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A Regulatory Sandbox for Robo Advice

September 2018

Abstract

Robo advice, the automated provision of financial advice without human intervention, holds the promise of cheap, convenient and fast investment services for consumers—freed from human error or bias. However, retail investors have limited capacity to assess the soundness of the advice, and are prone to make hasty, unverified investment decisions. Moreover, financial advice based on rough and broad classifications may fail to take into account the individual preferences and needs of the investor. On a more general scale, robo advice may be a source of new systemic risk.

At this stage, the existing EU regulatory framework is of little help. Instead, this paper proposes a regulatory ‘sandbox’—an experimentation space—as a step towards a regulatory environment where such new business models can thrive. A sandbox would allow market participants to test robo advice services in the real market, with real consumers, but under close scrutiny of the supervisor. The benefit of such an approach is that it fuels the development of new business practices and reduces the ‘time to market’ cycle of financial innovation while simultaneously safeguarding consumer protection. At the same time, a sandbox allows for mutual learning in a field concerning a little-known phenomenon, both for firms and for the regulator. This would help reducing the prevalent regulatory uncertainty for all market participants.

In the particular EU legal framework with various layers of legal instruments, the implementation of such a sandbox is not straightforward. In this paper, we propose a ‘guided sandbox’, operated by the EU Member States, but with endorsement, support, and monitoring by EU institutions. This innovative approach would be somewhat unchartered territory for the EU, and thereby also contribute to the future development of EU financial market governance as a whole.

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* Professor of Law, University of Hamburg, Institute of Law & Economics; Visiting Professor, University of Oxford.
** Research Associate, University of Hamburg, Institute of Law & Economics.
I. Introduction

Machines and automated processes are replacing human beings in many areas. ‘Robo advice’ is the catchphrase for a new phenomenon in the world of investment advice: automatic, web-based tools that help individuals with their investments into certain types of financial assets. Robo advisors will not fully replace human interaction with their clients – far from it – but they have gained a considerable market share over the past several years and are predicted to grow at least at the same pace. The advantages for investors are obvious: they promise higher speed and significantly lower costs in comparison with regular investment services provided by humans. Moreover, their availability is around the clock, and automated advice holds the promise on an unbiased and neutral approach that is free from human error or prejudice.

While the availability of robo advice is clearly a welcome addition to the choices available for many investors, its merits warrant close scrutiny. The main target group of robo advice are retail investors acting in their personal capacity. Such consumers have limited capacity to assess the soundness of the advice, and are prone to make hasty, unverified investment decisions. Moreover, financial advice based on rough and broad classifications, as used by robo advisors, may fail to take into account the individual preferences, situations, and specific needs of the investor. On a more general scale, where automated services recommend certain asset classes to investors on a similar pattern, this bears the risk of large-scale parallel behaviour, the development of bubbles, and ultimately the emergence of systemic risks.

Regulation, which should address these concerns, is of little help. The key elements of the European body of financial regulation concerning investment advice are still written with the leitmotif of human interaction in mind. Many categories used by the Markets in Financial Instruments Directive (MiFID) are difficult to match to the activities of this new breed of investment advisors. Worse still: parts of the European framework have been implemented differently across EU Member States. Even where harmonisation has been achieved, rules are partly interpreted differently by the national authorities. The result is a patchwork of different rules and requirements that applies to robo advisors, depending on which EU Member State they are operating in, creating great uncertainty not only among robo advisors, but also on the side of the regulators.
The challenge is thus to design a regulatory environment where new business models can thrive, where potential risks to both investors and to financial stability are monitored and which simultaneously creates legal certainty for all market participants. This paper proposes a regulatory ‘sandbox’ as a first step to facilitate this. A regulatory sandbox would allow market participants to test robo advice services in the real market, with real consumers, but under close supervision of the regulator. The benefit of such an approach is that it fuels the development of new business practices and reduces the ‘time to market’ cycle of financial innovation while simultaneously safeguarding consumer protection. At the same time, a sandbox allows for mutual learning in a field concerning a little-known phenomenon, both for firms and for the regulator. This would help reduce the prevalent regulatory uncertainty for all market participants.

In the particular EU legal framework with various layers of legal instruments, installing a sandbox is not straightforward. In this paper, we propose a ‘guided sandbox’, which should be guided by an interplay between the federal (EU) and national levels. More specifically, it would be the Member States who operate the sandbox, but with endorsement, support, and monitoring by EU institutions. This innovative approach would be somewhat unchartered territory for the EU, and thereby also contribute to the future development of EU financial market governance.

This article is organised as follows. Section II. explores the phenomenon of robo advice and discusses the risks and promises of this new business practice. We also detail the shortcomings of the present regulatory framework. Section III. responds to these concerns and proposes the establishment of a regulatory sandbox at the EU level, along with a trajectory of regulation over the coming years. Subsequently, Section IV. turns these considerations into a concrete proposal of implementation. Section V. concludes.

II. The Phenomenon of Robo Advice
Robo advice is a fast-growing phenomenon in the financial services market that, among other rising financial technologies (‘fintech’1) has the potential to severely disrupt the financial

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1 ‘Fintechs’ are computer programmes and other technology used to support or enable banking and financial services.
market. The emergence of disruptive technologies puts many established business practices and regulatory paradigms into question. Consequently, regulators are faced with the question of whether the present regulatory framework is still appropriate.

This section explores the phenomenon of robo advice by briefly tracing its historical development, explaining the way robo advisors operate including their business models, their risks and promises, and ultimately detail the shortcomings of the current regulatory framework. This will lay the ground for a reconsideration of the present regulatory approach and the idea of setting up a regulatory sandbox, which we discuss subsequently (sections III. and IV.).

A. What is Robo Advice?
There is no standard definition of ‘robo advice’. We use the term to refer to digital investment advice tools that match consumers on the basis of their personal preferences to financial products. Different from other commentators, we concentrate on ‘client-facing’ tools. This means we exclude ‘internal’ robo tools that financial professionals use as a basis of their face-to-face advice, since these are far from being a new phenomenon in financial markets and – from the regulator’s perspective – belong to the category of traditional (human) advice. We also limit the definition of ‘robo advice’. The variety of products that could be the subject of robo advice is extensive: insurances (e.g. life, home or car insurances), consumer credits, mortgages and investment products, to name but a few. Indeed, this paper focusses on the service that robo advisors are most frequently associated with, which is the recommendation of investment products.

The advice provided by the robot is mostly based on two key elements: the input information provided by the consumer and the algorithm. The former is commonly collected via an online questionnaire that asks investors to provide personal information (e.g. age, profession, monthly net income) and some investment related data (e.g. investment experience, risk aversion, investment goals). Subsequently, based on the user’s answers,
the algorithm constructs a portfolio proposal with various investment products, in which the user can invest. The composition of the output differs among providers, however, it typically and predominantly consists of passive Exchange Traded Funds (ETFs) based on the stock, pension, or commodity markets along with some mutual funds. The weighting of these components depends on the given answers, especially on those relating to risk appetite. As soon as the investor has created an account and transferred funds to it, the subsequent processing depends on the characteristics of the respective robo advisor: Some provide continuous monitoring and evaluation of the investment strategies, whereas others offer automatic reallocating or rebalancing of the portfolio according to the stated preferences and information given. In any case, investors retain the opportunity to (manually) adjust their portfolio or recalibrate their preferences.

The costs for robo investment services typically range from an annual fee between 0.25% and 1% of the investor’s account value. Other providers charge provision-based fees. In addition to the advisory fee, customers usually pay a fee for the underlying investment product, which is the fee that is generally charged for the purchase of an ETF or a mutual fund.

B. The Development of Robo Advice
While financial professionals have used digital investment advice tools for many years, the rise of ‘client-faced’ digital investment advice tools began roughly ten years ago. Pioneering that evolution were two American online wealth managers called Betterment and Wealthfront who started their business as early as 2008, but actually began offering robo advice to public investors after 2010. The European market lags the US in the rise of robo advice. The first UK robo advisor for instance was founded in 2011 and launched in 2012. Since then, the market has seen a number of launches with a significant increase since 2014.

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5 Orçun Kaya, ‘Robo-advice – a true innovation in asset management’ Deutsche Bank Research (10 August 2017) <https://www.dbresearch.de/PROD/RPS_DE-PROD/PROD0000000000449125/Robo-advice_-_a_true_innovation_in_asset_management.PDF> states that the final set of ETFs for robo-advisory purposes comes down to only app. 3-6% of all available ETFs.
6 Average fee in Europe: (app.) 0.8%, whereas in the US only 0.4%: see Kaya (n 5) 1.
Even though existing data on robo advice market share varies strongly, all indicate a rapid growth, particularly during the recent years. As a research paper from Deutsche Bank documents, this growth was particularly impressive in the US: assets under management of robo-advisory start-ups increased by approximately 800% from $2.3bn in 2013 to $20bn in Q1 2017. As of 2018, the US is by far still the leading market of robo advice, comprising about $266bn in assets under management out of a global $371bn. Other sources estimate even higher numbers. Moreover China is a rapidly growing market for robo advisors, showing a more than an elevenfold increase in assets under management within only two years (2016 to 2018). This trend also did not go unnoticed by major regulators: The US Securities and Exchange Commission (SEC) reacted by including robo advice in its examination priorities, whereas the British Financial Conduct Authority (FCA), noticing the potential of robo advice, established an ‘Advice Unit’ providing regulatory feedback to robo advisors.

Compared to the United States, the European market is still underdeveloped. The dissemination of robo advice within Europe varies strongly, with the UK spearheading the development (around 75% of the European assets under management), followed by Germany (around 17%). However, when looking at the number of firms, the number of registered robo advisors in the UK and Germany are on a par: They each comprise about one third of all robo advisors in the EU. In contrast, in some Member States, robo advice is not (yet) an economic concern at all.

However, not only the data about current market shares, but also their estimates vary considerably. Prognoses for the global assets under management by robo advisors in the year 2020 start at USD 0.82tn over USD 1tn, or USD 2.2tn and run up to USD 8.1tn.

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10 Therefore excluding established asset management providers who offer automated portfolio management.
11 Kaya (n 5) 8.
13 As of BI Intelligence ‘The Robo-Advising Report’ (June 2016) the assets under management (AuM) in the US in 2015 is around USD 300bn, estimating a global AuM of roughly USD 600bn.
14 Statista (n 12) 20.
16 See <https://www.fca.org.uk/firms/advice-unit>.
17 Kaya (n 5) states that the AuM of EU robo-advisors is some 5-6% of that in the US.
18 Kaya (n 5) 8.
19 For a regularly updated overview of robo advisors’ dissemination in Europe, see <http://www.techfluence.eu/investtech.html> (for example entry from 13 December 2017).
20 Statista (n 12) 20.
According to the 2017 Statista Fintech report, in 2021 China will have almost caught up with the US in regard of assets managed by robo advisors, with Europe lagging far behind.24

C. Promises and Risks
The established goals of financial regulation have included consumer protection and financial stability, with an increasing focus on the latter, especially since the outbreak of the recent financial crisis.25 Good regulation, however, should not only focus on addressing potential risks, but should also strive to identify market developments that are desirable for the system, and moreover promote those. In the following, we discuss the benefits of robo advice that regulation should support.

Key advantages
As mentioned above, the key promise of robo advice is to deliver convenient, unbiased financial advice at significantly lower costs than human advisors. Of those promises, low financial costs are most evident. Whereas robo advisors charge average fees between 0.4% (mainly in the US) and 0.8% (mainly Europe), the fee for human financial advice usually amounts to 1-2%.26 The reason is simple: Robo advisors make use of the economies of scale. The ‘advice’ is provided by one computer algorithm, no matter how many customers there are. Human advice, in contrast, naturally has to reflect a fixed cost for each individual advice process, namely the human’s time and salary. Hence, the growth of robo advice will be most likely accompanied by increasing returns to scale, and continuing decrease in costs for consumers. In addition to that, there are other financial aspects that make robo advisors more attractive for consumers: Firstly, human advisors often tend to recommend actively managed funds to generate higher commissions.27 Those funds are usually substantially more expensive than ETFs, which robo advisors mostly recommend, while often not being able to outperform them.28 Second, unlike human advisors,29 robo advisors usually require no
or relatively few minimum volume in providing financial advice.\textsuperscript{30} Consequently, this makes their advice accessible to a wider range of investors.\textsuperscript{31} What makes robo advice so convenient for customers is the simplicity and accessibility of the advice. In contrast to bank opening times, robo advice is available around the clock, each day of the year, and from any location in the world the consumer may find herself, provided there is a good internet connection. Further, the customer is able to receive the advice after about 15 minutes, without having to go through the traditional client process, often involving extensive paperwork.

**Performance**

Moreover, although to our knowledge no comprehensive study on the performance of robo advisor compared to their human equivalent has been conducted to date, the quality of automated advice is likely to benefit consumers. Analytics firm BackEnd have started to collect some data on the performance of robo advisors in their ‘Robo Report’.\textsuperscript{32} They opened and funded accounts at 20 (US-based) robo advisors, all with an approach for moderate and somewhat risk-averse testing and regularly compare their one-year return.\textsuperscript{33} The 2017 report showed a decent performance of the respective providers: One-year returns\textsuperscript{34} ranged from 12.39% to the top performer TD Ameritrade with 16.47%.\textsuperscript{35} In their Q2 2018 report, Backend have begun comparing the robo’s returns against a normalised benchmark.\textsuperscript{36} This comparison reveals that the majority of robo advisors in a two year period stays slightly below that benchmark. A similar test has been conducted by online platform

\begin{itemize}
\item[\textsuperscript{29}] In contrast, human financial advisors (in the US) often require a minimum asset volume of more than USD 500,000 (see <https://investorjunkie.com/35919/robo-advisors/>).
\item[\textsuperscript{31}] This would be true for both consumers who have not yet participated in the financial market at all and for those who have invested without relying on any (professional) advice. As individual investors with low financial literacy are particularly prone to behavioural biases, robo advisors may provide more rational and sounder investing in such a case. See for example Jan Henrik Wosnitza, ‘Robo-Advising Private Investors on German Mid-Cap Bonds’ (2018) 7 Corporate Finance 220 in regard of a prevailing bias concerning German mid-caps that could be averted by using a robo advisor.
\item[\textsuperscript{32}] Accessible at <https://theroboreport.com/>.
\item[\textsuperscript{33}] Starting with the Q4 2017 Report, Backend is also comparing two-year returns and seeks to provide more perspective on how robo advisors perform in the long term.
\item[\textsuperscript{34}] Excluding those where the returns could for various reasons not be assessed.
\item[\textsuperscript{35}] BackEnd Benchmarking, *The Robo Report* (Q4 2017) 8. The recent Q2 2018 report shows slightly decreasing returns. This is explained by general market conditions – inter alia increasing fluctuation in the equity markets as well as decreasing returns in fixed-income, especially sovereign bond markets, amidst a rising dollar and trade concerns.
\item[\textsuperscript{36}] For a detailed description of the methodology, see BackEnd Benchmarking, *The Robo Report* (Q2 2018) 18-9.
\end{itemize}
‘brokervergleich.de’, providing an analysis of the German robo advisory landscape.\footnote{See \url{https://www.brokervergleich.de/robo-advisor/echtgeld-test/}. Brokervergleich.de states that they would ‘generally’ use a balanced risk profile. The composition of the respective portfolios is disclosed in test.} Starting in May 2015, brokervergleich.de looks at periodical returns of German robo advisors in yearly observation periods. Compared to the results of the BackEnd survey, German robo advisors seem to be outperformed by their American competitors. Even though they largely showed good performances during the 2016/17 period with returns of up to 13.3%, most of them had more moderate returns during 2017/18 and even experienced net losses in 2015/16. Comparing the performances as observed in those two studies, it appears that German robo advisors yield significantly lower returns than their US counterparts. Direct comparisons between the surveys are however to be taken with caution: Differences in returns might be (at least partly) a result of a diverging test structures (e.g. different risk levels\footnote{While the Backend report also measures risk-adjusted returns, brokervergleich.de provides no such figures.}) and differing taxation systems for capital income. Also, the typically higher fees of German robo advisors dampen the reflected performance in the test.\footnote{In both tests the performance reflects the net return on the portfolio, hence after deduction of respective fees.} Brokervergleich.de also compared the performance of German robo advisors with two benchmark portfolios that represent common risk-averse portfolios as recommended by a human adviser. As with the US Robo Report, the comparison showed that the returns of robo advisors were on average slightly below those benchmarks.

