provision of credit to small and medium enterprises (SME) to support economic activity (Financial Stability Board, 2013, p. 1). However, the crisis proved that these two sector do not operate separately from each other. Both systems are intertwined, resulting in a severe risk exposure of the regular banking system by the shadow banking system due to spillover effects (Carvajal et al., 2012, p. 75). However, the shadow banking sector lacks transparency given its types and locations of risk, which makes it difficult to assess the potential risk exposure of the traditional banking sector driven by the shadow banking sector.

Given this lack of transparency in combination with the interconnectedness of both sectors, regulators need to protect the traditional banking sector from the risks posed by the shadow banking sector in the future, in order to prevent another big crisis from happening (Carvajal et al., 2012, p. 75). To protect the regulated banking sector from the shadow banking sector's risks, regulators need to spate these two sectors in terms of balance sheets and liquidity (Kacperczyk & Schnabl, 2013). According to some experts, the entities within the shadow banking sector should have their own liquidity and should not need to rely on traditional financial institutions when they experience difficulties. The EC's prudential regimes need to capture the interaction that takes place between the two sectors in order to limit the banks' exposure to shadow banking entities and to introduce risk-sensitive capital requirements for banks' investments in the equity funds. While it will probably not be impossible to capture 100% of the interaction, the regulators should try to strive for an as high as possible percentage.

4.2.4. Lesson 4: Regulate requirements for risk diversification

A diversified investment portfolio enables entities within the (shadow) banking sector to adverse economic shocks (Ötker-Robe & Pazarbasioglu, 2012, p. 53). Furthermore, banks with a diverse balance sheet and sources of income are more adjustable to new regulation. One of the problems with shadow banking, MMFs prior to the crisis in particular, was the limited portfolio diversification (Bengtsson, 2013, p. 583). Once all intermediaries decided to offload their longer-term and riskier assets, portfolio's appeared to be insufficiently diversified, resulting in price drops in other assets and portfolio's. This spread financial unrest throughout

the financial sector. Additionally, these portfolios lacked transparency. This lack of transparency made it difficult for regulators to assess and act upon the potential spillover effects of these portfolios and their exposure to these price drops in advance (Narain, 2012, p. 53).

The core issue of these problems lies with the regulators' increased focus on ratings, without having sufficiently assessed this rating process (Lutrell et al., 2012, p. 10). Prior to the financial crisis, rating agencies conducted the rating process of these financial products, but they failed to sufficiently assess all risks connected to these products. Many of the securitized products offered by institutions within the shadow banking sector were rated AAA, which assumes risk mitigation through risk diversification. This portfolio rating was the highest and therefore the safest investment products, which confided investors and the demand for these AAA rated products grew. Given the higher demand of these products, broker-dealers started to produce more of these AAA rated securities, even though they did not always meet the underlying requirements for quality and collateral. The securities that did not meet the requirements for an AAA rating were transferred to the shadow banking sector, where they were nonetheless sold as AAA rated portfolios, allowing this sector to grow (Lutrell et al., 2012, p. 11). Since traditional banks transferred part of their securities to the shadow banking sector, traditional banks and shadow banks became further intertwined. Due to the lax regulatory oversight on this rating process and the compliance to underlying requirements, the poorly securitized instruments spread globally, eventually impacting the global financial turmoil in the run-up to the crisis of 2008.

In the future, the EC should mitigate the risks related to insufficient risk diversification, especially within the non-bank financial intermediary sector and adequately assess whether the financial institutions comply with the risk diversification requirements (Busch & van Rijn, 2018; Lutrell et al., 2012). The EC has to address the portfolios with insufficient risks diversification that the traditional banks want to transfer to the shadow banking sector proactively, in order to keep a sufficient risk diversification in both sectors. Therefore, according to the FSB, the authorities can impose limits on asset concentration in order to manage these risks.

It is hard to control after the transfer of securization has been completed, given the current unregulated sphere the shadow banking sector operates in. Therefore, if it is not possible to regulate the shadow banking sector itself, regulators should place this control before the transfer from the traditional to the shadow banking sector has taken place. Financial professionals expect a large growth for these non-bank credit intermediation companies, which makes control

on the mitigation of systemic risks even more important. These non-bank credit companies provide alternative sources of financing which reduces dependency on funding by the traditional banks. However, these companies in general cannot rely on public guarantees. To protect the lenders from severe risks, it is therefore important that these companies diversify their portfolios in order to allocate capital and risk diversification that will strengthen the European financial system (Busch & van Rijn, 2018, p. 306). Furthermore, these risk portfolios should be made transparent and understandable for investors – a requirement that needs to be regulated – to give investors insight in the risk they are taking (Lutrell et al., 2012, p. 11).

Lastly, regulators need to be aware that it is not simply enough to spread the investment risks across thousands of investors throughout the global financial in order to maintain the financial stability and prevent the financial system from excessive exposure risks (Poszar, 2008). This ideology lived among the regulators in the period prior to the financial crisis of 2008, but proved to be insufficient. While the low risk investments did indeed spread throughout the financial system, the high-risk investments clustered with only a small number of financial institutions. Besides, many financial institutions had insured their losses. Within these securities insurance companies, the high risks were again concentrated. In future policies, the mechanism that risks will automatically spread to investors throughout the financial system needs to be reconsidered in order to prevent high-risk exposure of some financial institutions.

5. Results

5.1. Data presentation

This research analyzed fifteen documents published by the EC, but not all these documents would contribute to the study on the EC's learning capabilities. Eventually, nine of these documents were considered helpful for the research and were included in the Framework Method analysis. Since the aim of the research was to determine the learning capabilities of the EC, the focus of the research lay solely on documents published by this institution. Given the limited number of official documents, such as policies and action plans, the EC has published on the topic of interest within this research this analysis also included speeches and other communications published by the EC. While other relevant documents from EU institutions, such as the European Parliament, were found, they were not included into the examination since they fall out of this research's scope. Therefore, the EC documents analyzed in this research are:

- The FinTech Action plan, (2018);
- The Proposal for a Regulation on European Crowdfunding Service Providers (ECPS) for Business, (2018);
- European Commission impact assessment on the Proposal for a Regulation on European Crowdfunding Service Providers (ECPS) for Business, (2018);
- European Commission impact assessment accompanying the document proposal for amending Directive 2014/65/EU on markets in financial instruments (2018);
- Press release on the FinTech action plan, (2018);
- Annex - Workplan of the initiatives included in the FinTech Action Plan, (2018);
- Frequently asked questions: Financial Technology (TechFin) Action Plan, (2018);
- Press release on the internal Task Force on Financial Technology, (2018);
- The EC's proposal for amending Directive 2014/65/EU (2016);

The documents that were considered for the analysis, but were not included in the study due to their limited informative level are:

- Impact assessment on the EC's proposal for amending Directive 2014/65/EU, (2016);
- Summary of the Proposal for a Regulation on European Crowdfunding Service Providers (ECPS) for Business, (2018);

- Annex to the Proposal for a Regulation on European Crowdfunding Service Providers (ECPS) for Business, (2018);
- Regulatory scrutiny board opinion on the Proposal for a Regulation on European Crowdfunding Service Providers (ECPS) for Business, (2018);
- VP Dombrovskis speech at the Afore consulting's 2nd annual FinTech and digitalization conference, (2018);
- European Commission informational webpage on FinTech, (n.d.d).

Based on the Framework Method as described by Ritch and Spencer, the documents were analyzed through the method of familiarization, indexing, charting, mapping and interpretation (1996). The indexing phase resulted in the following concepts that functioned as base for the first documental analysis: opportunities and challenges for FinTechs, their risks, the already existing regulation that is applicable to FinTechs, deregulation measures, reforms proposed or implemented by the EC, other regulatory initiatives from the EC and lastly, the cited reports. Throughout the further analysis of the documents, it was noticed that some concepts that were necessary for a true in-depth examination were missing. Given the flexible nature of the Framework Analysis method, it was possible to add some concepts to the documental analysis. The concepts that were later added were: public consultation references, regulatory initiatives, (near) future oriented steps and proposals, institutions and governance measures. Previously studied documents were later again examined by using these concepts in order to make sure that no information was missed. The study later showed that the concepts "reform" and "deregulation" that were added based on existing literature were not mentioned in the documents that were studied. A summary of the concept analysis is included in Table 1 in the Appendix.