This picture is surely far from being representative for the entire robo advice market and, since investors take a long-term outlook on their investments, gives an incomplete picture, but it may be useful to give us an idea of their capabilities. Finally, research in diverse fields demonstrates that even simple algorithms may outperform humans in their respective task. There is ample reason to believe that the same is true for automated financial advice.\footnote{See \citet{2017baker} with further references at footnote 10.}

**Further benefits**

Automatisation is further said to mitigate internal agency conflicts that normally arise between financial advisors and their customers. Since robo advisors are transparent and the same algorithm is available equally to every customer, a high degree of advice consistency is ensured. Also the vulnerability for conflicts of interest seems to be much lower.\footnote{\citet{2017fisch} 20f.} First, they
typically do not themselves sell the same investments that they recommend, which appears to address some traditional biases in the product selection. Secondly, the fees charged by robo advisers are always the same, irrespective of the chosen investment product, and their fees are also much more transparent than human advisory fees. Finally, full automation in robo-advisory services holds the promise of improved compliance and record keeping.

There is a chequered history of (human) financial advice. In particular, widespread practices of fraud and other illegal practices that contributed to the global financial crisis in 2007-2009 have led to a significant mistrust in financial advisers. Robo advisors that emerged as small start-ups in the aftermath of the crisis are however not as much tainted as incumbent financial firms let alone associated with the causes of the crisis. Promising an automated advice that is free from human bias, they could thus fill that trust vacuum. However, as various studies indicate, robo advisors struggle with a trust problem of different nature: Investors still seem to be quite reluctant in confiding their money to a fully automated system. According to a 2016 Gallup survey on investors’ perceptions of human versus robo advice, more than 70% of US investors believed human advisors to better serve their interest and make a better investment recommendation than robo advisors. Within a survey conducted by ING, 91% of respondents stated that they would not like an automated programme to conduct financial activities for them, at least not without their final approval. Even millennials, to whom robo advisors are supposed to be particularly appealing, still seem to prefer face-to-face interaction. This observation is shared by the recent report published

43 Greg Medcraft, ‘Digital disruption and how regulators are responding’ speech at the regulators panel on FINSIA (Sydney, 5 November 2015).
47 ING International Survey ‘Mobile Banking 2017 – Newer Technologies’ (May 2017) https://think.ing.com/uploads/reports/IIS_Mobile_Banking_2017_Newer_Technologies_FINAL.pdf. However, it should be noted that surveys conducted by big financial institutions can be biased and therefore should be treated with caution.
48 Barnett (n 45). Given the obvious bias of its principal, the validity of the study can however be questioned.
by the European Supervisory Authorities (ESAs), in which domestic regulators identified the lack of confidence in the use of the tool as one of the major barriers preventing the development of robo advice.\textsuperscript{49} Related to the trust problem another observation is that the investors’ reluctance seems to increase with the size of their portfolio.\textsuperscript{50} Apart from general scepticism concerning a fully automated advice process, investors’ expectations may also explain this: Sophisticated investors with large portfolios may expect a more complex and personalised advice of a quality which robo advisors to date might not offer. This suggests that robo advice is yet more relevant to investors with smaller portfolios. Ultimately, the feature that is perceived as most valuable to date seems to be the low costs, rather the quality of the advice.\textsuperscript{51} Robo advisors will only succeed if they manage to convince consumers to trust in the quality of their service. Since financial services, including robo advice, are credence goods, their prospective development will highly depend on this issue. Hence, earning such trust will be crucial and one of robo advisor’s primary task in the coming years.

In sum, robo advisors’ most appealing asset still seems to be their cost advantage over traditional advisors in combination with better accessibility. Additionally, their features could reduce some elements of behavioural bias, conflicts of interest and poor judgement. This theoretically gives them a substantial ‘trust advantage’ over human advisors, which, however, has not been materialised to date. Despite of the prevailing trust issue, there is a strong consensus that robo advice is one of the fastest growing and most promising fintech phenomena.

**Macropurudential implications**

Besides those (more obvious) potential benefits for consumers, some commentators also highlight the broader (macroprudential) implications that result from the emergence of robo advice.


\textsuperscript{51} This assumption is further endorsed by a survey of the CFA Institute reaching a similar conclusion: CFA Institute, ‘Fintech Survey Report’ (April 2016), <https://www.cfainstitute.org/Survey/fintech_survey.PDF>.
First, robo advisors could enhance access to financial markets for consumers and therefore promote financial inclusion. Consumers that may – for various reasons – not contact a human advisor and are reluctant to participate in the financial market on their own could feel more confident about using an automated advice tool, such as their smartphone. It is therefore no surprise that robo advisors promote their business with claiming ‘to have brought investing to the masses’ by enabling investors to ‘manage low-cost portfolios from their iPhones as easily as they could order a takeaway’.

This effect can certainly be driven by a reduction in perceived costs of market entry. A survey from 2016, conducted on behalf of the Association of Professional Financial Advisers found that 69% of the polled (human) advisors had turned away clients, with too little investment volume being the most common reason. As robo advisors require a much lower minimum volume for their advice due to lower fixed costs, they could arguably integrate those investors much better into the financial market. Irrespective of this aspect, saving habits in Europe seem to substantially differ from those in the US. Data from the OECD show that in contrast to the US, European households rather deposit their money in bank accounts than investing it in the stock market. In times of dramatically low interest rates though, even a small inflation is able to continuously burn money that is stored at the bank. Meanwhile, stock markets are breaking one record after another, providing investment opportunities that generate a decent rent at a reasonable risk.

Offering a low-cost and simplified way to invest in the capital market, robo advice provides a good opportunity for consumers to change such investment habits to their own benefit. This might also be desirable from a political perspective. As real wages remain mostly static, while on the other hand companies and high net worth individuals continue to

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52 In this paper we use the term ‘financial inclusion’ in the meaning of widening financial market access to broader parts of the social community. In particular, this would apply to households that were yet not able (e.g. due to income) or willing (e.g. due to mistrust in financial advisors, favouring bank deposits) to participate in it before.
53 See FCA, ‘Financial Advice Market Review (FAMR) Baseline Report’ (June 2017) <https://www.fca.org.uk/publication/research/famr-baseline-report.pdf> includes various surveys that offer some explanations, see e.g. table 3.2. on page 11.
55 FSB (n 4) 44.
57 However, despite the increase of accessibility, some believe that there will be no significant financial inclusion taking place. BI Intelligence (n 13) for instance assumes that in 2020 99% of assets managed by robo advisors will be held by people, who already have assets under management with traditional asset managers.
58 Data was taken from https://data.oecd.org/hha/household-financial-assets.htm; Kaya (n 5) 9 notes that this is particularly the case for the German market, which therefore offers a lot of potential for robo advice.
increase in their wealth, mid-income households increasingly feel being economically left behind. Online wealth managers could play a significant role in enabling participation of those households in the growing economy.

Enhancing participation in the capital market would also have beneficial effects for the overall economy. Capital is allocated more efficiently when channelled through the capital market. When stored on a deposit account at a bank or invested in real estate, capital is not used in a productive way, i.e. not effectively facilitating economic growth or (in the case of real estate investment) a socially productive outcome. On the contrary, intermediated by a robo advisor, it would provide liquidity for the capital market and in that way provide capital for economic activities. In sum, encouraging those households to access the financial market is a confluence of political as well as private interests of the financial sector.

From an EU perspective, this promise seems to be particularly appealing. In 2015 the European Commission adopted an action plan on building a Capital Markets Union (CMU). The CMU project was initially launched since EU capital markets were and still are relatively underdeveloped and fragmented. While the European economy is as big as the US one, Europe’s equity market comprises only less than half the size. Complementing Europe’s bank-based system with stronger, deeper capital markets will supposedly lead to efficiency gains, higher growth rates and make the financial system more stable. Promising to facilitate access to the capital markets for many not yet participating consumers, robo advice and fintech could play an important role in completing the Capital Markets Union. Not less, its reduced geographical proximity and promotion of access to cross-border investments may also make an important contribution to the CMU agenda. Further strengthening and

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59 Investing in real estate is another very common form of investing in Europe, particularly in Germany (see for example Deutsche Bundesbank, ’Monthly Report’ (March 2016) <https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Monthly_Report_Articles/2016/201 6_03_household.pdf?__blob=publicationFile> Chart on page 68.
integrating the EU capital market may have become ‘more important than ever’\textsuperscript{65}, since the UK as the Member State with the largest capital market has decided to leave the EU.\textsuperscript{66}

Robo advisors might also have the potential to positively disrupt the financial market by challenging incumbent players, stealing market shares and diversifying the market.\textsuperscript{67} Since the traditional financial market is said to typically lack competition due to high market concentration and significant switching costs, this would be a desirable effect. Despite these expectations, a survey of the current fintech landscape reveals that only little improvement is in sight: Most incumbent firms either build up ‘innovation hubs’ or similar institutions\textsuperscript{68} to develop their own fintechs, or are acquiring small fintech firms\textsuperscript{69} to provide the respective service in their own name.\textsuperscript{70} Accordingly, a recent EBA report concludes that fintech companies do not seem to be in direct competition with incumbent firms at present; however, according to the report, competition among incumbents appears to increase as a result of the emergence of fintechs,\textsuperscript{71} not least reflected by the prevalent consolidation and innovation efforts. The new ESAs report, issued in September 2018, confirms this development specifically for the robo advisory market, observing an increase in partnerships between robo advisors and traditional financial intermediaries.\textsuperscript{72} Nonetheless, an important survey demonstrates that the majority of wealth managers do feel pressure on their margins and

\textsuperscript{65} As stated by Markus Ferber, vice chairman of the European Parliament’s economic affairs committee in an interview with Reuters (Huw Jones, ‘Europe’s slow-moving capital markets plan gets Brexit reboot’ (8 June 2017) \url{https://www.reuters.com/article/us-eu-markets-regulations/europes-slow-moving-capital-markets-plan-gets-brexit-reboot-idUSKBN18Z18W?il=0}.


\textsuperscript{70} EBA (n 67) 24 ff. identifies forming partnerships as the predominant type of relationship between incumbent institutions and fintechs (see p. 24 ff.). See also Philipp Maume, ‘In Unchartered Territory – Banking Supervision meets Fintech’ (2017) 8 Corporate Finance 373, arguing that fintechs and incumbents enter into a ‘co-operative competition’.

\textsuperscript{71} EBA ibid p 67.

\textsuperscript{72} ESAs 2018 report (n 49)
fear losing part of their business due to robo advisors. An increase of competition in the financial advisory market could lead to more transparency, a reduction in costs, and make pricing more competitive, ultimately enhancing the efficiency of financial advice services.

**Consumer Risks**

From a regulatory perspective, attention should be paid to the potential risks of a new phenomenon, as they often trigger regulatory intervention. Robo advice may be problematic in terms of both consumer risks (microprudential risks) and systemic risks (macroprudential risks).

The most prevalent consumer risk seems to be the potential unsuitability of the individual advice, meaning that the output does not appropriately respond to the actual situation and risk preferences of the respective individual. One problem that may lead to such unsuitability is the design of the advice process. Since the robo advisor’s output directly depends on what information it seeks and what information the investor provides, it may not assess the individual’s situation including all particular events exhaustively. A ‘one-size-fits-all’ questionnaire may be too narrow in some cases, as opportunities for clients to include additional or connected information to supplement their responses are limited. A recent review conducted by the FCA supports those assumptions: according to their findings, many robo advisors did not properly evaluate their clients’ knowledge and experience, investment objectives or capacity for loss. For instance, in some cases investment experience was not considered at all, in others, no adequate information about debts and ongoing were gathered. Further, online questionnaires are often not designed to ask follow-up questions to

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74 See also EBA (n 67) and FSB (n 4).


76 More specifically, the FCA reviewed 10 firms, of which 7 firms offer ‘automated online discretionary investment management (ODIM)’ and 3 provide ‘retail investment advice exclusively through automated channels (auto advice)’. However, both of those services fall under the definition of robo advice that we use in this paper (see sec. II.A.).

address any inconsistencies. Two investors who want to take out precautionary savings may have something completely different in mind regarding the ‘bad-case’ situation. In a similar vein, a recent study demonstrates that when answering the questionnaire, customers are particularly susceptible to certain biases (in particular overconfidence, familiarity bias and rules of thumb), resulting in a wrongful self-assessment. On top of that a recent study has shown that the impact of the given answers on the investment recommendation varies widely. There are cases where only a single answer (more specifically, the recommended portfolio was directly correlated to the customer’s chosen risk level) determines the outcome. Focusing on the output, automated advice tools are usually designed to fit the customer into a range of pre-determined investment portfolios. The limitation of this range may be problematic when the pre-determined assumptions or categories are not entirely appropriate to the customers’ personal situation. In such case, the customer would not be aware of the inappropriateness, despite answering the questionnaire correctly. Furthermore the appropriate processing of advice depends on the consumer reading and digesting information. In contrast to human advice, possibilities to seek clarification are limited. Taking into account that the average financial literacy in the population is low, the risk of misunderstanding parts of the questionnaire as well as the information provided within increases. As the FCA review demonstrates, robo advisors frequently not only engage in poor information-gathering, but also fail to appropriately disclose information. In the FCA sample, fee and service-related disclosure were often unclear or even misleading. On that basis, a customer will not be able to make an informed decision. This once more exposes the customer to the risk of an unsuitable product. Additionally, it is obvious that misleading

disclosures on a large scale certainly do not create the trust and confidence for consumers that the development of robo advisors so much depends on.

Another risk that has been identified is related to the possible malfunctioning of the tool or its underlying algorithm.\textsuperscript{85} Within the complex structure of the robo-advice software, there is always the risk that an error can occur, for instance due to flaws in the development process. This could lead to unsuitable advice. In comparison to human advice, any unsuitable recommendation issued by an algorithm is likely to affect a large number of customers and therefore potentially causes damage on a much bigger scale than a human’s incorrect advice. At the same time, it would likely result in a high number of complaints. A flood of lawsuits – imagining the worst-case scenario – could be fatal for a (start-up) robo advisor, as well as for the investors, who could end up not being compensated due to the small size of the liable entity. Even if the advisor were not legally liable in a particular case, it would certainly have to face severe reputational damage, which could ultimately be as fatal for the firm as being held liable.

Naturally, as robo advisors base their service solely on algorithmic software, they may be vulnerable to third-party manipulation or hacking, likewise resulting in unsuitable advice for the customer.\textsuperscript{86} Depending on the size of the company and its internal risk and compliance system, it may take quite some time for the financial institution to identify instances where cyber threats have occurred.

Moreover, Jill Fisch and others have identified an advantage of traditional financial advisors over robo advisors in what they call the ‘warm body effect’.\textsuperscript{87} Survey data indicate that people tend to favour advice from a person more than from businesses that provide online advice only.\textsuperscript{88} Apart from the potential advantage, as discussed above, of helping to overcome the lack of financial literacy or better understanding and evaluating the individual situation of the client, there are other preferable aspects of human advice to robo advice. First, automated advisors might do less well than financial advisers in preventing the client

\begin{footnotesize}
\textsuperscript{85} ESAs (n 82) 26 f. and the corresponding 2016 Report (ESAs, ‘Report on automation in financial advice’ (16 December 2016) <https://esas-joint-committee.europa.eu/Publications/Reports/EBA%20BS%202016%20422%20(JC%20SC%20CPF%20Final%20Report%20on%20Automated%20Advice%20Tools).pdf>). See also FSB (n 4) 45. The most recent 2018 report on automation in financial advice (n 49) found that the risks and benefits that had been originally identified in the 2015 paper and the 2016 report seem to be still valid.

\textsuperscript{86} ESAs DP (n 82) 26 and corresponding Report (n 85).

\textsuperscript{87} Fisch and others (n 9) 15.