After the indexing phase, the charting phase examined each data-piece individually to see in which of the lessons it fitted best, but the data remained organized by its original concept. However, again not all data fitted perfectly within these concepts or in the four "lessons learned" categories. This information might still contribute to the general knowledge of the institutional learning capabilities of the EC. To include all relevant data and not miss any information, the section "Other" was created as extra category in the analysis. For other data, no clear distinction between the different lessons could be made; it fitted within two sections. In order to prevent relevant data being missed in the examination, these parts where included in both relevant sections. In the next phase, the mapping phase, the data was considered within each lesson, but outside of its original document in order to derive an overall view of the EC implementation

and consideration of the lessons learned. Additionally, the data in the "other" section was again examined to see if this information could contribute to first conclusions on the EC learning capabilities, derived from the four lessons. To derive this overall view, several aspects were considered: the number of times an aspect was mentioned, how many different documents reflected the aspect, the underlying reasons for considering it, and, the most important indicator in this phase, the content of the arguments. A summary of this analysis is included in Table 2 in the Appendix.

Since this research focuses on knowledge based institutional learning, which is derived from documents and other (scientific) input, the analysis also kept track of different documents, expert input and consultation that have been used to generate the policies, action plans and communications. This was not included in the same document as the study that was based on the lessons learned, but was recorded separately. While this record is not included in the appendix, attention is paid to the EC's expert input used for its policies in the results section.

The second step of the data gathering process included interviews, in which the results found in the document analysis were discussed and additional in-depth information was generated. Many different officials from a variety of organizations were approached, such as different expert groups and individual experts within the DG FISMA (sections C1, C2, C3, D1, D2, D3), the European Parliamentary Research Service, different spokespersons on banking, financial services and innovations and entrepreneurship, the EC's Taskforce on Financial Technology, cabinet members and assistants of Olivier Guersent, the Director-General of the DG FISMA and his deputy Director-General John Berrigan, Dutch experts on the topic within the Dutch Ministry of Economic Affairs and several Thinktanks such as Bruegel.

While I sought contact repeatedly and through different means, such as e-mail, LinkedIn and telephone, only three people were open to participate in an interview. These three people were all representatives of the DG FISMA, but had a different specialization. One of them had worked at the EC for over 20 years, most of the time within the DG FISMA. He was therefore able to explain the differences in the approach the EC took towards FinTechs now compared to the EC's strategy prior to the crisis. Another interviewee is an expert on one of the EC's approaches towards FinTechs, the Regulatory Sandboxes. The last interviewee had just joined the DG, but had a lot of knowledge on the different policies that the EC had implemented for different aspects of the FinTech sector and was therefore able to provide a broad insight in the activities of the EC.

5.2. Data analysis

Knowledge based learning

This research focusses on knowledge based policy learning. In order to derive whether knowledge based learning has indeed taken place it is necessary to assess the documentation and input the new policy is based on. Furthermore, it is also necessary that this scientific input has affected the outcome of the policies in such a way that it differs from a policy outcome that regulators would have implemented without the knowledge. The analysis therefore paid attention to the different input used for the policies and in the interviews attention was paid on new policy insights generated from these scientific insights and expert input.

The study showed that the DG FISMA, and thus the EC, has based its policies intensively on scientific knowledge derived from both internal as external knowledge. The EC conducted an extensive impact study on the ECPS that analyzed the effects of the different scenarios over both short- and long-term in-depth. While not all recommendations are put into practice, the adoption of both the Single Rulebook and a label for the ECPS by the EC, show that the EC has used its scientific study of the different policy options to derive the best policy options given the circumstances, implying knowledge based policy learning. Furthermore, research papers from respected universities such as the University of Cambridge and studies from large consultancy firms were used as input and the DG FISMA has initiated many different consultations to generate expert input within the different phases of the policy making process. One clear example of the usage of expert knowledge is the consultation on the FinTech Action Plan. The consultation document that the DG FISMA used in the first drawing phase for this Action Plan was already highly reliant on expert knowledge provided by different expert groups. The input generated by this consultation document strongly defined the direction of the final FinTech action plan. Without the knowledge generated by this consultation the DG would have included some other topics and left others out of the Action Plan. The EC's is therefore clearly aligning with the requirements for knowledge based policy learning, at least with regard to this specific document.

While this shows signs of knowledge based policy learning, since the knowledge has led to other policy outcomes than regulators would have chosen without this knowledge, this change in focus on expert knowledge generation through consultations cannot be solely be credited to the learning capabilities of DG FISMA. This new focus on consultation is in line with the Better Regulation Agenda of the EC, which aims for making more evidence-based proposals of EU

policies and laws, and can therefore likely be witnessed among the different DGs within the EC since its implementation.

5.3. Implementation of the lessons learned

5.3.1. Lesson 1: Seriously considered and partly implemented

Regulatory initiatives

The financial crisis of 2008 has shown that the EU's regulatory framework was not capable to control the risks posed by new financial innovative business models. One of the main flaws within the regulatory framework was its rigidness. The regulatory framework of the pre-crisis period was not able to facilitate an up-speed process for drafting new policies and regulation and was therefore unable to respond adequately to new threats to the financial stability. The analysis shows that the Commission has acknowledged this inflexibility of the regulatory framework and has changed its regulatory approach after the crisis.

With the case of the development of FinTechs, the analyzed documents show that the EU acknowledges that overly prescriptive and hastened regulation carries the risk of unwanted outcomes and leaves too little room for (new) beneficial financial developments. Such regulation might place EU FinTechs at a disadvantage in the global market. However, the EC acknowledges that there is also the risks of under-regulating, in which regulators do not address all potential risks appropriately. This can lead to regulatory loopholes and regulatory. The EC recognized both risks of over- or under-regulating and responds more adequately to this current developments then it did in the run-up to the financial crisis. One clear example of this adequate approach is the EC's Regulatory Sandboxes[5]. With this approach, the Commission adopts an innovation oriented method towards FinTechs through the creation of a competitive environment in which the FinTechs can safely apply their innovative products in stable surroundings. It addresses the friction between the regulator's desire to stimulate innovation within the financial sector, while it also encourage complying with regulation implemented as result of the financial crisis of 2008.

[5] Regulatory sandboxes create an environment where supervision is tailored to innovative firms such as FinTechs. Within this approach, the regulators apply a wait-and-see approach. This allows the regulators to learn what technology will be applied on the market and will be able to draw on experience to determine the risks that accompany these innovations. The national authorities need to apply relevant EU financial services legislation, but there is room for a tailored approach, leaving room for proportionality and flexibility (Demertzis, Merler & Wolff, 2017).

Currently, the EC considers the mandate for Regulatory Sandbox regulation usage to lie with national authorities. They should decide whether existing regulation is applicable or that the controlled environment of the Sandbox fits the new FinTech company best. According to the DG FISMA representatives, this approach is currently used on a small scale; only half of the EU member states have a Sandbox and the nations that use this approach have no more than one Sandbox installed. The UK installed the first Regulatory Sandbox, a regulatory development that gained interest of the EC. The EC evaluated this approach, considered it a suitable approach to the FinTech sector and therefore encouraged the member states' regulators to adopt this approach.

While it is not directly stated in the documents, the study illustrates that the EC views this balance between over- and under-regulating as one of the most challenging aspects of the necessary adjustments within its regulatory framework. According to the EC's internal analysis, backed-up by external analyses that state that gradual adjustment of regulatory intensity is the best approach to addressing the risks in the financial technological industry, this Regulatory Sandbox approach is indeed an appropriate response to current challenges stemming from crowdfunding FinTechs.

However, this Regulatory Sandboxes approach is not a long-term solution, something both the EC documents and the experts acknowledge. While it allows room to test different approaches to FinTechs, without restricting its development, regulators can apply this approach only on a small scale since it requires intensive supervision and contact; requirements the national authorities cannot always meet. In a later stage, the EC needs to translate this approach into EU wide regulation that can be applied on a large scale. The EC acknowledges the short-term practicality of this regulatory approach and will therefore present a blueprint on best practices of the regulatory sandboxes approach which the EC can later transform into new regulation on FinTechs. When the EC presents this blueprint and when specific FinTech regulation derived from this blueprint will be implemented is not specified in the documents. The DG FISMA's representatives also could not provide a clear vision on the next phase of these FinTechs.

Apart from the Sandboxes, the EC has implemented another regulatory approach that the documents had not mentioned: the Innovation Hubs on national levels. These Hubs are designed to create a dialogue between new FinTechs that fall outside of the Regulatory Sandboxes. Where Regulatory Sandboxes are in place for FinTechs that have such innovative business models that no regulation is applicable yet, the Hubs are designed to provide guidance for new

FinTechs for which clear requirements are in place. In return, these Hubs acquire valuable information on new FinTech developments and are assured that new FinTechs comply to the necessary regulations and licenses. However, FinTechs might prefer operating within the shadows – given that this lowers regulatory and other costs. This preference for non-compliance, from either economic incentives or simply ignorance, drives the regulators' the initiative for this relationship with the FinTechs in the innovation Hubs. This requires a lot of monitoring and supervision from the regulators to make sure no new FinTech is overlooked. A clear vision on how the EC wants to make sure that these hubs overlook no possible risky activities is currently non-existent.

Broad focus

Another lesson learned from the financial crisis of 2008 is the necessity of a comprehensive supervision on the financial sector, including both the traditional and shadow banking sector. This comprehensive supervision should limit differences in member states' approach towards innovations. The documental analysis shows that the EC acknowledges the absence of clear and harmonized processes between member states' approach to FinTechs and admits that the different member states have adopted a large variety of regulatory standards. Furthermore, different jurisdictions have developed different regulatory and supervisory frameworks, which all address a specific subsection of FinTech innovation. The EC acknowledged that this leaves opportunities for regulatory arbitrage and comprehensive risks.

While the risks EC failed to comprehensively analyze the from different policies, the Framework method used in this research was able to pool these different analyses which provided a picture in which the EC is actively approaching the risks that stem from these differences. With its FinTech Action Plan, the Commission aims to integrate the European FinTech market in order to limit the fragmentation of FinTech developments along the national borders as far as possible and to have a coherent approach to the risks posed by the FinTechs. Additionally, it proposes a European single rulebook that is applicable to all financial institutions in the internal market. These initiatives and the drivers behind it, as described in the documents, show that the EC has reflected upon some of its mistakes made prior to the financial crisis and tries to improve its approach. Through its broad action plan, the European single rulebook for all financial institutions and its harmonization of rules between the different EU member states, the EC shows it has learned from the financial crisis.

However, while this analysis shows many positive developments, some of the lessons learned are currently not used in the EC policies and corresponding documents. Another one of the FSB recommendations is the inclusion of all financial aspects in the new policies. While the EC tries to broaden the applicability of its policies, a clear vision on how to prevent a new shadow banking sector from arising in new regulatory gaps is currently missing. No policy is yet in place that proactively assess whether there are regulatory gaps or other opportunities for regulatory arbitrage in order to close these gaps in advance. Furthermore, no clear policies are in place to stimulate information sharing processes across jurisdictions and it remain the question whether the EC has been effective in increasing the policy making process, apart from the Regulatory Sandboxes approach that can only be applied on a small scale.

Institutions

One of the aspects that was missing in the EC's regulatory framework prior to the financial crisis of 2008 was the supervision of new developments and innovations in the financial sector. The risks posed by the shadow banking sector where not timely signaled, which made it possible for these risky innovations to attract a large number of investors and occupy a large sector of the financial (shadow) sector, without being regulated. In order to tackle this supervisory problem in the case of FinTech, the EC has proposed several (new) institutions to participate in monitoring the risks posed by the FinTechs. In its FinTech Action Plan, the EC mentions the establishment of an EU FinTech Lab, which will raise the knowledge level on regulatory and supervisory capacity about technological innovations. Furthermore, the EC created an expert group that assesses the regulatory obstacles for financial innovation and weighs which measures are necessary for financial stability and which only limit innovation without adding much certainty.

Additionally, the EC proposed a platform for European crowdfunding under the label of a European Crowdfunding Service Provider (ECSP). This platform provides FinTechs the opportunity to scale their operations at the EU level, while remaining within the national regulatory framework. Furthermore, the Commission initiated the Financial Technology Task Force (FTTF) at the end of 2016. The FTTF's goal is to acted upon the potential FinTech opportunities and challenges, which are already partly addressed in the FinTech action plan. Another measure the EC has taken is the extension of ESMA's scope. According to the EC documents, the ESMA also supervises FinTechs and assesses their compliance to EU regulation after this reform. However, how the EC will formalize this in practice is not specified in the

documents. Additionally, it remains unclear whether the ESMA will be given sufficient means to execute this new addition to its responsibilities.

The interviews with representatives from the DG FISMA showed that the EC currently does not qualify FinTechs as a possible threat to the financial stability. It rather classifies it as a challenge. The representatives acknowledge that the FinTechs – by them seen as all financial services companies that use technology as core aspect of their business model – could in theory have posed a risk, but they consider the EC's approach towards FinTechs to be adequately capable of addressing these risks. Additionally, the FinTech sector is currently still relatively small. Since the EC has already started implementing an FinTech Action Plan and regulations for these developments, the representatives consider the EC to have adopted a sufficient and forward-looking approach for once the FinTechs occupy an even larger sector in the financial system. According to the representatives, the ECs approach results therefore in limited risks from the FinTech sector.

Technological neutrality

One of the main reasons why the representatives do not classify FinTechs as threat but as a challenge is due to their technologically neutral approach to FinTechs, in which the EC regulates the economic activity of the business instead of the specific technology used in by business. When FinTechs come up with new technologies to handle existing services more efficiently – the most common business model amongst FinTechs–, they still need to get a license for their service, regardless of the technology used. According to the DG's representatives this approach allows to respond adequately to new FinTechs, since most of their activities will fall within these regulations. Clear examples of these regulations are the Payments Directive or MiFID, which automatically includes all new (innovative) companies that engage in the financial services. This approach is in line with the lessons learned on applying technology neutral regulation as suggested by the FSB and can also be identified in the EC documents such as the FinTech Action Plan.

The interviewees acknowledge that there might be some unregulated FinTechs that fall outside the regulation's current service oriented scope, but these FinTechs will have a limited size and therefore limited possible risks. According to the representatives, regulators will definitely signal FinTechs the existing regulation currently overlooks once these FinTechs grow too big and start to pose a threat. They will then be required to apply for all necessary licenses to exercise their business (adding up to eventually an official banking license). Regulators can

control the business models for which no existing regulation is applicable in a Regulatory Sandbox until they have designed the right solution or regulation.