\end{footnotesize}
from selling low and buying high.\textsuperscript{89} If consumers are able to adjust their portfolio and preferences without the consultation of a professional, they might be more prone to various ‘hypes’ in the market. Secondly, not all aspects of traditional investment advice are yet covered by the robo advisor. To date, robo advisors focus largely on the matching and rebalancing function, while this represents only a part of the service human advisors (optimally) provide. A traditional financial advisor can help clients with how much to save, create plans, set up structures and counsel those clients who fall short of their plans etc.\textsuperscript{90} Those coaching and relationship aspects are harder to automate and therefore basically not (yet) provided by robo advisors.\textsuperscript{91}

This might explain the recent development towards hybrid models:\textsuperscript{92} Some of the major US financial management companies such as Vanguard or Schwab offer robo- advisory services with the (additional) possibility to contact a certified financial planner 24/7. While fees for those services are often comparable to those of genuine robo advisors, the account minimums are usually significantly higher,\textsuperscript{93} and range from between those of genuine robo advisors to traditional financial advisor minimums. Finally, one of the pioneers of robo advice, Betterment, for the first time opened a call centre in 2017.\textsuperscript{94}

Systemic Risk

Aside from these problems on an individual client basis, there are also potential systemic risks that may accompany the phenomenon of robo advice. Relevant focus areas for policymakers in this regard are financial stability and cyber risks.\textsuperscript{95} Such systemic risks are likely to appear when robo advisors grow in scale and become a major force in the financial markets. Due to the fact that currently automation in financial advice is not widespread, those

\textsuperscript{89} See also Fisch and others (n 9) 15.
\textsuperscript{90} See also Baker and Dallaert (n 3) 729.
\textsuperscript{91} It is however noteworthy that automated advice constantly evolves in that regard: US provider Wealthfront, for example, is currently developing tools to offer goal-based advice tied to asset allocation decisions, ultimately providing a product akin to ‘self-driving money’. See Samuel Steinberger, ‘Here’s How One Robo Provides Goals-Based Planning’ (29 June 2018) <https://www.wealthmanagement.com/technology/here-s-how-one-robo-provides-goals-based-planning>.
\textsuperscript{92} Hybrid models are basically robo advisors, added with the possibility of consulting a (human) financial adviser.
\textsuperscript{93} For example Vanguard’s charge a fee of 0.3% for their service and require an account minimum of 50,000 USD (see <https://investor.vanguard.com/advice/personal-advisor>).
\textsuperscript{94} See Fisch and others (n 9) 24.
problems are commonly seen as unlikely to materialise in the near future.\footnote{FSB (n 4) 32; ESAs Report (n 85) 11 and confirmed by the 2018 report (n 72).} Nevertheless, looking at the rapid pace of growth that robo advice experiences, they should be assessed as early as possible.

In this context, a predominant concern associated with the phenomenon of robo advice is the so-called ‘herding risk’.\footnote{See for example: FSB (n 4), p. 46; Baker and Dallaert (n 3) 742f.; ESA Report (n 85) 11; FSB, ‘Artificial Intelligence and machine learning in financial services’ (1 November 2017) <http://www.fsb.org/wp-content/uploads/P011117.pdf> 25. Also, Jens Weidmann, president of the German Bundesbank, warned against that risk in a speech at the G20 conference, however saw it as not yet prevalent (speech available at <https://www.bundesbank.de/Redaktion/EN/Reden/2017/2017_01_25_weidmann.html>).} The basis of this concern is that most robo advisors, to a certain degree, will act in similar or parallel ways as they process and evaluate their customers’ data, since the composition of their portfolios as well as their underlying algorithm that allocates the assets are to a certain degree similar.\footnote{Kaya (n 5) states that robo advisors usually use mean-variance optimisation (see on page 6). In this context, EBA (n 67) identifies another risk that stems from the reliance on similar underlyng technology, more specifically on the technology provider: A development as such could contribute to the creation of systemically important unregulated technology suppliers (ibid 21).} Assuming that risk models are highly correlated, robo advice has the potential to exhibit greater herding behaviour than traditional portfolio advisors and lead to concentration risks. Since market participants can act in ways that exacerbate the degree and impact of fluctuations on economic growth and market prices, herding can increase the amplitude of swings in asset prices and lead to an increased incidence of unidirectional portfolio shifts.\footnote{FSB (n 4) 20, 45f.; ESAs DP (n 82) 27.} Also, correlated algorithms may similarly react to external shocks, leading to solvency problems that can spiral through the financial system. Robo advisors may tend to be more active during periods of low volatility but rapidly withdraw from the market during periods of market stress when liquidity demands are high and thereby increase asset price volatility. Moreover, predictable patterns in the behaviour of algorithms could be used by cybercriminals to manipulate market prices.\footnote{FSB (n 97) 25.}

An aspect of (systemic) risks that algorithmic trading implies allegedly occurred during a so-called ‘flash crash’,\footnote{The term ‘flash crash’ refers to a sudden fall in stock prices caused by manual or algorithmic errors.} the most prominent of which took place in 2010. The 2010 flash crash lasted for approximately half an hour during which time the American stock indices collapsed and dropped by about 9%.\footnote{For more information on the events, see the two SEC reports that had been issued in regard of the Flash Crash. First report: SEC, ‘Preliminary Findings Regarding the Market Events of May 6, 2010 – Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issue’ (18 May 2010) <https://www.sec.gov/sec-cftc-prelimreport.pdf> and the second Report: SEC, ‘Findings Regarding the Market Events of May 6, 2010 – Report of the Staffs of the CFTC and SEC to
event caused substantial uncertainty among investors and regulators. Most recent investigations suggest that the collapse was initially triggered by a ‘lone trader’ based in London, making use of a shady trading method called spoofing, which has been banned as a consequence of that incident. Spoofing refers to a technique where the trader puts up a significant amount of futures for sale slightly below the market price (with intent to cancel before the orders are filled), and thereby causes a drop in their market price. This drop is at least partly a consequence of algorithms reacting to the actions of the trader and therefore an issue that could be subject to exacerbation from the growing dissemination of automatisation on financial markets. Ultimately, this event has shown that a drop in prices of futures can lead to a high-speed selling spiral (to a significant degree) caused by algorithmic trading and affect the stock market in a significant way.  

Another incident where the British Pound Sterling dropped significantly within a few minutes occurred in October 2016 and is also said to be at least exacerbated by algorithmic trading.

Current robo advisors were trained during times of predominantly low volatility. Accordingly, it remains rather unclear how they will react to a major shock in the markets, ie whether they will lack flexibility to effectively handle the shock, or rather react in a more prudent, long-sighted way than humans usually do. A 2015 study implies the former: the authors found that human beings were better at coping with stressed stock market conditions than algorithmic traders. Algorithms tended to be significantly more sensitive to market stress, rapidly withdrawing from the market. However, it is noteworthy that the results were taken from tests periods in May 2006 and May 2012. Considering that algorithms have rapidly evolved during the more recent years, the significance of this study for today’s performance of algorithms can be doubtful.

It could be argued that the decision in favour of Brexit was a first test for the performance of robo advisors in that regard, as it lead to one of the most significant shocks in the financial markets in the recent years. The outcome of the June 2016 referendum surprised many and shook the markets. From an investor’s perspective, however, most robo portfolios mastered the challenge well. The way it was overcome, however, may give some
ground for critique: Major robo advice firms decided to halt trading for several hours on that
day to prevent investor overreaction. Naturally, this intervention provoked fundamental
critique as being patronising, arguing that investors should be the ones to decide when to
trade. More importantly though, that reaction revealed an inherent weakness of robo
advisors: The inability of the programme itself to solve a comparable situation without the
need for human interaction. It would have been interesting to see how the algorithms had
reacted to that event, had they not been halted.

In another investigation, it was analysed how robo advisors dealt with the stock
market crash that occurred on 5 February 2018, where the Dow Jones lost almost 1600
points in one day – the biggest slump in its history. Despite suffering acute losses in their
portfolios, data provided by brokervergleich.de implies that robo advisors stayed surprisingly
calm. Only two out of eleven robo advisors rebalanced their portfolios in the course of the
events. Clients of robo advisors on the other hand apparently did not remain calm, causing
the websites of Betterment and Wealthfront to crash due to massive log-in numbers. This
ultimately underlines the trust issue that robo advisors face.

Risks may also occur not only due to actual events, but also in consequence of
wrongly propagated information. As algorithms commonly rely on patterns that were
predictive for market movements in the past, they may overreact to certain false information.
For example, in April 2013, markets significantly reacted to a false tweet, which was sent
from the hacked Associated Press twitter account, reporting of two explosions at the White
House. Even though it is difficult to prove a clear causal link between the tweet and the
algorithms’ reaction, scenarios like these may be exacerbated with the widespread use of
algorithms and robo advice.

**Cyber Risks**

Another risk that merits regulatory attention, not only in regard of robo advice, but rather
concerning the fintech phenomenon as a whole, is the problem of cyber risk.

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106 Kaya (n 5) 11.
107 See for example Matt Eagen, ‘Dow plumm 1,175 -- worst point decline in history’ (5 February
108 Brokervergleich.de (n 37).
109 See for example Frank Chaparro, ‘Betterment and Wealthfront websites crash during market
bloodbath’ *Business Insider* (05 February 2018), <https://www.businessinsider.de/betterment-and-
110 See above section II.C.
111 This concern is also raised in FSB (n 4) 11.
112 The text of the original tweet was: ‘Breaking: Two Explosions in the White House and Barack
Obama is injured’.
113 For more information on this topic, see for example Tero Karppi and Kate Crawford, ‘Social Media,
susceptibility of financial activity to cyber attacks is likely to be higher the more the systems of different institutions are interconnected. That is, the more institutions or systems are interconnected, the higher the possibility of a ‘weak link’, endangering the whole system. Given that fintech start-ups are frequently not in possession of a proper cyber-security system comparable to those of big financial institutions, cyber-risk is an issue that merits further scrutiny. On the other hand, in case of more diversity and less concentration in the market that may come along with the rise of fintech, a single cyber-attack could be less systemically relevant.

**Artificial Intelligence**

One factor that plays a great role in the future development of robo advice, bearing great potential for the quality of robo advice, but also posing considerable risks, is the emergence of Artificial Intelligence (AI) and machine learning. AI can be described as the theory and development of computer systems being able to perform tasks that traditionally require human intelligence. Machine learning, which is a sub-category of AI, can be defined as a method of designing algorithms that optimise automatically through experience with limited or no human interaction. This experience is created by using a large training data set that the algorithm can repeatedly go through, learning by trial and error how to connect the data and apply it in order to make intelligent future decisions. In the case of robo advisors, this data can consist of parameters about the individual investor, such as credit history, employment history, assets, purchasing history as well as data that stems from social media, e.g. Facebook or Twitter. Also, the algorithm can be fed with data about macroeconomic parameters, such as market movements and collective behaviour during volatility.

With datasets about the individual, robo advisors using AI could design a portfolio more tailored to the individual preferences, i.e. give a more customised advice. Some commentators see the inclusion of AI and machine learning as the yet missing piece in the puzzle that will allow robo advisors to widely replace human advisors. The idea behind this hypothesis is, as Adam Nash, the CEO of Wealthfront puts it: ‘actions speak louder than

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114 FSB (n 4).
115 Definitions are broadly taken from the FSB Paper (n 97).
117 See also FSB (n 97) 27.
words’. In other words, if the algorithm is capable of collecting and connecting all the necessary information of the customer by tracking her actual behaviour, it would then probably be in a much better position to provide a suitable investment advice than advice based on a personal conversation. Obviously, this could present an opportunity to overcome the problems associated with the use of a questionnaire that we described earlier. The robo advisor could use various data sets to verify clients’ answers to the questionnaire and thereby address certain biases prevalent in the answering process. Also, big data in combination with AI could enable the robo advisor to offer a more comprehensive product to the customer and automate parts of the financial advice service that are to date reserved for human advisors. Access to that information about the customer regularly requires the consent of the customer as well as access by the company that initially collected and presently possess the data. In order to gain the customers consent, robo advisors could create certain incentives e.g. by giving a discount on advisory fees. Access to the data may be achieved by engaging in a cooperation with legacy financial institutions or major tech companies. This cooperation can create synergies and therefore be beneficial for both sides. However, it also gives those companies controlling the data a significant competitive advantage: They are able to block or limit small robo advisors’ access to customer data, while (potentially) using it for their own services. In the worst case, large financial institutions could choose to simply deny access to their data, however not with the objective of offering innovative services themselves, but to protect their traditional advice segment, i.e. preventing disruptive innovation. Aiming at removing the monopoly of financial institutions on their customers’ data, the new EU Payment Services Directive PSD2 may bring significant improvements in that regard.

More customised portfolios could also have systemic implications: A higher degree of individuality could simultaneously result in less correlation with other portfolios. This could

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119 Wealthfront is a major robo advisor in the US. The quote was taken from the following article: Ryan W Neal, ‘Wealthfron Turns to Artificial Intelligence to Improve Robo Advice’ (31 March 2016) <http://www.wealthmanagement.com/technology/wealthfront-turns-artificial-intelligence-improve-robo-advice>.
120 See also Wedlich (n 79) 227f.
121 As described earlier, these parts largely consist of relationship management and coaching.
122 The use of that kind of data may entail data privacy and information security issues, in parts also arising from the new data protection regulation GDPR, which is coming into force in May 2018. Those issues are however not in the scope of this paper.
123 Regarding the relationship between banks and fintech on data, see also van Loo (n 67) 243f.
125 Similar implication made by FSB (n 97).
further lead to greater diversity in market movements, i.e. potentially mitigating the above mentioned ‘herding risk’. On the other hand, if machine learning prevails and more robo advisors adopt similar algorithms, it could also go the other way around.

Ultimately, feeding the algorithm with macroeconomic data could enable it to even anticipate market movements and the occurrence of shocks and to better estimate certain risks. As opposed to its human equivalent, a well-trained algorithm would not be susceptible to make hasty decisions when the market is moving in an unexpected way. Therefore it could be in a better position to handle such a situation. However, it may seem naïve to assume the algorithm could adequately predict and anticipate all kinds of market situations. Since it is always ‘trained’ on historical data, the threat is prevalent that it fails to anticipate utterly novel categories of risks. Relying on the algorithm irrespectively may pose an idiosyncratic risk: Algorithms using machine learning develop their own dynamics, which can lead to the problem that commentators commonly refer to as ‘black boxes’ in decision making. This describes a decision made by algorithm, which stakeholders, consumers or regulators find difficult or impossible to trace and understand. Such black box decisions pose difficult questions in relation to liability, auditability and – of course – regulation. Also, as a consequence of unpredictable and unexpected decisions, market movements may be ascribed to AI and interpretation of market shocks may therefore be hampered.

On balance, robo advice combines several important benefits, for consumer as well as for the financial market as a whole. However, a significant amount of risks are still unresolved, notably the risk for consumers in receiving unsuitable advice and the market risks of increasing volatility and potential flash crashes. In this regard, we may see some interesting developments with AI and machine learning in the future. Again, more data and time is necessary to form a comprehensive assessment of the phenomenon of robo advice. Thus, more research is needed: a strong focus on the regulatory side should be on the collection of data, insights, knowledge and resources that build a proper basis to support the potential, whilst mitigating risks.

D. Current regulatory situation

126 A comparable assumption is made by Helen Edwards and Dave Edwards, ‘AI does not have enough experience to handle the next crash’ (12 December 2017) <https://qz.com/1151664/ai-does-not-have-enough-experience-to-handle-the-next-market-crash/>.
127 See also FSB (n 97) 34.
128 See for example Rosov (n 116). Also EBA (n 67) sees that risk specifically in respect to robo advice (ibid 21).
129 FSB (n 97) 30.
One of the foremost objectives of financial regulation is to improve the functioning of the financial system. To that end, regulators and legislatures have identified a number of common objectives along which a regulatory framework is developed. Among these are ensuring consumer protection, financial stability and (good) competition. Too much regulation on the other hand stifles innovation, competition, and ultimately economic growth. Therefore, the starting point of the discussion should still be ‘if it ain’t broke, don’t fix it’.\(^\text{130}\) By following a technology-neutral and proportionate approach, the regulatory framework in the EU seeks to achieve those principles in a dynamic way that is adaptable to new technologies.\(^\text{131}\) The emergence of a new, potentially disruptive power in the market is a good opportunity to evaluate the rules in place and to reassess whether their underlying principles and objectives are still effectively achieved. Hence, this section seeks to examine if and how the current rules apply to robo advisors and what consequences they entail. In doing so, we seek to find an answer to the question of whether the current rules constitute an unnecessary burden for robo advisors.