Conclusion on the first lesson

Given the insecurity about the best approach towards some new FinTechs with innovative business models, the EC has decided on a flexible way of regulation and keeping an eye on the developments in the form of Regulatory Sandboxes. This approach is preferred over the alternative option of waiting to see what happens; an approach that might result in action taken too late. One of the EC's intentions to make EU regulation and policy more future-oriented and aligned with the phase developments of (financial) technology, as recommended by the FSB, can be considered to be put into practice with this Sandbox approach, even though this approach is only used on a small scale. To monitor new developments and possible risks on a larger scale than is happening with the Regulatory Sandboxes, the EC has installed some new institutions for these monitoring activities. Furthermore, the EC has broadened its regulatory focus within the financial sector, preventing regulatory arbitrage and risk being unsupervised and has therefore implemented another one of the FSB' recommendations. The only recommendation made by the FSB that the EC documents not specifically asses is "review". However, it is likely that the usual review processes of the EC will assess the effectiveness of these. Given these developments and the fact that the EC has based them all on an intense process of knowledge generation, both internal and external, it can be concluded that the EC has shown its knowledge-based learning capabilities on this topic.

However, the EC has not implemented some lessons learned and recommendations made by the experts. While the EC has applied some aspects from the FSB' policy principles, others, such as a clear procedure on assessments and reviews, were not. Furthermore, the EC has gathered only limited information on the effectiveness of some of the implemented policies. Since no assessment and review mechanisms are in place yet, there is no possibility to reflect on the effectiveness of the proposed policies and plans at a later moment.

5.3.2. Lesson 2: Possibilities for systemic risks are currently not considered

One of the lessons learned from the financial crisis of 2008 is that systemic risks need to be controlled. However, while different scholars signal this possible risk, the EC does not pay much attention to this lesson in their documents. Attention is paid to the impact of different risks, for example loan defaults, business failures or platform collapses due to malpractices, but the possibility of a systemic risk caused by the FinTech sector is not considered. One thing the

EC does argue is that investors need to be sufficiently informed about the risks that they are taking by using the FinTech platforms. To protect the investors, the EC has imposed a threshold of one million euros for each crowdfunding offer. Once an offer exceeds this threshold, a supervisor needs to approve a prospectus on the offer in line with Regulation (EU) 2017/1129. These measures are mostly in place to protect the investors from losing a lot of money, instead of limiting the size of the FinTech sector.

However, this is the only measure that is currently in place regarding the systemic risks and focusses on the protection of the investor instead of the financial system as a whole. While Perrut has defined some criteria that provide clear warning signals and indicators on which regulators can proactively base their policies, these are not considered within the EC documents and no policy has been designed based on these indicators. Additionally, the FSB recommendation to impose liquidity buffer requirements on shadow banking companies is not adopted in current EC policy.

The DG representatives were clear about their vision of the possibility of crowdfunding FinTechs posing a systemic risk to the financial system: nonexistent. These FinTechs are still of limited size and influence within the financial sector. Moreover, according to the representative, these FinTechs are appropriately regulated in the already existing regulatory framework, which rules out the risk of these crowdfunding FinTechs becoming large enough to pose a systemic risk.

Conclusion second lesson

According to Perrut's characteristics, the crowdfunding FinTechs might be able to pose a systemic risk to the financial system, for example based on their excessive growth rates or their interconnectedness with other financial institutions. The lessons learned show that it is important that the EC approaches possible future developments pro-actively given the duration of the regulation process. Since experts are already warning about these possible risks and the crowdfunding FinTech development aligns with the developments of past systemic risks, this could have been the right opportunity for the EC to show the forward-looking approach it claims to have. However, the documents and interviews show that while EC pays attention to different risks coming from these FinTech, the possibility for systematic risks is not seriously considered and no policies have been implemented. The analysis therefore considers the lesson regarding this systemic risk "not learned".

5.3.3. Lesson 3: The possible spill-over effects are currently not considered

One of the reasons that the crisis had such a severe impact on the real economy was the interconnectedness between the shadow banking sector and the traditional banking sector. Research on what went wrong prior to the financial crisis showed that, in order to prevent financial turmoil to spread throughout the entire financial sector, the EC should make sure that these different types of financial institutions remain separate in terms of balance sheets and liquid means. Preferably, all interaction between the two different aspects within the financial system, traditional and shadow financial institutions, are to be kept strictly separate.

However, while the EC acknowledges that this interconnectedness increased the impact of the financial crisis and it notices the increased overlap between FinTechs and the traditional financial sector as showed in the documents, it does not consider this a possible problem. Subsequent to this, the EC has not taken any action to limit the current interconnectedness between the FinTechs and the traditional banks. The similarities between the sponsor relationship MMFs had with traditional financial institutions prior to the financial crisis and the current sponsor relationship between crowdfunding FinTechs and traditional banks has not yet caught the eye of the EC as showed in the documents and a similar message was advocated in the interviews with the DG representatives. While the crowdfunding FinTechs again lack the liquid means in times of financial turmoil and they are again relying on traditional financial institutions as sponsors to overcome these insufficiencies, the EC does not consider this a risk. It currently considers cyber-attacks as more reason for concern and therefore chooses to focus attention on this type of risks instead of spillover risks.

Conclusion third lesson

While the EC notices that banks partly outsource their business processes to the more efficient FinTech firms, it does not qualify this as a possible risky development. Other developments in this sector that might create a risk for the financial stability, such as the sponsor relationship between crowdfunding FinTechs and traditional banks that shows many similarities to the MMF structure prior to the crisis of 2008, are not noticed. This analysis therefore concludes that the EC has failed to implement this third lesson on current developments.

5.3.4. Lesson 4: Thorough analysis, but no policy implemented yet

The crisis should have taught regulators the importance of risk and portfolio diversification. In the financial crisis, securities and investment portfolios were insufficiently diversified. After

the collapse of Lehman Brothers, this insufficient risk diversification created a domino effect, allowing the financial unrest to spread throughout the financial sector.

Only one of the documents analyzed in this research paid serious attention to the risk diversification problems that might arise within the FinTech sector: the impact assessment on ECPS for business. Among others, this impact assessment considers the adverse selection risks that might arise within the FinTech sector. It states that these risks might arise when the investors or the lenders cannot sufficiently assess the possible success rate of the projects that need funding. There is a fair chance that the crowdfunding lending platforms will only attract high(er) risk projects, since low risk projects that need funding will prefer funding through a bank, as this comes with regulatory safeguards and a safety net, and these low risk projects will meet the requirements necessary to receive the funding while the high-risk projects will not. Since crowdfunding FinTechs' portfolios will consist of mostly high risk projects due to this principle, this insufficient diversification of the internal market of FinTechs might give too little room for risk diversification, which in return puts the financial system at risk since these risks will not automatically spread to many different investors.

The impact assessment on ECPS shows that regulators currently take insufficient measures to force crowdfunding FinTechs to disclose the expected risk/return profile[6] of the investment portfolio's. Given the FinTechs' lack of regulatory safeguards that ensure investments, this can result in unexpected risky investments with high possibilities of losing the investment made. Without this regulatory safeguards and a sufficient risk/return profile, investors take high risks in their investments and might lose capital.

As recommended by the FSB, the EC could prevent these risks if it proactively assesses these risks through regulation and implements requirements for risk diversification. However, as stated in the impact assessment, there is currently no regulation in place. Additionally, as recommended by Luttrel, investors need to have sufficient knowledge of the risks they are taking, instead of being tangled up in financial instruments they cannot understand. The EC agrees with this statement and argues in its impact assessment that crowdfunding service providers should run an entry knowledge test of their prospective investors and should prevent an information sheets about the portfolio's risks. Furthermore, the entire sector might suffer

[6] Within this profile, the risk of losing the investment relative to the expected return rate is calculated on which an investor can base its decision to invest into the project (Chen, 2018).

from reputational risks once it cannot return investments on a large scale. To tackle this problem, policy needs to be designed to ensure a professional, fair and transparent way of selecting projects that might apply for crowdfunding and that the crowdfunding practice itself is executed in a similar professional, fair and transparent way. While these recommendations all stem from an analysis conducted by the EC itself, is so far fails to implements these recommendations.