At the EU level, regulatory standards that are relevant for robo advice are primarily within the Market in Financial Instruments Directive (MiFID) framework.\(^\text{132}\) The original MiFID framework dates from 2004\(^\text{133}\) and was substantially revised with the implementation of MiFID II in national law in January 2018.\(^\text{134}\) The underlying purpose of the reform was to strengthen investor protection and to improve the functioning of financial markets making them more efficient, resilient and transparent.\(^\text{135}\) Further, the new regime is supposed to enhance powers of supervision and regulation authorities. Even though robo advice was barely a phenomenon at the time even when MiFID II Directive was negotiated,\(^\text{136}\) it generally

\(^{130}\) Armour and others (n 25) 51.
\(^{131}\) See for example the respective clarification by ESMA in its Q&A on MiFID II (ESMA, ‘Questions and Answers On MiFID II and MiFIR market structures topics’ (18 December 2017) <https://www.esma.europa.eu/sites/default/files/library/esma70-872942901-38_qas_markets_structures_issues.pdf> 38).
\(^{132}\) Other eventually applicable EU directives or regulations are, for instance, CRD/CRR or GDPR, which are however not in the scope of this paper.
\(^{136}\) MiFID II was finalised in the beginning of 2014 and entered into force on 2 July. That was also the time when robo advice became increasingly widespread and accordingly drew the attention of 25
applies to automated advice as well as to all other entities which qualify as investment firms under MiFID. To be designated as an investment firm within MiFID, the robo advisor must either perform investment advice or portfolio management. These requirements are ‘function-based’, and therefore apply to all kinds of entities that meet the respective requirements, irrespective of provision by a human or an algorithm.

Investment advice in the meaning of the Directive is the provision of ‘personal recommendations to a client […]’ (Article 4(1) no 4), whereas portfolio management means ‘…managing portfolios in accordance with mandates given by clients on a discretionary client-by-client basis where such portfolios include one or more financial instruments’ (Article 4(1) no. 8). Firms that provide investment advice or portfolio management, whether automated or not, generally fall within the scope of the directive including all its corresponding obligations. An exception can be made under the propositions set out in Article 3. A firm meeting those propositions does not fall within the scope of the Directive and can be regulated by the domestic initiative. Whereas under MiFID I the regulation of firms meeting requirements of Article 3 was entirely within the responsibility of the national initiatives, MiFID II sets out new requirements, referred to as ‘analogue' requirements.

According to these, firms that seek to avail themselves of the exemption of Article 3 are now subject to a comparable authorisation process and an obligation catalogue that applies to financial institutions. In the context of Article 3, the distinction between investment advice and portfolio management is an issue, since the exemption is only available for firms providing investment advice. Even more problematic though is the distinction between investment advice and the mere intermediation of investments. Since the latter is not regulated under MiFID, its regulation is mainly in the responsibility of the domestic legislature or regulator. As opposed to an investment advisor, the intermediary or agent simply receives and transfers orders from the investor, without giving a (personal) recommendation.

lawmakers and regulators. The first time robo advice was explicitly mentioned was in the ESMA guidelines on MiFID II (n 75).

These are just the options that are relevant for robo advisors.

ESAs Report (n 85) 21. Also mentioned by Ferguson (n 2).

Further specified in Art. 9 (1) of Commission Delegated Regulation 2017/565 (supplementing MiFID II) as a recommendation ‘presented as suitable for that person, or [one that] shall be based on a consideration of the circumstances of that person’.

For example the firm is limited in the range of financial products it is allowed to recommend to the client.

MiFID II article 3(2) requires national regulation to be to be ‘at least analogous’ to the provisions in respect of authorisation and supervision, conduct of business and organisational requirements.

The application of MiFID involves some substantial legal obligations for regulated firms. First, firms must be authorised by the competent federal authority. For that, they need to satisfy various requirements, for instance having a sufficient initial capital endowment. Further several conduct of business standards have to be met when providing the service. Those standards for example consist of obligations to provide information to the client about the firm and the service and to collect relevant information from the client in order to be able to give a suitable recommendation (‘suitability test’). The latter is considered to be one of the most important requirements for investor protection. Also, all necessary steps to prevent a conflict of interest have to be taken by the firm. Since MiFID II came into force, robo advisors and other institutions see themselves confronted with additional regulatory burdens: the new law prescribes large amounts of information to be obtained about the client, to be presented to the client and to be documented. The FCA review indicates that robo advisors seem to have difficulties complying with those obligations. However, as the sample of that review only consisted of ten firms, it is an open question whether this could become a systemic issue.

Despite the technology-neutral approach of EU regulation, one issue that seems to prevail among robo advisors is regulatory uncertainty. Pre-defined categories and fine distinctions make it hard for new forms of financial advice to assess their regulatory situation. New innovative approaches or hybrid technologies may be hard to reconciled with those categories or to be categorised at all. First, firms seem to struggle with the distinction

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143 MiFID II Article 5.
144 MiFID II Article 25(2) and Articles 54 and 55 of the Commission Delegated Regulation 2017/565; see also ESAs Report (n 85) 11.
145 MiFID II Article 23.
146 E.g. information about the risk tolerance and the ability to bear losses (Article 25(2)).
147 For instance, firms are now obliged to inform the client whether or not the advice is independent (Article 24(4) lit. a). They must further explain why their advice is qualified as independent or non-independent by clarifying the differences (further specified in Article 52(3) of the Implementing Directive).
148 Under Article 25(6) a suitability report has to be conducted and made available for the client (generally) prior to the transaction.
149 See FCA (n 77) in particular concerning disclosure obligations and the suitability requirement.
between investment advice and portfolio management and between investment advice and investment intermediation. While the first differentiation is especially relevant to the question of whether that firm is able to rely on the exemption of Article 3, the latter determines whether the firm is regulated under EU or domestic law. For instance, under German law, investment intermediation does not have to meet a suitability requirement or equivalent. The resulting uncertainty caused among robo advisors is obvious: A significant number of robo advisors in Germany claim to only intermediate financial products rather than to provide advice. When applying the above mentioned criteria though, many of them seem to fall within the category of ‘investment adviser’. In order to mitigate this uncertainty, some regulators provide guidance on the interpretation of rules and their application to respective services on their website or in form of guidelines. However, this often is of little help. Concerning the authorisation requirement for robo advisors, BaFin for example states: ‘The rendering of robo-advisory services with the model described above frequently presupposes that financial services subject to an authorisation requirement are performed. […] However, there are many different ways to provide robo advice, which makes allocation to one activity subject to an authorisation requirement difficult. For this reason, the supervisory assessment depends very much on how a particular platform is structured and on what contractual arrangements are agreed with the users.’ The use of ambiguous terms like ‘frequently’ and ‘it depends’ will not provide a clear picture and are therefore unlikely to reduce regulatory uncertainty.

For firms who find themselves in a regulatory ‘grey zone’, the reaction of the respective authority regarding their regulatory obligations would be difficult to predict. Consequently, the more innovative a new method for financial advice is, the greater the regulatory uncertainty. A 2017 Discussion Paper by the European Banking Authority (EBA) seems to corroborate these arguments. The Discussion Paper entails the outcome of a mapping exercise, which EBA undertook to gain better insight into the spectrum of fintech firms in the EU and corresponding services and their respective regulatory treatment. As a part of this exercise, EBA examined how a sample of firms applying a particular service is

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151 See also for further differences between those categories in German law: Florian Möslein and Arne Lordt, ‘Rechtsfragen des Robo-Advice’ (2017) Zeitschrift für Wirtschaftsrecht, 793, 794 ff; Baumanns (n 142).
152 Baumanns (n 142). Looking at the German robo advisors tested by brokervergleich.de (n 37), most of them now seem to opt for a full licence as investment advisers.
153 See <https://www.bafin.de/EN/Aufsicht/FinTech/Anlageberatung/anlageberatung_node_en.html;jsessionid=9788705DB8D4BE76E7EBCA4A4001CCB9.1_cid381>.
regulated and, if so, pursuant to which regime (national or EU). In the case of robo advice, the data show that out of the sample of robo advisors 35% are under no regulatory regime, whereas 41% are regulated under EU law and 24% under a national regime. First, considering that the common robo advisor (as described in Section II.A.) is supposed to be regulated by MiFID, the relatively high number of unregulated robo advisors seems striking. A service that is not regulated at all may bear uncovered risks and ultimately harm consumers. Secondly, the data implies that that those firms being subject to different regulatory treatment often apply the same service. This indicates that there are most likely divergences in the treatment of robo advisors across the EU. A related example (dealing with the allowance of video identification for fund management companies) is provided by Dirk Zetzsche and others who explain that in one instance the German BaFin and the Luxembourgish market authority CSSF read the same rule in a completely different way, resulting in varying regulatory treatment for the same service. Similar concerns were raised within the responses to the European Commission’s Consultation Paper on fintech. Given the fact that the regulatory framework is widely harmonised by EU law, this indicates that there is also substantial uncertainty among regulators regarding the application of current regulation to new technologies. This not only runs contrary to the regulatory objectives of consumer protection and preserving financial stability, it also adversely affects innovation. In order to establish regulatory certainty among firms and investors, consistency and

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156 EBA worked with a sample of 282 fintech firms in total from which 11 were providing robo advice, see on pages 16, 22, 24.
157 It will be interesting to see how the share of robo advisors regulated under a national regime will develop against the background that the exemption of Article 3 became much less attractive in the course of MiFID II.
159 Meaning here regulated under MiFID directly or by the national regime, using the exemption under Article 3 of MiFID.
162 The German and Luxembourgish rules both rest upon the same EU provisions.
predictability in application of rules is predominating objective. Therefore uncertainty on the side of regulators necessarily intensifies the uncertainty among regulated firms.

The effects of high regulatory uncertainty are manifold: First of all, it constitutes a substantial market barrier for potential market entrants. The fear of being sanctioned when introducing a new technology to the market or being forced to end the business may lead fintechs to be cautious with innovation and may prevent them from entering the market in the first place. Evidence from other areas suggests that time-to-market can be increased by about a third in this way, at a cost of about 7 or 8% of product lifetime revenue.\textsuperscript{164}

Regulatory uncertainty also creates a barrier for (potential) investors\textsuperscript{165} as they try to factor in risk which, under those circumstances, they are not well placed to assess.\textsuperscript{166} In other words, investing in a fintech that has not yet been approved to conduct business, bears great risks. There is evidence from another sector, the pharma industry, that valuations may be reduced by 15% due to regulatory uncertainty.\textsuperscript{167} And this does not include cases of firms failing to raise any funding at all. Thus, under regulatory uncertainty it becomes hard for firms to raise fresh capital, what ultimately means a drag for innovation.

The inconsistent application of regulation (or deviations in domestic regulation) mentioned above can additionally lead to regulatory arbitrage. Robo advisors may shop for the jurisdiction whose regulatory system or enforcement appears more favourable to them, potentially causing the well-known ‘race to the bottom’ as a result of regulatory competition.\textsuperscript{168} This might simultaneously bare risks for consumers, because the service might not be properly evaluated by the respective authority. Moreover, diverging, inconsistent and unclear application of regulation can cause confusion among consumers who under which circumstances is responsible in case of detriment. As we have noted above, the creation of trust and confidence in the service of robo advisors is crucial for their future development.\textsuperscript{169} Regulation plays a key role in that regard. Good regulation functions as a seal of approval in the sense that the consumer can make use of that product without having to worry about hidden risks. Uncertainty on the other hand signals the opposite: It gives the

\textsuperscript{165} Hereby referring to investors for firms (i.e. robo advisors).
\textsuperscript{169} See Section II.C.
consumer grounds to doubt the regulators’ expertise and as a consequence may become overcautious in regard of new products and services. Against that backdrop uncertainty on the side of regulators as well as firms is a major risk for the development of robo advice and fintech in general and needs to be addressed by the regulator.

Aside from regulatory uncertainty, another main obstacle of the current framework appears to be licencing requirements.\textsuperscript{170} As stated above, to receive a regular license, among other things an initial capital endowment is required, as specified in the Capital Requirements Regulation and the Capital Requirements Directive IV.\textsuperscript{171} Especially for small fintechs constantly struggling to find investors and to raise capital, this poses a considerable barrier to enter the market. Insiders estimate that the total costs for operating a fintech until the receipt of a licence amounts to roughly €20 million, which is a significant sum to come up with for any start-up.\textsuperscript{172}

As a consequence of this, many robo advisors sought the option that was provided by MiFID I Article 3.\textsuperscript{173} Although this exemption seemed to be a good opportunity to enter the market without having to run through the strict authorisation process as a whole, most of its attractiveness vanished when taking a closer look at its propositions – even when considering just those that were set out in MiFID I: First, its only availability for firms providing ‘financial advice’ was an obstacle due to its blurry distinction from portfolio management that has been described above. Secondly, limitations on the firms’ activities (e.g. restrictions in regard of recommended financial products, cooperated institutions) were constraints on the commercial freedom and chilled incentives for innovation. Furthermore, problems can occur when the robo advisor starts under the exemption of Article 3, but subsequently outgrows the limitations. Then being faced with the comprehensive MiFID regulatory catalogue, the robo might be forced to wholly redesign its internal structure and processes.\textsuperscript{174} Thirdly, firms using the exemption were not able to utilise a major benefit that comes along with being governed

\textsuperscript{170} As shown above, out of the EBA sample, 65\% of all robo advisors have an authorisation.
\textsuperscript{171} See MiFID II Article 15, which refers to Regulation (EU) No. 575/2013 (Capital Requirements Regulation).
\textsuperscript{173} See for example Jürgen App, ‘Regulation von Fintech’ (22 April 2016) <http://private-banker.online/news/die-app-kolumne.html> showing that half of robo-advisors (from his sample) are regulated under the German GewO, which is mainly the domestic regime for those robo advisors that prevail the exemption of article 3 MiFID.
\textsuperscript{174} See Maume (n 70) 374-5 for the equivalent regime change under the German laws implementing the corresponding MiFID requirements. In Germany, this regime change is also accompanied by a change of the supervising authority, possibly exacerbating the problem.
by MiFID, which is the use of the ‘passport’. Those rules have now been tightened further under MiFID II (see above), meaning that the exemption under Article 3 is more an ‘empty shell’ than a considerable opportunity for robo advisors in the long term. In contrast, robo advisors that had been regulated under a national regime (due to Article 3), are as of January 2018 subject to a significantly higher regulatory scrutiny. For some of them this means an increase in regulatory requirements that they are unable to cope with. This might be a partial explanation for the recent trend of engaging in partnerships with incumbent players. When obtaining a licence becomes too costly, the fintech firm could effectively be forced into the arms of a licence holder, as a simple means to survive. The trade-off is of course the corresponding restriction of its entrepreneurial freedom and the inability to directly compete with incumbent institutions.

Furthermore, although said to be technology-neutral, many EU rules are obviously written with the leitmotif of human interaction in mind. For example, certain provisions appear to require paper disclosure, handwritten signatures or physical presence. Provisions as such are an obstacle for the digitalisation of financial services.

With regard to consumer protection, the regulation generally applicable to financial advice primarily relies on the suitability requirement, the prevention of conflicts of interest and the education of the customer by obliging the firms to provide a stack of information. Ensuring the quality of the advice, the suitability requirement certainly has its justification and is considered to be as one of the most important requirements for investor protection. Just recently, the European Securities and Markets Authority (ESMA) comprehensively adjusted its guidelines on the suitability requirement to robo advisors and initiated a consultation on this issue. Despite this, it remains an open question whether the particular recommendation of a robo meets the suitability requirement in a sense that it comprehensively takes into account the individual situation of the customer.

Promoting education and preventing conflicts of interest through disclosure obligations is generally desirable since informed customers are more likely able to identify malfunctioning products and effective competition. Enhancing disclosure and transparency obligations is a common way to promote consumer education.

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175 cf at II.B.  
176 Commission Responses (n 163) 39.  
177 See ESMA Guidelines (n 75).  
178 Concerns may arise against the backdrop of the above mentioned (see section II) limits of the questionnaire and available portfolio compositions. A related discussion about robo advice their ability to act in the clients’ best interest is currently ongoing in the US, see for instance Melanie L Fein, ‘Are Robo-Advisors Fiduciaries?’ (September 2017) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3028268>.  
179 E.g. Baker and Dallaert (n 3) 728, 731.
advice, automatisation and standardisation of the advice process simplify the collection and provision of the necessary information. Therefore, it could be argued that the more information is disclosed, the better placed the consumer is in understanding and answering the questionnaire.

On the other hand, the online setting paired with the simplification of the advice process might bare a new risk: in exceeding a certain quantity of information, customers might not read them at all. There are studies showing that especially in an online setting, people tend to ‘skip and skim’ information\(^{180}\) inter alia due to losing concentration.\(^{181}\) Thus, important information presented in order to improve the consumers’ understanding of the service, may be dismissed as ‘legal small print’ without the presence of a person who can endorse the importance of certain information.\(^{182}\) The chance of information getting skipped increases with the amount of information provided. Thus counterproductively, the more information is provided, the higher the risk of unsuitability due to the lack of knowledge. Also, there is evidence that the design of information has a huge influence on the probability of it being read.\(^{183}\) Hence the focus of regulation should not only lie on if and what kind of information are being provided, but also on the (genuinely) necessary amount and especially how they are provided.

In sum, even though the present regulatory framework at the EU includes rules that formally apply to robo advice, they cause a number of concerns. Since those problems are (to this date) localised in the application rather than in the (hard) ‘wording’ of the law, we argue in what follows in favour of a ‘soft’ measure that provides regulators with some flexibility and facilitates the exchange of knowledge in order to stabilise the application of the regulatory framework.

III. Regulatory Sandbox and Trajectory

After exploring the merits of the phenomenon of robo advice and evaluating the current regulatory situation, we find ourselves in a difficult position: Whilst the assessment of the

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\(^{180}\) Salo and Haapio (n 75) 442. Further, see EBA (n 155) (proposing e.g. a ‘time-lag’ between provision of information and continuing, videos or quizzes on page 50); ESAs DP (82) 22, 28.

\(^{181}\) See Kaya (n 5) 3; A recent study documented that visitors of a website had a dwell time on average before leaving the website, 80% had a dwell time of less than 100 seconds (see Nicola Barbieri, Fabrizio Silvestri, Mounia Lalmas, ‘Improving Post-Click User’s Engagement on Native Ads via Survival Analysis’ in Proceedings of the World Wide Web Conference (2016) 761ff.

\(^{182}\) ESAs DP (n 82) 22.

\(^{183}\) Salo and Haapio (n 75) 448ff. with further references.
development has turned out to be ambiguous, with great expectations on the one, but also alarming risks on the other side, the evaluation of the regulatory framework has revealed not only substantial shortcomings in addressing certain risks, but also high market barriers for new entrants. This uncertainty makes it seem premature to take a definitive stance that is either to heavily regulate robo advice due to its presumable risks or to ultimately remove regulatory impediments in order to fuel the development. Meanwhile, the status quo is unsatisfactory in that it creates unnecessary high market barriers for market entrants and investors, stifling innovation and economic growth.

Against that backdrop we seek to find a dynamic solution that addresses the shortcomings of the current regulatory situation, while also ensuring consumer protection and simultaneously engaging with the phenomenon to develop the necessary expertise to review existing regulation and adjust it as appropriate.

The following section proposes a ‘regulatory sandbox’ to facilitate this. We argue that a sandbox is at this stage the optimal solution since it fuels the development, addresses a major part of the shortcomings of the current regulatory framework and simultaneously ensures consumer protection. No less importantly: it facilitates a mutual ‘learning process’ that on the one hand allows regulators to better assess the risks that are connected with robo advice, while on the other hand enables robo advisors to benefit from the regulator’s expertise in applying the regulatory framework.

This section is structured as follows: First, we explain what a ‘regulatory sandbox’ is and describe its underlying principles. Subsequently we give a brief overview of existing implementations of regulatory sandboxes. Then, after showing the general benefits of the principle, we apply those benefits to the situation of robo advisors and demonstrate how it can provide an adequate solution to the questions posed above. Ultimately, we will address the disadvantages of regulatory sandboxing and conclude that we consider it not the ultimate objective, but rather a good and necessary first step towards an improved future regulatory framework.

A. Description and General Principle
A good starting point of what the principle of a sandbox is can be derived from its name. A safe playground to experiment, collect experiences and play without having to face the strict rules of the 'real world'. Whereas the sand of an actual sandbox ensures the prevention of harm while playing, certain consumer safeguards are established to fulfil that task for its
regulatory counterpart. Meanwhile clear entry and exit requirements as well as a pre-defined scope display the borders of the box.

Recently this concept has been applied in several (non-financial) areas. A ‘sandbox’ for programmers was established, where potentially unsafe codes could be run and studied. Due to the sandbox, problems were not able to spread across the borderlines of the sandbox and infect the entire system.\textsuperscript{184} The term ‘sandbox’ is also used in medicine where it refers to clinical trials for new methods of treatment. That is, a drug is being tested on a limited and specified group of patients to evaluate its effect before becoming authorised for the market. Each of those and other ‘sandbox’ analogies have in common that before an (innovative) product is being put on the market, it is tested in a safe environment, where the potential harm is strongly limited and cannot break out of the box to cause widespread damage.

The sandbox as it is used in this paper is a regulatory tool that has been explored and tested by various jurisdictions lately. In the financial sector it – irrespective of its specific implementation – refers to a controlled space in which businesses can test and validate innovative products, services and business models and delivery mechanisms with the support of an authority for a limited period of time.\textsuperscript{185} The risk of harm for consumers is limited through special safeguards, and regulations which normally occur when conducting the respective service are significantly reduced.

**B. Existing Forms of Regulatory Sandboxes**

As of March 2018, there are currently 17 sandboxes in operation worldwide, plus several ones announced with two already having draft bills in the legislative process.\textsuperscript{186} Jurisdictions having a regulatory sandbox established are\textsuperscript{187}: UK (4/2016), Hong Kong (9/2016), Malaysia (10/2016), Singapore (11/2016), Abu Dhabi (11/2016), Australia


\textsuperscript{185} Same definition used by EBA (EBA’s Approach on fintech).

\textsuperscript{186} For a comprehensive overview, see Zetsche and others (n 161) 64ff.

\textsuperscript{187} With the date of the initial launch in brackets.

\textsuperscript{188} <https://www.fca.org.uk/firms/regulatory-sandbox>.


\textsuperscript{192} <http://fintech.adgm.com/regulatory-laboratory/>.
While the heterogeneity that can clearly be observed within the enumeration of countries is also evident in their implementations of the respective sandbox, they share common policy objectives particularly consumer and investor protection, market integrity, financial inclusion and promoting innovation and competition. In the following we describe common parameters that these sandboxes entail – although they differ in their implementation.

1. Entry conditions: Each regulator defines certain requirements to determine which firm should be granted access to the sandbox. Hereby, aspects usually of importance are: An innovation test, its effect on market stability, individual need for participation (i.e. regulatory

206 FSB (n 4) 4f.
207 The following enumeration is neither definite nor claims to be exhaustive. A comparable categorization is used by Zetsche and others (n 161) 69 ff.
burden on the regular market) and some specific safety requirements that needs to be met by the potential participant. The British Financial Conduct Authority (FCA) for instance publishes a list of eligibility criteria for the upcoming cohort. Interested firms have to explain how they meet those criteria within the application form. Also the scope of firms that sandboxes potentially cover varies strongly. There are sectoral restrictions that are for instance based on the scope of the respective regulation authority. That means for example that Hong Kong’s sandbox which was established by the HKMA is limited to the scope of its regulatory authority, that is banks and banking authorities. The Dutch as well as the UK sandbox on the other hand have no sectoral restrictions. In case of the Dutch sandbox, this is achieved by a cooperation between the Dutch National Bank (DNB) and the Dutch Financial Market Authority AFM (together supervising all financial institution under the so called ‘Twin Peaks’ model). Differences in scope of the sandboxes can further be observed regarding the treatment of existing regulated entities. While most sandboxes are open for regulated as well as unregulated entities, some regulators refuse entry to regulated entities, therefore solely supporting unlicensed firms, which are mostly start-ups. Furthermore, the sandbox is usually limited to a certain number of participants. For example, cohort 2 of the FCA’s sandbox consisted of 24 participants.

2. Consumer protection/safeguards: There are numerous approaches that are taken to protect customers that participate in the sandbox testing. The FCA for example ensures customer protection on a case-by-case basis with the following standards:

- ‘retail customers – this type of customer should not bear the risks of sandbox testing, thus, they should always have the right to complain to the firm, then to Financial Ombudsman Service and have access to the Financial Services Compensation Scheme (FSCS), if a firm fails;’
- ‘sophisticated customers – depending on the specifics of the trial, and if legally possible, we could consider tests that only engage with sophisticated customers who have consented to limiting their claim for compensation;’

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209 See <https://www.fca.org.uk/firms/regulatorysandbox/prepare-application>.
210 For a brief description, see Zetzsche and others (n 161) 73.
211 The Australian sandbox however has no limitation on participants.
213 FCA, Default standards (n 208).
‘Additional safeguards – depending on the size, scale and risks from the trial, additional safeguards may be necessary, e.g. disclosure about being involved in a sandbox test to retail customers.’

In the case of robo advice an ‘additional safeguard’ was established, which in most cases comprised of the duty for the firm to include qualified financial advisers checking the automated advice outputs generated by the underlying algorithms in order to avoid unsuitable advice.214

The Australian Securities and Investments Commission (ASIC) on the other hand – apart from compensation arrangements and disclosure obligations – additionally set up a number of limitations for eligible participants:215

- The company provides services to no more than 100 retail clients;
- The maximum exposure limit for each client is 10,000 AUD;
- And the total exposure of all clients is less than 5 million AUD.

There are numerous other restrictions that regulators are able to impose for security reasons. The application of those measures often lies in the discretion of the authority. Usually the number or intensity of restriction increases with number of retail clients or the focus of the firm216.

3. **Timeframe of sandboxing**: The testing period for participating firms is in most cases limited to either a standard duration (typically 6 to 12 months) or an individual duration, set on a case-by-case basis.217 Some sandboxes though are more dynamic and not strictly limited to a specific period.218 Naturally, the duration is less strictly limited in sandboxes that already have a strict functional limitation (such as limits on number of customers or a transaction threshold).

4. **Relaxation of regulatory burden**: When looking at the core competence of the sandbox, namely the relief of regulatory requirements that normally need to be met, a variety


216 Zetsche and others (n 161) 75.


218 Eg the proposal for the Swiss Sandbox is not limited timewise.
of different approaches can be observed. Most authorities do not specify what exact requirements may be waived and which may not. Albeit varying in detail, almost all have in common that they aim at reducing unnecessary authorisation requirements and other regulatory burdens, with a special emphasis on unnecessary. It is true that certain rules can be deemed as unnecessary where a specific (formal) requirement is not met by the firm, but its underlying purpose is. Furthermore, a legal rule may apply to firm, even though the risk that the rule is intended to mitigate does not exist in that case. Instruments for achieving that purpose are for instance ‘No enforcement action letters’, waivers or modifications, alternative interpretation of rules and – and no less important – individual guidance. Also some sandboxes, including the Dutch and the UK versions, offer restrict licences for unregulated firms.

Particular considerations apply in the EU context. As opposed to fully sovereign jurisdictions, EU Member States are limited in their ability to waive regulatory requirements since many elements of the legal framework stem from the EU level. Put differently, EU legislation restricts the flexibility of national supervisors and sandboxes in that the national level is not allowed to waive rules stemming from EU legislation. In that regard, the Dutch AFM and DNB outline a hierarchy for the possible scope of a sandbox. They state that supervisors have most room for sandboxing in terms of their own policies, followed by policies set by the European Supervisory Authorities (ESAs), where ‘supervisors may deviate from the guidance, or interpretation or impose it in a different way, always providing they are able to demonstrate that legal and regulatory aims are being met in an alternative fashion’. In terms of national legislation, supervisors may offer tailored arrangements where the law offers scope or room for interpretation. The possible sandbox scope in regard of implemented EU laws is narrow, offering tailored options only where the legislation explicitly provides scope to do so. This may explain that the Danish sandbox seems to focus on the clarification of rules and licencing requirements. Other regulators (without sandboxes)

\[219\] In the Australian sandbox though, under its fintech licencing exemption all requirements regard the authorisation are waived, without a case-by-case analysis on their ‘unnecessity’.

\[220\] For example, the Australian ASIC has the power to (fully) exempt firms from a predefined set of regulation and also has the discretion to grant relief from compliance with a rule when its applicability to the fintech industry is unclear.

\[221\] See eg the apparent constraints of the Dutch authorities: AFM and DNB, ‘More Room for innovation in the financial sector’ (December 2016) [https://www.dnb.nl/en/binaries/More%20room%20for%20innovation%20in%20the%20financial%20sector_tcm47-350715.pdf] or those of the FCA (n 166).

\[222\] AFM and DNB (n 221).

\[223\] ibid.

even claim to not be authorised to promote individual treatment at all.\textsuperscript{225} In those cases, preceding actions by the legislature would be necessary to pave the way for a regulatory sandbox.

5. Exit: In most sandboxes, participants must provide an ‘exit strategy’ as part of their application. The purpose of this requirement is to minimise the potential detriment to participating consumers, and it can therefore be partly understood as an investor protection device. Another aspect regarding the exit from the sandbox is that there are typically specific grounds on which the regulator may remove the privilege, hence withdraw a firm from the sandbox.\textsuperscript{226} Reasons for such an exit may be non-compliance with rules and misconduct or simply the non-achievement of the sandboxes purpose.

What we can observe from the discussion above is that there is a common ground in regard of underlying principles of sandboxes across all jurisdictions, while the specific implementation varies. Since the sandboxing phenomenon is still in its infancy, there is not yet much data on the efficacy of different varying approaches. Therefore, to date, it is not feasible to properly evaluate the respective effects of each respective design and – on that ground – prefer one approach over another. Against this backdrop, a diversity of approaches should be highly appreciated as the best way to find the most appropriate approach is still through experimentation.

C. General Benefits of a Regulatory Sandbox

The first and probably most apparent benefit of a sandbox is the reduced time-to-market-cycle, lowering the corresponding market barrier: In tightly regulated areas, just like the financial sector, firms must meet a list of propositions to conduct their business. This prolongs the development phase, while conversely delaying the start of the business, from which point investments that were undertaken during development phase can be amortised. This ultimately raises the stakes for young firms. Besides, high regulatory market barriers are a common incentive for arbitrage activities in order to circumvent the overwhelming

\textsuperscript{225} For example Felix Hufeld, president of the German Financial Supervisory Authority BaFin in a speech at BaFin’s 2016 New Year press reception (available in German at: <https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Reden/re_160112_neujahrsressempfan g_p.html>).

requirements. Discovering and sanctioning those activities is laborious and resource-intensive.

A regulatory sandbox can address these problems: It reduces time-to-market-cycle by reducing the regulatory burden and the uncertainty within a safe space for innovation. Hereby firms can usually already determine whether their new product is worth to be put on the regular market or not. Also reducing the time-to-market-cycle mitigates the risk for firms that their (innovative) business model is copied by a competitor with deeper pockets during a long authorisation process.