The DG representatives down played this lack of EC regulation to the allocation of the risks, since, according to hem, the main risk lies with the investors. This makes EU wide regulation unnecessary. According to the representatives, these investors are carrying the risks individually, which therefore does not affect the larger financial system. An investor might decide that the prospected revenues are worth the risk of investing and while experience might later show that this was a misjudgment, the risk remains with the investor in the portfolio and has limited chances to spread to other FinTechs, let alone the rest of the financial sector. The representatives from the finds the threshold and maximum net worth measures that are already in place sufficient for the current diversification risks and expects that is remains that way. However, this line of thinking proved to have severe effects in the run-up to the financial crisis. Past events have showed, as described in lesson 4, that risks do not automatically spread evenly throughout the financial system. Some investors have a specific appetite for high-risk investments that can get problematic if these investors are financial institutions. Besides, these high risks can again be accumulated in insurance companies. The interviews show that the DG FISMA is currently not considering this mechanism to occur again and there is no intention to monitor or guide an effective risk diversification that keeps a possible later risk allocation in mind.

The documents have not paid attention to one of the factors that played a role in the insufficient risk diversifications within the portfolios: the third party credit rating agencies. It therefore remains unclear whether the EC would consider using such a construction for risk monitoring again in the future or that it has learned from this mistake in the past and will carry out the risk diversification monitoring themselves.

Conclusion fourth lesson

The documents and the interviews provide somewhat of a mixed view on this fourth lesson. The analysis based on the EC documents shows that the EC is actively considering the risks of the growing crowdfunding FinTech sector. While this thorough analysis has not been transformed in implemented regulation, it shows that the EC has seriously considering possible

threats coming from crowdfunding FinTechs. Therefore, the learning capabilities of the EC on this fourth lesson fall between the “slightly” and “moderately” classification for learning capabilities. However, the interviewees stated that they do not expect that the EC wants to regulate any of these risks, since the risk remains mostly with the portfolio investor and has limited chances of spreading throughout the financial sector. Currently, the EC has not implemented any policies directed specifically towards the portfolio diversification so it can be concluded that the EC has currently not learned from past events on this policy topic. However, the results from the documental analysis on this lesson indicates that the EC is moving in the right direction on this topic, since it actively engages in knowledge generation. Unfortunately, the interviews show the opposite picture, which makes it difficult to see whether the EC is currently taking steps into the right direction.

6. Discussion

6.1. Discussion on this research

This research tried to answer the question whether the EC had learned some lessons from the mistakes made in the run-up to the financial crisis. Given the EC's resolution to implement more forward looking and future proof policy, and because of the similarities between the crowdfunding FinTechs and the MMFs, this research hypothesized that regulators would approach the current risks adequately and proactively. The documental analysis and the interviews conducted in this research showed that the EC has indeed learned some lessons from the financial crisis of 2008, as expected. However, whilst there are clear indicators for possible threats coming from the FinTechs, the EC still needs to implement or at least consider several lessons.

The study showed that the EC has acknowledged that its regulatory framework was insufficiently capable to respond to threats posed by financial innovations. It has therefore implemented many reforms within the regulatory framework in order to be better able to respond to new risks and to prevent similar events that led to the financial crisis of 2008 from happening. Furthermore, the EC has showed an ability to learn in regards to the focus of its policy. In the past, the EC implemented policy to regulate the details, such as the legal registration of an institution, current policy however is more aimed towards the function of the institution within the financial industry. Additionally, the EC proactively approaches the national differences towards FinTech regulation with its FinTech Action Plan. Prior to the crisis, a broad supervisory approach that included the entire sector and all member states was missing. The measures proposed in the new FinTech Action Plan now cover this discrepancy. However, several measures still need to be implemented.

Another inconsistency the EC has now covered is the lack of regulatory oversight and monitoring of the institutions that engage in risky activities. As response to the rising threat of FinTechs, the EC has started an EU FinTech lab that needs to raise the knowledge on FinTechs and monitor the developments of these innovations. However, while the EC has founded this new institution, its effectivity and capability of signaling possible threat in time has not been proven yet. The EC has also proposed a European platform for crowdfunding service providers and a Financial Technology Task Force to address the potential opportunities and challenges of

FinTechs. Furthermore, the EC broadened the monitoring scope of ESMA which now includes FinTechs as well.

These developments show that the EC is proactively approaching and monitoring the FinTech development and has changed its regulatory sufficiently. Furthermore, as shown earlier, the EC has extensively based its new policies on scientific knowledge and expert input, all implying knowledge based policy learning. However, while the EC has indeed showed some policy learning and has implemented some aspects of the lessons that the regulators could have learned about its Regulatory Framework, some aspects are not sufficiently covered, such as the long-term Regulatory Sandbox approach.

The EC has shown much improvements regarding its regulatory framework and based these improvements on scientific and expert knowledge. However, some lessons are not implemented nor is there a clear plan on future steps. Based on these two factors, according to the scale used in this research (Table 1) the EC's implementation of the lessons learned can be classified as *almost all.* The analysis shows a different picture in the other three lessons that the EC could have learned. The EC has not paid significant attention towards both the systemic risk and the possible spillover effects. It failed to implement serious improvements or to consider some of the developments that fall within these lessons as a possible risk. While the EC does consider the possible risks of non-diversified risks, as identified in the fourth lesson, in its ECPS impact assessment, and proposes some clear policy improvements, it has not yet implemented measures to encourage sufficient risk diversification. An overview on the question whether the EC has learned the lessons from the financial crisis has been summarized in Table 2.

Table 2. Summary of results from the analysis on the lesson learned

	Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**
Has the EC implemented the lessons learned?	Almost all *Many (but not all) lessons are implemented. Intensive use of scientific/ expert knowledge*	Not at all *No substantial improvements implemented or considered. No scientific knowledge on the risks generated*	Not at all *No substantial improvements implemented or considered. No scientific knowledge on the risks generated*	Slightly/Moderately *No policies are implemented, but different policy options are considered. Intensive generation and use of scientific knowledge.*

Previous to this research, it was only certain that the EC engaged in policy learning on low-saliency policy topics. This research adds to this theory that the EC is also capable of policy learning on high-saliency policy topics, which deepens the general knowledge on the EC's learning capabilities.

The current FinTech development could have been the perfect opportunity for the EC to show the new forward-looking policy approach the EC claims to have adopted. However, the EC fails to adopt a forward-looking approach on the expected future risks in three out of the four lessons. Even more striking, as stated in the interviews, the EC finds its current approach to the new FinTechs adequate and sees no need for improvement. Nevertheless, the study on the first lessons shows that the EC is capable of knowledge based policy learning in some policy areas and therefore possesses at least a certain amount of learning capabilities. The results of this research show that the EC can actively base its policy on knowledge generated from research or expert input. The EC is therefore able to learn from past approaches – both the successful and the less effective ones – on high-saliency topics. This provides a promising picture for future policies on other high-saliency topics. Since these topics have a severe impact on the society, it is satisfactory to see that the EC actively basis its policy on studies that examined earlier policies on the same topic, in order to learn from the past mistakes. This improves the overall quality of new policies on these impactful policy topics and might prevent future mistakes that would otherwise have had a severe impact on the society.

However, while this research does provide a promising picture for future high-saliency policy topics, the EC has not showed learning capabilities on all the lessons learned and still leaves some FinTech risks unregulated. Future research should answer the question why there are mutual differences between the EC's learning capabilities in the different lessons learned. If the question is answered we know more about the different causal effects that determine whether the EC will engage in knowledge based policy learning. Future decision making processes can then be designed based on those principles.

Improvements for FinTech policies

Given the severe effects the financial crisis of 2008 had on the real economy and the EU citizens, as well as the warning signs that were signaled by some experts but ignored by the EC, it is positive to see that the EC is now reacting more proactively to new threats to the financial stability, such as FinTechs, and proactively engages experts in its policy making process. While the EC currently does not cover all possible threats, it actively monitors the developments

within the FinTech sector in order to signal possible risky developments. It cannot be stated with certainty that this increased proactive monitoring of threats and the use of experts will prevent a new financial crisis, but a crisis certainly could probably not be prevented without certain learning mechanisms in place.