The second and maybe even more important benefit of a regulatory sandbox is the implementation of an ‘institutionalised’ dialogue between the regulator and firms. This dialogue enhances a mutual learning process that strongly benefits both sides, regulators and regulated firms.227 New, potentially disruptive technologies emerge on the market, and the authorities need to assess the risks as soon as possible and decide whether the incumbent rules are suited to those risks or may rather be an unnecessary burden. As we simply lack the ability to predict negative consequences that may be associated with a new technology in advance, the task of establishing facts and data on its effects should always be the starting point.228 Gathering information and creating an in-depth knowledge of the new phenomenon is therefore always the logical and necessary first step to address that question.229 In this regard, digitalisation bares huge potential, as almost every part of the respective process is automatically being saved in the provider’s system. Ideally regulators (in cooperation with the legislature) will then be in the position to adequately react to risks before they even materialise, instead of making exaggerated regulatory changes after materialisation. New firms on the other hand struggle to comply with the burdensome regulatory authorisation process and obligation catalogue that may be difficult to match for new technology. Not least, an early-stage, mutually beneficial dialogue serves as a good basis for further cooperation, ideally creating a private sector culture of compliance.230

227 As explicitly outlined for example by the Danish FSA in regard of their sandbox (see <https://finanstilsynet.dk/en/Tilsyn/Information-om-udvalgte-tilsynsomraader/Fintech/FT-Lab>). This particular benefit of a regulatory is also acknowledged by BIS, ‘Sound Practices, Implications of fintech developments for banks and bank Supervisors’ (2018) Basel Committee on Banking Supervision (<https://www.bis.org/bcbs/publ/d431.pdf>) 39 and the FSB (n 6) 3.
228 See also Mark Fenwick, Wulf A Kaal and Erik PM Vermeulen, ‘Regulation Tomorrow What Happens When Technology is Faster than the Law’ (2017) 6 American University Business Law Review 561.
Regulatory inertia on the other hand can stifle innovation by reinforcing the status quo, but also (alternatively) leads to regulatory under-inclusiveness, allowing new emerging technologies to operate unchecked,\(^{231}\) either way resulting in an adverse situation for consumers.

Adding the instruments of the sandbox\(^{232}\) to that dialogue, the sandbox is able to reduce a large portion of regulatory uncertainty that is commonly prevalent among providers of new technology. More than that: Within the sandbox, the regulator provides clear, suitable and appropriate (and eased) regulatory requirements for the firms, which might not only eliminate constraints for firms, but even encourage them to experiment within that (normally) legally uncertain ‘grey zone’.

Reducing the above mentioned market barriers therefore holds the promise of fuelling innovation by incentivising experimentation with new technologies. This incentive becomes even stronger considering the positive signalling effect a sandbox creates through communicating regulatory flexibility and open-mindedness towards new technologies and innovative firms. This effect can already be observed in the UK: The FCA sandbox has been credited with contributing to London becoming the foremost fintech hub in the world.\(^{233}\) Strengthening innovative forces can ultimately lead to more competition and put pressure on incumbents, which may be especially desirable in high concentrated industries.

Zetzsche and others furthermore point out positive external effects regulatory sandboxes could entail.\(^{234}\) First, it could incentivise incumbent firms to accelerate their digitalisation process. Second, it could boost regulatory competition among jurisdictions as to which one is to become the pre- eminent fintech hub.\(^{235}\)

**D. A Sandbox for Robos**

After demonstrating the problems of the current regulatory framework for robo advisors and displaying the benefits of regulatory sandboxes in general, we now put those two things in context to each other and show how a regulatory sandbox addresses the majority of those problems, while avoiding premature changes in ‘hard law’ regulation. Many of the identified problems are directly addressed through the sandbox; for some, however, a ready solution is not immediately at hand. Nevertheless, even those are addressed in an indirect way, since

\(^{232}\) See section III.
\(^{233}\) See Allen (n 230) with further references on page 2.
\(^{234}\) Zetzsche and others (n 161) 78.
\(^{235}\) For desirable effects of regulatory competition, see Ringe (n 168).
the established dialogue and the corresponding learning-process build up the grounds for adequately addressing those problems in the future.

1. How a sandbox benefits robo advisors. The most prevalent market barrier that has been identified in section II.D. appears to be the regulatory uncertainty that exists among robo advisors. This uncertainty is mainly a result of the confusion in applying MiFID obligations to robo advice firms and blurry, unfitting distinctions between financial advice, portfolio management and other categories.\(^{236}\) This, in addition to the lack of regulatory expertise of start-up firms, turns the certainty a regulatory sandbox is able to provide into one of its key attractions. Before beginning to test in the sandbox, every participant is provided with the exact game rules, exact instructions, therefore leaving no room for uncertainty. Within the sandbox, regulators may help robo advisors to navigate through the EU legislative framework which compensates their lack of expertise. The Lessons Learned Report, published by the FCA in October 2017, indicates that the British sandbox successfully met those objectives: Feedback from former sandbox participants as well as the fact that a vast majority of participants continued towards a wider market launch following the test phase indicates that the sandbox in the UK was successful in meeting those objectives.\(^{237}\) Even after exiting the sandbox, the preserved dialogue and the presumably good relationship between regulator and regulatee make it easy for robo advisors to seek clarification when encountering any problems with applying legal rules. Under operation of a sandbox, both can identify rules that be at odds with the digital provision of investment advice (for instance those mentioned in section II.D.) and therefore may represent an obstacle for robo advisors. Together, supervisor and regulated firm can assess how to comply with that particular requirement, or whether an adjustment is necessary.\(^{238}\) Moreover, different approaches to certain propositions may be tested, eg regarding the problem of disclosing (too much) information, as mentioned in Section II above.

Secondly, sandboxes would reduce the time-to-market cycle. As we have seen, the authorisation process under MiFID constitutes a major market barrier for robo advisors. However, the barrier to become part of a sandbox is significantly lower. To enter a sandbox firms typically do not need a (full) market licence.\(^{239}\) After successfully exiting the sandbox,

\(^{236}\) See section II.D.
\(^{237}\) FCA, lessons learned (n 214) in 2.8, 2.9. It must however be acknowledged that given its small scale, no robust conclusions can be derived of that.
\(^{238}\) See also Caelainn Carney, ‘Robo-Advisers and the Suitability Requirement: How They Fit in the Regulatory Framework’ [2018] Columbia Business Law Review 586, 611, 614, with regard to the particular case of properly complying with the SEC suitability requirement.
\(^{239}\) See section III.B.
robo advisors should benefit from the knowledge they gained and from the dialogue with the authority, such that they are better equipped to face the (full) authorisation process. Effectively, the sandbox would significantly smooth the entrance for small firms to the financial market.

Thirdly, an early close supervision ensures safety for consumers, as discussed above. The better robo advisors are supervised and guided, the more probable it is that a certain quality is ensured. Creating safety and ensuring a certain quality of the robo advisor may further enhance trust on the investor side. Knowing that the product has been under the supervision of a competent authority from its infancy can give the consumer the essential certainty to entrust the robo with their money.240 The combination of improvements in quality and the ensured safety might tackle the trust issue that robo advisors currently face.241

As described in section II., market barriers for firms go hand in hand with investment barriers. Just like any other fintech firm, robo advisors often find themselves in a vicious cycle: if they are not authorised they will find it hard to attract investors, and if they do not find investors, it is hard to get authorised. By establishing regulatory certainty and offering a quicker route to authorisation, a regulatory sandbox would be in a position to attract more potential investors, making more capital available for young robo advisors.242 In its Lessons Learned Report, the FCA states that testing in the sandbox has helped facilitate access to finance for participants.243

2. How a sandbox helps regulators. Section II.C. has shown that there are several – especially macroprudential – risks that accompany the emergence of robo advice. Albeit these are not yet severe, when looking at the pace of growth of robo advice, they have to be taken seriously. To this date, the lack of (good) data makes it hard for regulators to properly assess those risks.244 Simultaneously there is the unpredictable development of AI and

240 As a former participant of the FCA sandbox put it: ‘For us and for small companies, regulation is an important hook to sell our products’. (See <https://www.bbva.com/en/participated-regulatory-sandbox/>).
241 As discussed above Section II.C.
243 See FCA, Lessons Learned (n 214) paras 2.9 ff. The FCA thereby provides the fact that at least 40% of firms, which completed testing received investment during or following the sandbox. It’s not clear however, how many would have received investment without sandbox participation.
244 The necessity of data and expertise is also highlighted by the FSB (n 4); Regarding this problem, see also Douglas W Arner, Janos Barberis, Ross P Buckley, ‘FinTech, RegTech and the Reconceptualization of Financial Regulation’ (2017) 37 Northwestern Journal of International Law & Business 371.
machine learning. In those regards the sandbox for robos entails great opportunities. Testing all different kinds of robo advisors in a safe space makes it possible to collect a huge amount of various data. Due to the all-digital-functioning of the participants, every action and every outcome can be preserved in the system of the regulator. Looking at the prevailing risks, data is and will even more be the most valuable and essential resource for regulators. They should therefore use the opportunity and find ways to make use of the (potential) multitude of data as soon as possible, for instance with the help of Regulatory Technology (‘RegTech’) or Supervisory Technology (‘SupTech’). The same technologies that are harnessed by fintech firms could also be used to improve supervisory efficiency. For example, DLT-based reporting systems could potentially allow supervisors to monitor actions of market participants in real-time. Without doing so, they are likely to lose track of the fast moving digitalisation process of the financial industry. The sandbox provides a useful platform for that task. Survey and empirical research could for example be supplemented by interviews and consultations with employees of robo advisors, not only in regard of compliance, but also to technical issues or the business model. Agencies could also take that opportunity to simulate different market scenarios within the sandbox. For instance, the fall of the oil price or other critical situations could be simulated to assess the reaction of an algorithm. Here the predictability of robo advisors (compared to intuitive actions by human advisors) can be of great advantage. As shown in section II.D. above, regulators not only struggle with the assessment of (future) risks and corresponding questions of appropriate legal design, but already when applying the existing legal rules. In this context, the mutual learning facilitated by an institutionalised dialogue should be able to establish some certainty in applying the current legal framework. To be able to match the purpose of a rule to a new technology, regulators need a profound understanding of that technology. Moreover, removing uncertainty on the side of the regulator is a premise for addressing regulatory uncertainty among sandboxed firms.

3. How sandboxes benefit investors and contribute to their protection. As the sandbox framework enable firms to manage regulatory risks during the testing stage, more innovative products can potentially be introduced to the market. Those products have,
among other things, the potential to be cheaper, more efficient and more convenient for consumers. Obviously, an authority that is more experienced in risk assessment and better at addressing new risks (as described in 2.) is also in the interest of investors. Hence, the benefits that we identified for the regulator are likewise beneficial for consumers in the long run. Within the sandbox, investor protection is ensured via the respective mechanisms that have been described above. Those give consumers the opportunity to make use of innovative new advice services, without the risks of detriment that are likely to occur otherwise.

Conversely, this ‘consumer benefit’ also displays an upside for robo advisors: Ensuring consumer protection by adequate, prudently developed regulation creates trust in new technologies, consequently stimulating demand for those products. Higher demand on the other hand fuels innovation, which is again in the consumer interest.

4. How a sandbox can support financial stability. Financial markets are usually highly concentrated and lack competitive pressure from new entrants. Apparently, high market barriers are one major reason for this. Irrespective of the question of whether, to what degree and under which propositions competition is desirable in financial markets, a certain flow of market entrants is commonly considered to be vital for the market in any case. Recent years saw regulators around the globe dedicating an increased focus on competition objectives. The emergence of regulatory sandboxes can partly be seen as a consequence of that development. By lowering barriers to entry, creating trust in new financial products and making new firms more attractive for potential investors, the sandbox fosters competition in the respective market.

Despite the issue of whether this will actually lead to more diversity in the sector, positive effects of competitive pressure from new entrants can in fact already be observed through incumbent financial institutions setting up innovation labs and putting resources in digitalisation in order to defend their share in the respective market.

Finally, a sandbox will help regulators to deal with rising threats for financial stability, such as side effects of AI and machine learning (see above). It is highly recommended to keep on pace with those issues, starting at the very beginning of their development. Otherwise it might be impossible to come back on track.

250 That question is not subject of this paper. For specific information on this issue, see for example OECD, ‘Competition and Financial Markets’ (2009), <https://www.oecd.org/daf/competition/43067294.pdf>.
251 See for example van Loo (n 67).
Having applied the benefits of a regulatory sandbox to the specific case of robo advice, we can observe that many benefits and interests are often highly correlated. For example, the dialogue between firms and regulators will not only promote innovation on the side of firms (by making it easier for them to comply with applicable regulation), but will also improve regulators’ understanding of new technologies, contributing to consumer protection and financial stability. Not less, it can strengthen the trust of the consumer towards those technologies. Also, fuelling innovation on the one hand benefits consumers by providing better or cheaper products, while on the other hand has the potential to facilitate competition, which may contribute to financial stability by diversifying the risks that are currently concentrated at systemically important financial institutions.

E. Advantages over a Change of the Regulatory Framework

The advantages of implementing a regulatory sandbox compared to directly adjusting the regulatory framework to emerging technologies such as robo advice are numerous. In regular circumstances, the regulator or legislature needs to assess risks on the market. In that case, they cannot rely on a cooperative, mutual supporting relationship with the regulated firm, which potentially complicates the process. By the time the risks have been assessed with sufficient certainty, the stakes are usually already high, or the risks may have already materialised in form of a crisis. Subsequently, a proper answer to the problem needs to be found, and the legislature is under pressure (in case of a crisis not at least by the public) to take action. In the past, this frequently resulted in overhasty adjustments of the legal regime that were inappropriate and poorly designed. Also, in particular in the EU the traditional law-making process is immensely time consuming since most new EU instruments have to be transposed into domestic law or supported by delegated (secondary) EU acts. Given the urgency of regulatory action that is typically prevailing at this stage, this procedure seems largely inefficient.

The other possibility – to take precautionary action – is not recommended either: The main justifications for regulation are risks for financial stability and for consumers. At an early stage, as right now in the case of robo advice, risks cannot be identified with necessary certainty. Premature regulatory adjustment of the law would risk unnecessary burdens for market players and most likely slow down development and economic growth. Also, a new

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252 In the (common) case where EU institution use the form of a directive.
253 Armour and others (n 25) 51.
phenomenon may be volatility, which cannot be judged at the time of its appearance. That could mean once the regulation has changed, the phenomenon has already disappeared. The development of robo advice is still at an early stage, when it is too soon to decide whether legislative adjustments are necessary. The responses to the Commission’s consultation underpin this view, as there is a broad variety of opinions on the necessity of legislative action.\textsuperscript{254}

Against this background, a regulatory sandbox is a reasonable compromise. It does not take any premature regulatory actions while speeding up the process of assessing the risks of new technologies and creating necessary capacities for prospective actions. After some time of testing robo advisors inside the sandbox, the regulator would be in a better position to adjust respective regulations, if necessary.

F. Downsides and preliminary conclusion

Of course, a sandbox for robos is no panacea. Like every concept it has its limits: It offers no solution to some of the threats identified, for instance the problem of cyber risk. Also, for some of the problems discussed above it may only offer an indirect cure (if a cure at all), as the real solution is expected to result from the knowledge that has been developed with the help of the sandbox.\textsuperscript{255} Even more fundamental scepticism can be observed at some national authorities, above all the German BaFin.\textsuperscript{256} Arguments put forward are that a sandbox would not be covered by their mandate as well as level-playing-field concerns. BaFin for instance keeps on putting a strong emphasis on the old principle ‘same business, same risks, same rules.’\textsuperscript{257} Apart from that, there are some obstacles that depend on the respective implantation. Sandboxing may be resource-intensive, thus costly. For jurisdictions with no well-equipped and financially strong regulators, this poses a problem. In this regard some commentators assert that due to the lack of expertise, those regulators may either make promises of liberal treatment that they cannot live up to, or they may tend to allow

\textsuperscript{254} See Commission Responses (n 163) 39 ff. 
\textsuperscript{255} Further explained in below section III.C. and D. 
\textsuperscript{256} In his speech at the New Year press reception 2016 (see n 225), BaFin president Felix Hufeld insisted there will be no ‘little buckets and spades’ for fintech companies (speech available in German at: <https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Reden/re_160112_neujahrsprasseempfang_p.html>). A similar narrative was taken up by the head of the New York State Department of Financial Services, Maria Vullo, who stated that ‘Toddlers play in a sandbox. Adults play by the rules’. Statement available at <https://www.dfs.ny.gov/about/statements/st1807311.htm>. 
unacceptable levels of risks. Additionally the capacity in regard of participants (and correspondingly its effect) is strongly dependent on the resources put into the sandbox project. Engaging with robo advisors on a case-by-case basis, as it is the case in the FCA and many other sandboxes, imposes a natural limit on the sandboxes scalability, as typically every participant is allocated to an individual agent within the authority.

Also, as mentioned before, one objective of regulatory sandboxes is enhancing innovation and competition. This objective may be thwarted if incumbent ('too-big-to-fail') institutions are the ones to benefit most from its implementation. Even when excluded from the sandbox, this scenario may occur if those institutions were to begin acquiring firms from the sandbox. Indirectly, the firms that benefit from the sandbox (which is conducted at public expense) would then be the same whose costs of failure will be borne by the public.

In regard of the same objective, regulators should pay attention to actually provide sandbox firms sufficient room for innovation. In its Lessons Learned Report, the FCA states that around one third of participants in the first sandbox cohort significantly pivoted their business model ahead of launch in the wider market. This might be a hint that the FCA advised some more exotic concepts to adapt a more regulation friendly model. As regulators develop preferences (within the sandbox) about specific product designs, oversight might lead to a model convergence that potentially increases the herding risk. Another downside that has been raised by scholars as well as (potential) sandbox participants is the lack of transparency. Firms claim that it is not clear on which basis the regulator makes the assessment and determines whom to grant access to the sandbox. In this context it may also be problematic that some criteria for entering the sandbox are in essence of a subjective nature. This can intensify opaque practices and reduces legal certainty among (potential) participants. As a key element of regulatory sandboxing is the close relationship between the

258 See Zetsche and others (n 161). 79.
259 See also Zetsche and others (n 161) 46.
260 Not engaging with participants individually, but granting general relieves however imposes other problems and risks, see e.g. on page 48 of this paper (there in the context of the Australian sandbox).
261 See Zetsche and others (n 161), 80.
262 However, excluding incumbents from the sandbox might raise level-playing-field issues. This might on the other hand be justified by their presumed competitive advantage in managing the regulatory framework as well as their imposed risk on the society (in case of a SIFI). For more arguments on this issue, see for instance Bromberg and others (n 231) 9 f. or Allen (230) 37f.
263 FCA lessons learned report (n 214), 2.16 (on page 6).
265 See also Baker and Dallaert (n 3) 747.
266 Zetsche and others (n 161) 80.
267 See Commission (n 163) 52ff.
268 Zetsche and others (n 161), 80.
regulator and firms, regulators might be particularly prone to cognitive capture.\textsuperscript{269} Broadly, cognitive capture in regulation or regulatory capture refers to the process whereby firms influence the regulator with the consequence that the latter views the firms’ interest as a synonym for the public interest.\textsuperscript{270} A common channel in finance through which the industry can capture the regulator is through financial contributions and lobbying. For regulatory sandboxing however, this seems a rather unlikely scenario. More probable appears to be the sole identification with the industry due to extensive interaction, perhaps accompanied by sympathies for their views. Allen reasonably observes that this risk is heightened particularly by the FCA’s sandbox version, as each firm will be allocated a dedicated case officer.\textsuperscript{271}

However, the sandbox phenomenon is still in a very early stage of development and thus far from perfect. It is a positive aspect that sandbox criteria, instruments, and requirements are not set in stone and can therefore be easily adjusted by the authority.\textsuperscript{272} Consequently, those aspects should not be seen as insurmountable disadvantages of the sandbox idea as a whole, but rather as issues that still need to be improved. In sum, we view a regulatory sandbox as definitely a step in the right direction which has the potential to significantly improve the quality of the regulator’s work.

\textsuperscript{269} See also Allen (n 230) 43ff. with further references.
\textsuperscript{270} See Allen (n 60) 199. For a more detailed description of the phenomenon, see Armour and others (n 25) 560 ff.
\textsuperscript{271} Allen (n 230) 44. Allen also presents possible solutions for that problem on page 45.
\textsuperscript{272} For instance the FCA and the ASIC are continuously making discreet, small adjustments to the contours of their regulatory sandboxes. See FCA (n 166) stating that the sandbox can be revised in light of experiences made; regarding recent adjustment of the ASIC, see Lance Sacks and others ‘Growing the Sandbox – Australia’s enhanced Fintech Regulatory Sandbox’ (7 November 2017) Clifford Chance Client Briefing <https://www.cliffordchance.com/briefings/2017/11/growing_the_sandboxaustraliasenhance.html>.
IV. Specific Proposal

After demonstrating the benefits a regulatory sandbox would entail for various sides, this paper now turns to the question of what kind of implementation could be adequate and feasible in an EU context. The multi-layer EU framework for financial services is a complicated mix of legal instruments, and we mentioned earlier that some countries struggle to adopt a meaningful sandbox within this relatively rigid system.\(^\text{273}\)

In this convoluted context, we see three basic options to set up a regulatory sandbox. The first option would be a genuine EU-level sandbox, designed and implemented at the EU level. In that scenario, the most adequate institution to design and oversee the sandbox would presumably be either ESMA or the European Commission. However, since the competence for enforcement of laws and supervision of financial markets largely rests with Member States and their national authorities, this would require a revision of the European Treaties. A second variant of an EU-based sandbox could be common EU rules that would harmonise Member States’ regulatory sandbox approaches, whilst maintaining national authorities as the pivotal point for execution and day-to-day communication. And as a third option, sandboxes could also be realised at a Member State level, and include the EU in a coordinating role. This paper proposes an implementation of the latter version, since it is more feasible and best-suited to the current situation.

A. An EU-wide Regulatory Sandbox

Following the ongoing discussions, an EU-wide approach on regulatory sandboxing seems to be the zeitgeist.\(^\text{274}\) In September 2016 Olivier Guersent, Director-General for Financial Stability, Financial Services and Capital Markets, fuelled rumours of an EU-wide sandbox by saying ‘we think we should dedicate a bit of thought to how we can have a sound regulatory sandbox approach in Europe that allows markets to develop, that allows innovation to flourish, that allows those companies that innovate to go across borders in the single market while being consistent with our framework’.\(^\text{275}\) Further, in the European Commission’s

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\(^{272}\) See above section III.B.


Consultation Document on fintech, respondents, particularly from the industry side, but also national authorities expressed the need for such a measure. However, a closer look reveals that the perceptions of an ‘EU-wide sandbox’ among its proponents are not always homogeneous. While most of them seem to have a harmonised approach in mind, resting the execution on Member State level, some seem to advocate for a genuine EU sandbox, also executed at the EU level.

The strongest barrier to the concept of a genuine and centralised EU sandbox (as mentioned above) is that it appears largely unrealistic and legally difficult to implement. Such a step would require a delegation of regulatory powers from Member States to the EU, which has proven to be politically and legally challenging. For example, the Meroni doctrine sets limits to entrusting EU agencies with discretionary powers. Even if feasible, the realisation of necessary amendments would be enormously time-consuming. Since robo advice is a fast-developing and dynamic phenomenon, the prospect of a lengthy implementation on the EU level would not satisfy the need for a quick and flexible measure. An EU-based regulatory sandbox would represent a complex readjustment of the entire EU legal framework, which should only be attempted after the collection of sound analysis and data. Robo advice however, as stated above, is still at an early stage, in a phase where the focus should be on collecting data, gaining knowledge and developing expertise to reach a position which allows it to take further steps. Against this backdrop, any ultimate answer seems to be premature.

A less ambitious and more realistic approach has been proposed by, among others, the European Banking Federation (EBF) and the Banking Stakeholder Group (BSG). These institutions recommend a harmonised framework for experimentation with harmonised tools that avoid national divergences in implementation and facilitate the establishment of a level playing field for all countries and participants, while letting the execution of this framework rest within the power of national authorities. Comparable concepts are also favoured among a significant number of respondents to the Commission consultation. Arguments that are being put on the table most frequently are that this approach would avoid

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276 See EC Responses (n 163) 53ff.
277 For example Banking Federation (n 274) European Banking Stakeholder Group (n 215); European Financial Services Roundtable (n 274); also a significant number of respondents in the Commissions Consultation Document (n 64) seem to favour the harmonised approach.
278 Some respondents in the Commission’s Consultation Document (n 64) seem to favour an approach as such, see for example on p 51 or 54.
279 For more information on the Meroni doctrine, see e.g. Niamh Moloney, EU Securities and Financial Markets Regulation (3rd edn OUP 2014) 909-910 and 994 ff.
280 European Banking Federation (n 274) and Banking Stakeholder Group (n 215).
creating additional fragmentation in the single market, avoid distortion of competition between operators in the EU and prevent regulatory arbitrage and a corresponding ‘race to the bottom’.\textsuperscript{281} However, the possibility to implement a variety of different sandbox approaches across Member States with a dose of regulatory competition also presents potential benefits.

Although not as time-consuming as the first alternative of a genuine EU-based sandbox, the harmonised version would still take a lot of time to be implemented. Again, the effects of different sandbox approaches have not yet been properly evaluated, which is why it is too soon to make a final decision at this stage. Just like the phenomenon of robo advice, sandboxing itself is still in a phase of experimentation. And the similarities do not stop there: Regulators neither possess much experience with sandboxing, nor have any robust data or certainty about its effects. Therefore – in line with the arguments in favour of a regulatory sandbox for robo advisors – it seems to be more appropriate in the current situation to start a form of guided policy experimentation\textsuperscript{282} i.e. testing different approaches on regulatory sandboxes in order to develop the respective expertise. Also a ‘one-size-fits-all’ model would fall short of taking into account legal as well as geopolitical differences among Member States.

Responses in the Consultation Document further imply the reasonable claim that different approaches cause legal uncertainty among applicants. A vast majority of respondents underline a lack of clarity when it comes to definitions, terminology and transparency.\textsuperscript{283} However, as we shall see, legal certainty and transparency can also be achieved without harmonisation of sandbox requirements.

B. The Case for a ‘Guided Sandbox’ on the Member State Level

The challenge is therefore to design an implementation concept that exploits the benefits of experimentation and regulatory competition, while simultaneously not losing the upsides of an EU-wide approach that primarily lie in legal certainty. For reasons that have already been described above (mainly flexibility and no time-consuming implementation process), we advocate for finding an option that fits within the current legal framework. To facilitate this, we propose the idea of a ‘guided sandbox’ on the Member State level. This idea is essentially a

\textsuperscript{281} See European Banking Federation (n 274) and Commission Responses (n 163) 53f.

\textsuperscript{282} Fenwick and others (n 228) also advocate for a form of policy experimentation on how to deal with emerging technologies. Moreover, the Committee on the Internal Market and Consumer Protection of the European Parliament encourages Member States to experiment with new regulatory instruments, see European Parliament (n 229).

\textsuperscript{283} The lack of transparency is also named as one of the major downsides of regulatory sandboxes by Zetsche and others (n 161) 80.
sandbox version that is operated by the Member States, but in close interaction with the EU institutions as a monitor and guardian. Those would also serve as a forum for the exchange of knowledge and experiences. EBA is currently planning to establish a ‘Fintech Knowledge Hub’ to provide an overarching forum that brings together competent authorities in a common setting to facilitate information and experience sharing. Given the potential synergies, a forum for a ‘guided sandbox’ could easily be established in a similar way.

In its first function as a guardian, the EU could provide guidance to Member States with regard of regulatory sandboxing. Such guidance should be based on experience that national authorities have already collected, especially those of the FCA. Right now, there is little data to make use of, since there are only three European sandboxes established (one of them very recently). However, this data in addition with the data that is available from foreign authorities can build the ground for a preliminary sandbox body. Given the resources and expertise that is available at the EU level, various improvements can be tested. Technically, the guidance would be best executed by the ESAs within their given power hence on the third level of EU lawmaking. The ESAs could issue guidelines, high-level principles and recommendations that set out best practices on the implementation of a regulatory sandbox as well as basic principles that each sandbox should be built on. This could be complemented by further informal Q&A, FAQs, reports and tailored advice to regulators. Those guidelines etc. could include specific recommendations about the key sandbox parameters that have been presented in Section III. In that frame, the ESAs could propose different conceivable approaches on each parameter, for instance varying measures that work as consumer safeguards. Consequently national authorities could choose, in their own discretion, which version works best for their market. To ensure a certain degree of transparency for potential participants, those recommendations should be made publicly available by the ESAs.

284 In its Fintech Action Plan, the European Commission supports a comparable setup for innovation hubs, see European Commission, ‘FinTech Action plan: For a more competitive and innovative European financial sector’ (8 March 2018) COM(2018) 109 final 9. A speech by Sabine Lautenschläger, Member of the Executive Board of the ECB, indicates that the ECB already has specific plans for such a measure (available at <https://www.ecb.europa.eu/press/key/date/2017/html/sp170327_1.en.html>).
285 EBA Roadmap (n 160) 28f.
286 For further information on the Lamfallusy-process see Moloney (n 279) 854ff.
287 A concept similar to this one was also suggested by some respondents (from the industry side) in Commission Responses (n 163) 53. Following that, within their Fintech Action Plan (n 284) the Commission decided to present a report with best practices or regulatory sandboxes for regulatory sandboxes by Q1 2019 (see on p 9). The EBA decided to affiliate with that plan, intending to conduct further analysis on regulatory sandboxes with a view to defining common features and best practices and assessing compatibility with EU law (see EBA (n 160) p 21). It plans to issue a corresponding report by the end of the year. Creating more certainty, this will presumably be an important first for encouraging more Member States to adopt regulatory sandboxes.
The advantage of this method over a harmonised sandbox would be not only the speed of issuance, as those guidelines etc. would avoid the lengthy process of regular EU legislation. Moreover, they would gain the corresponding flexibility in adjustment and therefore be more responsive to market innovation. Smaller, less well equipped regulators would particularly benefit of the external research on sandboxing that is conducted by the ESAs and the certainty that comes with those recommendations.\footnote{For instance the Hungarian market supervisor has identified demand for a regulatory sandbox and is currently evaluating options of an implementation (see Magyar Nemzeti Bank, 'Innovation and Stability – Overview of Fintech in Hungary (Consultation Document 2017), available at: <https://www.mnb.hu/letoltes/consultation-document.pdf>. At this stage, it would significantly benefit from EU guidance as proposed in this paper.} This means that the process of designing a regulatory sandbox at the national level would be much less resource intensive. Consequently, those regulators would be able to concentrate their manpower in the mere implementation of any given recommendations. If they do so and only implement what has been pre-defined by the ESAs, they could signal this to (potential) participants, ensuring they can rely on those publicly available EU sandbox parameters. For more sophisticated authorities on the other hand, this concept maintains the possibility of a competitive advantage over other regulators by experimenting on other/better approaches. When deviating from EU recommendations, those regulators may provide explanations for participants on why they do so and emphasise the benefits of their respective approach. Within the close dialogue between national regulators and the ESAs, regulators would also have an opportunity to seek advice on their individual sandbox approach. In case of concerns about the consistency of a specific approach that deviates from the EU guidelines, the ESAs could by that provide some certainty.

Secondly, the EU would function as a coordinating forum for continuing exchange of experiences that have been made by national regulators with sandboxing. While national regulators would report regularly to the ESAs, the ESAs in turn would be able to provide constructive feedback on those experiences and also collect and analyse reported data in order to make assessments for the continuous improvement of the process. Given the flexibility of this concept, the iterative feedback between national regulators and the ESAs would facilitate continuing refinement and improvement of the guidance. The objective of this exchange is to engage in a mutual learning process that allows collecting more data and expertise on the nascent phenomenon of regulatory sandboxing. In regulatory sandboxing, a cooperative and mutually beneficial relationship is one key elements of this concept. Depending on the outcome of this process, the EU could subsequently engage in further
steps which might be an EU-wide sandbox, an adjustment of the regulatory framework, or any other action.

A widespread concern that is being raised against an unharmonised approach on EU regulatory sandboxes is regulatory arbitrage and a corresponding race to the bottom. If executed properly, this concern has very little bearing. The existing regulatory framework within the EU already entails a highly integrated regulatory standard. As one objective of the sandbox concept is to ensure appropriate and adequate application of existing rules to robo advice, the risk of a race to the bottom is more likely to decrease rather than to increase. The opposite may be true: we could expect a quality-based competition between Member States in providing the best conditions and the innovation-friendliest environment. That is, improvements of sandboxes' quality may not only be nurtured by the above mentioned mutual learning process, but also – and perhaps even to a higher degree – through competition between Member States. A reason for this is the dynamic and speed of the market. National authorities may become aware very fast if robo advisors are particularly attracted by another authority's sandbox. After having identified the reason of that attraction, they may then seek to copy the respective feature or even try to design a better version of it. Positive signals or suggestions may also come from the private sector, i.e. from (potential) sandbox participants. Those may express the desire for or emphasise benefits of a particular sandbox feature to their respective regulator. This lobbying effort is probable in regard of existing features (in other Member States) as well as completely new ideas.