There are ways in which the EC could improve its current approach towards the FinTechs. What stands out is that the EC is currently proactively approaching the FinTechs trough action plans and assessments, but fails to implement thorough and forward-looking regulations that cover a large range of possible risks. A clear approach on how to keep the FinTechs in the traditional financial sector instead of having it resort to the shadow banking sector is missing. Furthermore, a vision on how the FinTechs should be regulated in the future is lacking. It is recommended that the EC creates a vision on these aspects and implements the necessary regulations to enforce this vision. Currently, the EC applies the Regulatory Sandboxes a on a small and local scale, but there is no vision on how this approach can be translated to a larger scale. In addition, a vision on the possible systemic risk the FinTechs possibly presents is lacking. The EC currently argues that the FinTechs are only a small player in the financial system, so its threat is limited. However, the EC inaccurately values the growth rate of the FinTech sector and the warnings from experts. The EC should therefore already assess the possible systemic risk of FinTechs, in order to proactively approach and restrict the possibilities for creating a systemic risk.

While many possible risks that might stem from the FinTech sector are not captured in the current policies, the EC itself considers its policy highly future-proof. When asked about this in the interviews, the DG representatives confidently stated that the EC has implemented policy that was on top of the (future) developments and acted on possible risks stemming from (crowdfunding) FinTechs. However, this can be questioned, given the EC's approach on other new and innovative inventions within other sectors, such as Airbnb and Uber. While the EC itself is confident that it has captured possible new developments within its regulation, the analysis conducted in this research shows a contradicting picture on at least some policy aspects. This gives some reasons for concern as the EC currently fails to witness these regulatory inconsistencies. The EC continuously need to critically assess their policies – or have third parties conduct these assessment – in order to prevent an overly-confident attitude from the regulators.. Another aspect the EC should critically assess is its regulatory procedures. While improvements have been implemented, most of the procedures remain longwinded. The EC should investigate how these procedures can be improved, in order to respond more adequately

and on a larger scale in regards to new developments in the financial sector, since FinTechs probably won't be the only disruptive influence within this sector.

6.2. Limitations

First, it needs to be mentioned that some important institutional and regulatory changes aren't included in the analysis, since they were implemented by institutions that were created as direct results of the crisis, which would blur the outcomes of the analysis. However, due to this approach, the EC might appear worse in its approach to FinTechs than it actually is. It could be the case that the DG FISMA has not implemented certain policies because other DG's are already designing and/or implementing policies on these topics. These new policies could be a sign of policy learning on the mistakes from the past crisis, but this research disregards them due to its focus on DG FISMA.

While this research conducted a thorough analysis, resulting in the outcomes described above, the research experienced some limitations. While the original intend of the research was to analyze approximately 20-25 documents and conduct three to five interviews, the available data wasn't sufficient to meet this intend. After an extensive search on EC and DG FISMA publications, only fifteen documents were considered on-topic enough to be analyzed for the research, but only nine of these documents could provide substantial input for this research. The other documents only touched very lightly upon the topics of interest and did not provide much additional information about the policy process, decisions or future steps of the EC regarding FinTechs.

Additionally, to gather information from different perspectives, the original aim for the interviews conducted in this research was to talk to people with different professional backgrounds and different levels of expertise. Since only representatives from DG FISMA were willing to participate in the interviews this intention could not be upheld and the spectrum on which the documental analysis results could be checked remained limited. However, since the DG FISMA was the main subject of interest within this research, this was the most preferred institution to speak. The results found in the documental analysis could still be crosschecked, resulting in an adequate analysis on the learning capabilities from the EC.

7. Conclusion

7.1. Conclusion for this research

This exploratory research has tried to gain insight in the learning capabilities of the EC on a high-saliency policy topic: the financial crisis of 2008. It therefore tried to answer the question whether the EC has learned from the mistakes made regarding the shadow banking sector in the run-up to the financial crisis in its current approach towards a new shadow banking development: crowdfunding FinTechs. Previous research had shown that the EC is able to learn from policy mistakes and can base its new policy on new insight derived from research on these mistakes. However, these researches all focused on low saliency policy topics. While some experts argue a cycle of reoccurring crises, this research expected that the regulators would this time have learned from past mistakes and signaled and acted on the similarities between the past crisis and current events in time. It was expected that such policies, if implemented, would through adequate and focused policies due to the similarities between both developments, the EC advocacy of forward-looking and future-proof policies and the availability of knowledge on past mistakes.

To see whether the EC has indeed implemented (some of) the lessons learned of the crisis of 2008, first these lessons had to be uncovered. A secondary source analysis, based on scientific publications and reports from reputable institutions, generated these lessons learned. There were several mistakes made in the period leading up to the past crisis, but this analysis focused only on the lessons that were relevant for the topic of interest within this research, shadow banking and crowdfunding FinTechs. This examination identified four different lessons. The first lesson was the need for a more flexible and broader regulatory framework, that includes all aspects of the financial sector. This prevents risks from shifting to the shadow banking sector and can adequately respond to new developments and innovations within the financial sector. The second lesson that was derived from previous research was the need to prevent spillover effects between different sectors of the financial sector, especially if they are differently regulated and can trigger different risks. The third lesson that this study identified was the necessity to keep an eye on the size of the FinTech sector, in order to restrict its possibility to instigate a systemic risk for the financial sector. The fourth and last lesson learned was the importance of portfolio and risk diversification for any investor based business model. If investment portfolios have a diversified risk, the possibility that the investments cannot be returned on a large scale, one of the problems prior to the crisis, remains limited.

The next step in the research on the EC's learning capabilities was a qualitative case study based on primary source documents from the EC. These documents were analyzed through the qualitative analysis method "Framework Analysis". First, the examination deducted the relevant concepts from the documents and the data that aligned with these concepts was later grouped based on the lessons learned, in order to generate an overall view on the EC's position and actions taken regarding these lessons. The results, derived through this method, were discussed with representatives from the DG FISMA, the specific entity within the EC this research focused on. These interviews mostly underlined the results that were found through the document analysis. Additionally, they provided a deeper understanding on the main considerations that functioned as foundation of the published documents and therefore allowed for a more thorough examination of the learning capabilities of the EC.

The study concludes that the EC has indeed learned some of the lessons from last crisis and has proactively acted on some threats. Regarding the flaws within its regulatory framework, the EC has shown the most willingness to learn and adapt. It evaluated what went wrong in the period prior to the financial crisis of 2008 and incorporated much of the recommendations for improvement of this regulatory framework. However, these improvements fall mostly within the lesson about the EU's regulatory framework. The EC has done less with other recommendations and best practices that are based on evaluations on the EC's functioning prior to the crisis. For example, the EC has included some measures for risk diversification, but directs most of these measures to the investors and not to the core of the FinTechs' business models. Other aspects, such as spillover effects or systemic risk, are currently not actively considered by the EC even though they might pose a serious threat to the future financial stability.

This research has provided a first insight in the learning capabilities of the EC regarding a high-saliency topic. However, this analysis cannot simply answer the question if the EC is capable of learning from past mistakes with a yes or a no. Instead, the answer should be placed on a continuum between both answers. It can be concluded that the EC has actively gathered information on past mistakes and possible future risks, with more attention for some risks than others, but the extent to which this knowledge is used in policies or action plans differs largely for each topic. The EC has made a large improvement in the flexibility of its regulatory framework, but failed to seriously consider or implement changes on the spill-over and systemic risk. The EC seriously considers policy changes to limit portfolio diversification risks, but none of these improvements are currently implemented. While it is unlikely that all future crisis can

be prevented through forward-looking and knowledge based learning, it is encouraging to see that the EC is actively approaching some of the future FinTech risks with input from past mistakes.

7.2. Recommendations

This research has provided valuable insights in the DG FISMA's approach towards knowledge based learning from the mistakes made in the past. It showed institutional policy learning in some aspects of this high-salience topic. These policy-learning capabilities align with the basic theory on the EC's learning capabilities that previous studies on the EC's learning capabilities in low-saliency policy areas had already formed. However, there is still room for improvement. First, it is important that future research identifies the causal effects within this knowledge based policy learning on high-saliency topics. Why does the EC show policy learning on some of the lessons learned while none of the indicators for this learning can be identified in the other lessons? Furthermore, future research can further focus on the EC's approach towards other innovations s within the financial sector such as TechFins to see whether this overlaps with the EC's approach towards FinTechs. Additionally, a similar research to the one conducted in this research could be repeated again in a few years, to study how the EC responds to FinTechs once they occupy an even larger aspect of the financial sector, as it is likely to do. The last recommendation for future research is to conduct a study that generates a broader picture on the learning capabilities within the European Union. This can be done by focusing on the EC's learning capabilities on another high-saliency topic such as migration, but it can also focus on the learning capabilities of other EU institutions such as the Council or the European Parliament.

Lastly, this research drafts a few recommendations for the EC. Since the EC claims to engage in future-proof and forward-looking policy making, it should pay more attention to the possible future risk and not underestimate the current small risks that are expected to have a severe growth potential. Furthermore, the EC needs to act upon the risks that are distinguished in this research. Policies that control the possible spillover- and systemic risks needs to be implemented. Additionally, the EC needs to implement its own recommendations of the impact assessment on ECPS for business, since the study shows that these proposed measures are likely to control many of the portfolio diversification risks.

While the EC did already implement several improvements with regard to its regulatory framework, it should still assess possibilities to increase the speed of the policy making process. If future threats are signaled in time, a slow regulatory process should not be the reason why

risks can still arise. A fast regulatory procedure would enable the EC to regulate the risks simultaneously with the rise of the new disruptive innovations that cause these risks. Only if the EC installs a regulatory process that can be applied on a large scale and starts do adopt a true forward-looking policy approach that improves past mistakes and acts upon new threats, it might be possible to prevent a new financial crisis. For the current FinTech threat, the EC needs to act fast on the currently neglected regulatory challenges and already start with regulating possible new risks. However, due to the slow regulatory processes described above and the limited ability of the EC to adopt a forward-looking approach, it is the question if the EC will succeed in containing these risks or that the financial system can better prepare for a new financial crisis.

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Appendix

Table 1. Summary of concept analysis

	FinTech Action Plan	*Impact Assessment: ECPS for Business*	*Impact Assessment: Directive 2014/65/EU*	*Proposal: ECPS for Business*	*FinTech action plan: Communication*	*Annex –Workplan of the initiatives included in the FinTech Action Plan*	*FAQ: Financial Technology (FinTech) Action Plan*	*Commission's communication on internal Task Force on Financial Technology*	*Proposal for amending Directive 2014/65/EU*
Opportunities	FinTechs can provide opportunities for compliance	Currently small sector with large growth potential							
Challenges	Cyber risks	SME's reliance on short-term unsecured funding		Scale-up opportunities	Lack of common rules across EU			Support innovation vs. regulate risks	
	Fulfilling regulatory obligations	Possibilities for scaling							
	No clear processes	information gaps for investors							
	No clear guidance								

Necessities	Priority area	Safe guards		EU interference				Regulatory framework on EU level	Checks & balances
	EU regulatory framework	Investor protection		Impact assessment on new regulations					Minimal capital requirements
	Transparent framework			Threshold maximum for crowdfunding					Product approval process
	Open standards			Special Purpose Vehicles need to be regulated					Sufficient internal systems and controls
				Information sheets for investors					Provide information to investors on about risks
Risks	Cyber/Crypto risks (4x)	Regulatory loopholes	Current variation between regulatory frameworks	Limited risk diversification			Large regulatory differences between member states		Many weaknesses in financial system
	Over/under regulating	Regulatory circumvention		Over reliance on short-term unsecured lending					Creation of regulatory loopholes
		No bank deposits guarantees		Crowdfunding subjected to national regulation					Exchange rate risks
		Adverse selection problems		Legal barrier between member states					Conflicts of interest when different business activities are involved
		No clear risk/return profiles		Low standard for project selection					Algorithmic trading
		information gaps for investors							

		Cross-border spillover effects							
		Differences between member states							
Existing regulation	EU legislative framework allows for proportionality	Mortgage Credit Directive regulators purchases of immovable property	Article 4 TFEU		Service based regulation such as the Directives on Ecommerce, electric money and payment services	COM encourages standardized application programming interfaces that are compliant with the PSD and the GDPR as a basis for a European open banking eco-system covering payment and other accounts.	Companies that develop financial technology are currently faced with diverging regulatory and supervisory regimes..		
		MiFID to avoid regulatory arbitrage	Some specific member state regulations						
		EU AML/CFT applies to some crowdfunding services							
Regulatory initiatives	Regulatory and supervisory framework	Monitor oriented approach		Innovation oriented approach	Avoid regulatory arbitrage (2x)	COM presents a legislative proposal for an EU Regulation on investment-based and lending-based crowdfunding service providers (ECSP) for business	A common and coordinated Regulatory Sandbox approach among Member States would be useful to encourage innovation across the EU	EU regulatory Framework	EU regulatory framework
	Systematically consideration of FinTechs	Impact assessment			ESMA needs to ensure compliance	COM invites the European Supervisory Authorities to map current authorizing and licensing approaches for innovative FinTech business models.	ESA's to identify best practices among supervisors		
	Regulatory and supervisory framework								

	ECPS proposal								
	Mapping of current initiatives								
	Regulatory Sandboxes								
	Free flow of non-personal data								
Future oriented	No necessity for EU level interference	Monitor developments		Overcoming local differences	Principle-based vs. rule-based regulation		Future-oriented rules that are aligned with the rapid advance of technological development that is driving structural changes in the financial sector		Regulatory framework that encompasses full activity range
	Future oriented regulatory framework	Create forward looking regulatory framework		Uniform rules	Future oriented EU regulation to encourage and control technological development				Harmonized financial regulation in the future
	Clear follow-up actions	Establish efficient crowdfunding development		Capture platform activities in regulation					Create a comprehensive regulatory regime
	Derive future best practices			Implement the impact assessment					Pay specific attention how to design future regulation
Reforms	/	/		/	/	/		/	/
Deregulation	/	/		/	/	/		/	/

	Ongoing situation analysis	Monitoring and evaluation		Blueprint with best practices on Regulatory Sandboxes		COM invites the ESAs to conduct further analysis and identify best practices and to issue guidelines on these facilitators.	COM will come up with best practice guide on regulatory sandboxes		
	Examination of current landscape (2x)					COM invites competent authorities at Member State and EU level to take initiatives to facilitate innovation on the basis of these best practices			
(Near) Future steps	Assess technology neutrality of legal framework					COM invites the ESAs to facilitate supervisory cooperation, including coordination and dissemination of information regarding the innovative technologies, establishment and operation of innovation hubs and regulatory sandboxes, and consistency of supervisory practices			
						Based on the work of the ESAs, the COM will present a report with best practices for regulatory sandboxes.			
						COM will host an EU FinTech Lab			

Institutions	EU FinTech Lab			ECPS regime	Financial Technology Task Force (FTTF)	COM will set up an expert group to assess whether there are unjustified regulatory obstacles to financial innovation in the financial services regulatory framework.	The Commission will set up an Expert Group to assess whether current EU financial services rules are adapted to the challenges posed by new technologies.		
	Expert Group on regulatory obstacles			ESMA to supervise crowdfunding					
Governance				Supervise effective management of crowdfunding organizations		COM will help to develop more coordinated approaches on standards for FinTech by liaising and working with major standard-setting bodies			Install specific management requirements for FinTech managements
									Control capabilities of FinTech managements

Table 2: EC's considerations of the lessons learned (a summary)

	Lesson 1: EU Framework	***Lesson 2: Systematic Risks***	***Lesson 3: Spill-over***	***Lesson 4: Risk diversification***	***Other***
Regulatory challenges	The EU regulatory framework needs to be strengthened to increase transparency, protect investors and address unregulated areas	FinTech also presents challenges: cyber-related risks, data, consumer and investor protection issues and market integrity issues	Interconnectedness banks & FinTech: Banks are actively responding to these challenges, either trying to reproduce the FinTech firms' models (i.e. by setting up online lending platforms), or outsourcing part of their business processes to FinTech firms to take advantage of their greater efficiency	Adverse selection problems could arise given that investors/lenders lack the necessary information to assess the likelihood of success of projects	Persons that deal in commodity derivatives, emission allowance and derivatives thereof may also deal in other financial instruments as part of their commercial treasury risk management activities to protect themselves against risks, such as exchange rate risks. Therefore, it is important to clarify that exemptions apply cumulatively
	Current national differences create a fragmented environment, regulatory loopholes and spur regulatory arbitrage	Although crowdfunding is still relatively small compared to the complete alternative finance market, it is considered to be an essential chain to allow innovative SMEs to develop	The increasing complex interconnectivity of (global) financial services makes it more vulnerable to cyber-attack	Platforms risk attracting only low-quality projects, given that high-quality projects may not find the required funding at adequate conditions, due to investors' inability to assess their quality	There is agreement among regulatory bodies at international level that weaknesses in corporate governance in a number of financial institutions, including the absence of effective checks and balances within them, have been a contributory factor to the financial crisis. Excessive and imprudent risk taking may lead to the failure of individual financial institutions and systemic problems in Member States and globally
	Overly prescriptive and precipitous regulation carries the risk of limiting the innovation possibilities in the fast changing FinTech sector. However, refraining from updating EU policy and regulatory frameworks might leave risks unaddressed.	The biggest risks perceived are loan defaults or business failures, fraudulent activities or the collapse of platforms due to malpractice	The financial crisis has exposed weaknesses in the functioning and in the transparency of financial markets	A moral hazard problem might face difficulties to ensure that fund seekers/borrowers deliver what they have promised	

	FinTech can disrupt banks and capital markets and their relative positions	To avoid regulatory arbitrage and to ensure the effective supervision of crowdfunding service providers, crowdfunding service providers should be prohibited from accepting deposits or other repayable funds from the public, unless they are authorized as a credit institution	The investments can yield a higher return than savings accounts offered by banks, but can be subject to higher risk. No regulatory safeguards, such as bank deposit guarantee schemes or investor protection schemeneutrs, protect these investments, besides the different pecking order compared to financial instruments (investment-based instruments) in case of bankruptcy. If the borrower defaults or the platform becomes insolvent (in case it pools assets on own balance sheet), the lenders risk losing part or almost all of their investment	
	The combination of the crowdfunding model with a dispersed investment structure (and small ticket size that offers limited incentives to engage in monitoring) and a financial product calls for a targeted intervention to address risks for cross-border market stability and investor protection, which may not be sufficiently (or too aggressively) addressed under current national regimes.		From the investor/lender perspective, an investment could be riskier than expected due to risk/return profile not being properly disclosed and/or more costly than expected due to costs (direct and indirect) not properly disclosed. For the fund seeker/borrower, the funding could be more expensive than expected when costs (direct and indirect) and risk/return profile are not properly disclosed, which could also lead to reputational risk for the platform (lack of transparency / misleading information)	
			Invested capital (partly or completely) may be lost or not reclaimable due or the fund seeker/borrower may be faced with the inability to repay dues due to platform failure (counterparty risk)	

			Investors have limited accessibility and ability to diversify risk due to the lack of a internal market
Current regulations	Large variety of legislation across different EU member states		
	In some member states, FinTechs have to comply to already implemented regulation (MiFID, MiFIR, Mortgage Credit Directive, EU AML/CFT, the Directives on Ecommerce, distance marketing of consumer financial services, electronic money and payment services, and regulations on European Standardization)		

	Harmonization of current rules is necessary	Given the risks associated with crowdfunding investments, it is appropriate, in the interest of the effective protection of investors, to impose a threshold for a maximum consideration for each crowdfunding offer. That threshold should be set at EUR 1 000 000		Investors need to be provided with an information sheet and crowdfunding service providers should run an entry knowledge test of their prospective investors to establish their knowledge of investment.	The product approval process shall specify an identified target market of end clients within the relevant category of clients for each financial instrument and shall ensure that all relevant risks to such identified target market are assessed and that the intended distribution strategy is consistent with the identified target market
	An increasing number of jurisdictions have developed regulatory and supervisory frameworks to address specific forms of FinTech innovation				
	The ECSP proposal seeks to establish uniform rules on crowdfunding at EU level				
Regulatory initiatives	the Commission's FinTech Action Plan which aims to ensure that the EU adopts an innovation-oriented approach towards FinTech by creating a competitive environment where innovative products and solutions can be rapidly applied in a safe and stable environment				
	The ECSP proposal can overcome differences in national egal frameworks and ensures a level playing field				
	Regulatory sandboxes take the idea of innovation hubs a step further by creating an environment where supervision is tailored to innovative firms or services				

Future oriented policy	The Commission aims to respond to the calls by both the European Parliament17 and the European Council18 for a more future-oriented regulatory framework embracing digitalization and creating an environment where innovative FinTech products and solutions can be rapidly rolled out across the EU to benefit from the economies of scale of the single market, without compromising financial stability or consumer and investor protection	
	The goal can only be achieved by bringing forth a forward-looking regulatory framework that is fit-for-purpose in an increasingly digital age	
	The proposed ECPS regime oriented towards the provision of services would also allow for flexibility in capturing platform activities combining multiple business models, as it provides a single regime that applies to both investment-based and lending-based models (reducing regulatory uncertainty). The approach would also ensure that the regime is future-proof in light of rapid development within the sector and the use of different instruments.	
	The commission seeks to make EU rules more future-oriented and aligned with the rapid advance of technological development	

Follow-up steps	Further analysis is necessary to assess the extent to which the legal framework for financial services is technology neutral and able to accommodate FinTech innovation	
	To enable ESMA to fulfil that supervisory mandate, it should be given the power to request information, carry out general investigations and on-site inspections, issue public notices and warnings and impose sanctions. ESMA should make use of its oversight and sanctioning competences in a proportionate manner	
	the Commission proposed that the European Supervisory Authorities should in the future systematically consider FinTech in all their activities	
	The Commission would welcome further efforts to identify best practices across the EU and set up common principles and criteria for innovation hubs and regulatory sandboxes	
(Proposed) Institutions	The Commission would welcome further efforts to identify best practices across the EU and set up common principles and criteria for innovation hubs and regulatory sandboxes	
	Crowdfunding service providers shall provide their services under the supervision of ESMA	
	A stand-alone voluntary European crowdfunding regime under the label of a European Crowdfunding Service Provider	

	SMA shall assess compliance of crowdfunding service providers with the obligations provided for in this Regulation		
	The Commission will examine the current landscape and situation of technology-driven digital interfaces that help individuals to find suitable and cost-effective retail investment products across the EU's capital markets		In order to maintain a high standard of investor protection, to reduce the risks associated with crowdfunding and to ensure fair treatment of all clients, crowdfunding service providers should have in place a policy designed to ensure that projects are selected in a professional, fair and transparent way and that crowdfunding services are provided in the same manner.
Governance	Ensuring an effective system of governance is essential for the proper management of risk and for preventing any conflict of interest. Crowdfunding service providers should therefore have governance arrangements that ensure effective and prudent management and their management should be of good repute and have adequate knowledge and experience. Crowdfunding service providers should also establish procedures to receive and handle complaints from clients		
Intention to act	the Commission considers that the case for broad legislative or regulatory action or reform at EU level at this stage is limited		