Given the existing regulatory body with its rather rigid legislative standards, one might however raise the question of how a sandbox could work within such a setting. Since Member States are not able to grant relief of rules that are based on European legislation, possible instruments and flexibility within the sandbox are admittedly more limited than they might be for completely 'independent' jurisdictions. The Australian sandbox for instance is able to grant full relief for firms without a case-by-case review. Firms that meet the eligibility criteria are freed from any licensing requirement. No application process is needed, and candidate firms only need to notify the Australian Securities and Investments

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289 See e.g. Commission CD (n 64) Also Zetsche and others (n 161) see the risk of a ‘race-to-the-bottom style competition’, however stating that the more likely outcomes from Sandboxes will be beneficial (on page 78f.). Allen (n 230) makes a raises a comparable concern regarding a Sandbox in the US with enforced by different state agencies.
290 More specifically, the regulatory sandbox regime in Australia is comprised of both, an individual licencing exemption and the (general) fintech licencing exemption (see ASIC Regulatory Guide 257). For more information on the Australian Sandbox, also in comparison to the FCA sandbox, see Bromberg and others (n 231) 320ff.
Commission and provide certain information.\textsuperscript{291} The obvious benefits of this approach are the extremely low costs of operation, making the process less resource-intensive than for example the FCA sandbox. Also, there is no limited number of sandbox participants. On the other hand, the requirements for relief are quite narrow (e.g. by being only available to firms dealing with or advising on specific products), which also narrows the room for innovation. Moreover, firms applying for relief are obliged to disclose whether or not they have a regulatory licence, while also being limited in numbers of customers and assets under management. Under these circumstances, the relief granted by this limited sandbox appears to lose much of its attractiveness: Firms are limited in innovation, while also not being able to operate under real market conditions. This is impressively demonstrated by the fact that up until now, only four firms have taken advantage of the Australian sandbox licensing exemption.\textsuperscript{292} Furthermore, the lack of communication and individual engagement with innovation from the regulator’s side cuts the sandbox concept short of one of its key justifications, which is the mutual learning process.

Moreover, certain EU rules, as an expression of the proportionality or flexibility principle, offer a margin of discretion for the regulator.\textsuperscript{293} The feasibility of regulatory sandboxing within the existing EU regulatory framework is not at least evidenced by the existing implementations in the UK and the Netherlands.\textsuperscript{294} Also, the Dutch sandbox is not simply a copy of the UK version – far from it. Compared with the FCA, the Dutch authorities take a more ‘principles based’ approach by attempting to use the scope offered within the legal framework. Put differently, they seek to provide a regulatory solution for firms only if the underlying purposes of the respective policies, rules, and regulations are satisfied.\textsuperscript{295} The FCA meanwhile focusses more on individual guidance and coordination with sandbox participants. While there is no data on the Dutch sandbox available yet, effects of the FCA sandbox can already be observed: A growing number of applications in each cohort, and the position of London as the world capital of fintech\textsuperscript{296} indicate a demand for the concept as well as some return on the investment. Moreover, both approaches have in common that they provide restricted authorisation, which implies that the current regulatory framework offers some scope to mitigate the regulatory burden for firms.

\textsuperscript{291} ASIC Guide (n 226).
\textsuperscript{293} Commission Action Plan (n 284) 9.
\textsuperscript{294} Certainly under the assumption that those sandboxes are in accordance with EU law.
\textsuperscript{295} See AMF and DNB (n 221).
\textsuperscript{296} It is acknowledged that also other factors contributed to this to this development.
As mentioned above, one goal of the proposed concept is to encourage especially smaller jurisdictions to engage in the process in order to lure robo advisors, presumably benefiting from the creation of jobs and economic growth. Given the relatively high amount of resources that are needed for running a sandbox, an issue that might be raised is the ‘credibility’ of those sandboxes.\textsuperscript{297} It is obvious that small country regulators will not have the resources and capacity comparable to the FCA. Nevertheless, smaller regulators also have the possibility to turn this perceived lack of resources into an advantage. As a first step of a ‘guided sandbox’, both the structure and implementation of the sandbox would be determined by the EU. Those regulators may then focus on the enforcement of these guidelines and recommendations. There are not nearly as many participants as there were applications for the FCA sandbox,\textsuperscript{298} which shows that there is still a prevailing gap between the demand for and the supply of regulatory sandboxes.\textsuperscript{299} Therefore, start-ups could avoid jurisdiction in overcrowded sandboxes by moving to less popular ones, where the chance of participation might be higher. To boost the quality of their sandbox, regulators in smaller Member States may consider to not overcharging themselves to a high number of participants, but rather start with accepting just a few, while making sure they provide a decent service. Also, they could avoid (direct) competition with stronger regulators by engaging in specialisation. Some sandbox features may be particularly suitable for a specific type of robo advisor. Identifying, designing and emphasising those features could make them more appealing for the respective type of robo advisor compared to a more general sandbox. Hence, the disadvantage in total amount of resources could be compensated by pooling them. Ultimately, this would also contribute to an increase in overall capacity of sandboxes within the EU, supporting a general enhancement of innovation in the Single Market. This might also provide potential to make ground on the US robo advice market, as there is no such programme running to date. Even though the US Treasury in a recent report strongly endorsed the creation of a federal US sandbox,\textsuperscript{300} chances of its actual realisation are rather slim. Due to the fragmentation inherent in the US financial supervisory system and

\begin{itemize}
  \item See Zetsche and others (n 161) 79.
  \item The FCA received applications from 146 firms across the first two cohorts, of whom 50 were accepted and 41 actually began testing in the sandbox, see FCA sandbox lessons (n 214) para 2.16.
  \item Even in a by far smaller financial market like Hungary, a survey from the Magyar Nemzeti Bank indicated a substantial demand for a regulatory sandbox (see (n 288) p 37).
\end{itemize}
overlapping competences of authorities, implementing a regulatory sandbox on the federal level constitutes a profoundly complex endeavour.\textsuperscript{301}

C. Follow-up Regulatory Trajectory

Having explored the phenomenon of regulatory sandbox and demonstrated that it would be a suitable instrument to improve the current regulatory situation regarding robo advice, we subsequently developed a specific proposal for the implementation of such a sandbox in the EU context. This section now will take a glance forward to the situation following the implementation of the sandbox.

We saw above that a regulatory sandbox constitutes only the basis of an adequate regulation of robo advice. At the present time it is a sound regulatory instrument, whose primary benefit lies in facilitating knowledge exchange, collecting information and reducing uncertainty. However, it does not offer a sustainable cure for flaws that are incorporated in the EU legal framework. Also, the value of the learning-process is limited, since some risks only appear as the phenomenon matures and robo advisors reach a certain scale, that is, long after the respective advisor has exited the sandbox.

As previously mentioned, one of the regulatory sandbox’s key objectives is to lower barriers to enter the market for small firms. However, that alone may not be enough. In the following, we will argue that, after having facilitated market entry, regulation should stick to this underlying idea. That is, it should continue to address (unreasonable) barriers to scaling up that exist within the (regular) market. In this regard, it is important to note that this should not be understood as an unconditional support of robo advice. Most certainly, plenty of barriers and regulatory obstacles have their justification, also in regard of robo advice. Hence, only those barriers are to be addressed that constitute an inadequate obstacle. Moreover, common rules of competitive markets are preserved, while a sufficient level of consumer protection must be ensured at every time.

For these reasons, we take the view that the follow-up regulation after the sandbox phase should follow a regulatory ‘trajectory’ that proceeds in line with the size and risk-level

of respective robo advisors. This trajectory should consist of the following elements: First, it should maintain the same close dialogue to the firms that has been established during the sandbox phase in order to collect more valuable information about the phenomenon of robo advice. Secondly, it should mitigate unnecessary barriers that appear at each stage of growth of robo advisors. To simplify, we categorise the development of robo advisors in three stages: First the stage that directly follows the sandboxing period, which we term ‘probation phase’. Subsequently, after the respective robo advisor prevails in the market for a certain time it commonly enters the second stage, the ‘expansion phase’. When the robo advisor has become an established player in the market, it is situated in the last phase, which we call ‘globalisation stage’.

As it still too early to draw any definite conclusions, this section will take a brief outlook at issues that potentially warrant regulators’ attention as robo advice matures and to give some corresponding impulses.

1. Maintaining dialogue and mutual-learning-process. The first and perhaps the most important element of the follow-up regulation of robo advice should be to maintain the mutual learning process that has been initiated during the sandbox phase. As stated above\(^\text{302}\), as the age of fintech and robo advice are hallmarked by their incredibly fast innovation cycles, establishing facts, data and information becomes the paramount as well as challenging part for regulators. The more and better information are available to regulators, the better they are positioned to properly evaluate and regulate prevailing and emerging risks. Simultaneously, valid information and good data enable them to regulate robo advisors in a more dynamic and proportionate way, i.e. impose regulatory burden only where risks actually appear.

The growth of robo advisors that regularly takes places after exiting the sandbox allows regulators to collect data on a much bigger scale. Considering this, regulators should establish a solid data exchange system with respective robo advisors during the sandbox phase, which continues to stay in place afterwards.\(^\text{303}\) Ultimately, the sandbox therefore builds the ground for a high quality regulation on the regular market as well as a more collaborative relationship between regulators and regulated entities that ideally requires less oversight as opposed to one that is characterised by enmity. Robo advisors on the other hand would benefit from close advice by regulators and a proportionate and adequate regulation. Secondly, as robo advisors grow in scale and potentially become a significant force in the financial market, new idiosyncratic risks are likely to emerge. What is more, some

\(^{302}\) See section II.B. and C.

\(^{303}\) In this context, the development of another fintech species, namely regtech could be of interest. For a comprehensive overview and outlook of the regtech development, see Arner and others (n 244).
risks that seem of limited importance during the sandbox phase might later turn out to develop a macroprudential relevance. Concerning that kind of risks, the ‘learning process’ on the side of the regulator is typically limited. Those risks include but are not limited to the above-mentioned ‘herding risk’ and risks for cyber security. At this stage, regulators’ focus should increasingly be put on their objective of ensuring financial stability. Ideally, the information exchange should not stop at the authorities’ level. Certainly, there are cases, where the scope of regulators is limited. That is to say, problems with current regulation may be revealed, the remedy of which lies beyond the power of the executive branch of government. Therefore, it is worth considering expanding the exchange process to the legislature on the domestic level as well as to responsible institutions on the EU level. This would be a significant step towards a more dynamic regulatory framework and could ultimately well improve the quality of regulation.

On the other side of the coin, it cannot be dismissed that this continuing close relationship exacerbates the risk of regulatory capture. Growing in size, robo advisor firms might also become more influential as their financial resources increase, from which they typically spend a portion on lobbying activities. Consequently regulators have to stay aware of that risk and should consider introducing monitoring mechanisms to address it.

Furthermore, this process is – just as the sandbox itself – presumably highly resource intensive. Not only that closer and more individualised regulation warrants more manpower at regulators, with the increasing data flow, the need for well-trained IT staff/expertise will increase. Although especially at the beginning those costs are huge and undeniable, in the long run the digitalisation of the regulation bares the potential to make the regulation process much more cost-efficient. As soon as the systems are in place and efficiently running, regulation will take place in a more automated fashion, with less need for human employees.

2. Stages and accompanied issues. Having successfully gone through the sandbox period, the next logical step for firms is to enter the real market. We distinguish three typical phases that call for an adjusted regulatory framework and practice.

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304 See also FSB (n 3).
306 There are already some ideas in the literature on how to address the risk of regulatory capture. E.g. Brett McDonell and Daniel Schwarcz in ‘Regulatory Contrarians’ (2011) 89 North Carolina Law Review 1629, 1648 propose to integrate a contrarian to the work of regulators in order to mitigate the risk of regulatory capture. Those contrarians are supposed to force employees to also consider a different perspective. Allen (n. 230) advances this idea and applies it in the context of regulatory sandboxes (see on page 45).
This first and crucial stage of this period, which we call ‘probation phase’, describes the stage where firms have to prove themselves to customers and investors. At this stage it is decisive for the firm to attract customers and thereby show their investors that there is a significant demand for the product. At the same time entering the real market means being confronted with the full panoply of regulatory obligations. Meeting those obligations implies costs and time for firms, which strongly complicates the firm’s task of proving itself. Therefore the regulator’s focus at this stage should be on the proportionality of regulatory requirements. A certain flexibility would be desirable, and adjusting the regulatory framework may seem reasonable. In this stage, most firms will still be relatively small, and opening the regulator’s decisions towards a more principles-based approach may be a good way forward. Principles offer flexibility in compliance and are therefore typically cheaper for small firms to meet. In contrast to rigid rules, they are therefore more open for innovative business models as they allow for continuing refinement, improvement and flexible regulatory approaches. With increasing size of the firm (and correspondingly the increase of certain risks), it becomes more appropriate to promulgate a more detailed set of rules (as it is currently the case in the EU financial market).\(^{307}\) This flexibility could for instance be achieved by giving regulators more power to waive certain requirements in exchange for proving that the underlying purpose of the rule is met in another way.

Certainly, applying such a flexible approach to regulation solely for ‘sandboxed’ robo advisors would raise level-playing field concerns. Hence, this should apply to all robo advisors, regardless of whether they had started in a sandbox or entered the market without the help of regulators.

Other issues that should merit regulators’ attention at this stage are robo advisors’ relationship to incumbent firms. First, robo advisors are in certain regard highly dependent on incumbents. As mentioned above in section II.C., data and information about clients are a very important element of improving robo advisors’ service. The dependency on that data gives owning companies the ability to prevent robo advisors’ of developing better products.\(^{308}\) Facilitating access to that kind of data can therefore contribute to robo advisors’ growth, further fuel innovation and enhance competition. Albeit this lies largely beyond the regulators’ power, but rather requires legislative action (such as the PSD 2), regulators’ task is to identify such adverse dependencies and – as part of the learning process and corresponding information exchange – report them to the legislature. Secondly, there is an increase of


\(^{308}\) To a certain degree already happening, see van Loo (n 67) 242 (with further reference at n 59).
consolidation in the market, meaning that successful fintech startups, including robo advisors, are frequently being acquired by large financial institutions. Considering that one major rationale for the sandbox is fostering competition and promoting innovation, it seems problematic when large financial institutions are the ones primarily benefitting from the sandbox. Not only would it foster or even increase their market power, it could also stifle innovation, as incumbent financial institutions may have very different interests. For instance, incumbents’ ownership stake in robo advisors could shape product development in directions less likely to disrupt the financial market landscape in order to protect their current business model.\(^\text{309}\) Not less problematic is the fact that large financial institutions, namely those considered to be ‘systemically relevant’ are benefitting from implicit government guarantees, while imposing a crucial risk on the society as a whole. Since the sandbox is conducted at public expense, it does not seem adequate to let them be the ones profiting.\(^\text{310}\) This is an issue that may have to be addressed in the future, either by financial regulation, or by competition law and policy.

Once having mastered those first challenges, within the second stage (‘expansion phase’) robo advisors’ primary goal would be to further grow, seeking to offer their service to a broader audience. In order to support those efforts, ensuring a good environment in which robo advisors can easily conduct business across borders is of high importance. In an EU context, this is primarily achieved by a well-functioning single market for financial services and the (projected) completion of Capital Markets Union.

Even though – thanks to passporting – the investment firm licence under MiFID allows robo advisors to operate across all Member States, there are still certain domestic laws impeding the provision of robo advice across borders. In the ESAs’ Report on automation in financial advice, main concerns that have been expressed were in relation to legal requirements for data protection, anti-money laundering, combating the finance of terrorism and foreign tax compliance / Common Reporting Standards (CRS).\(^\text{311}\) Clearly, some of those barriers are beyond the remit of national as well as European agencies (e.g. national tax laws). However, wherever possible, barriers should be analysed and addressed. In line with our proposal of a guided sandbox, national barriers should be reported to ESMA, where they will be subject to further analysis. Subsequently ESMA evaluates further actions that could include issuing guidelines to respective Member States on how to mitigate those.

\(^{309}\) ibid 248 ff.
\(^{310}\) See also Allen (n 230) 46.
\(^{311}\) ESAs Report (n 85) 18. Some of these issues have also been named by Pascal Martino, Robo-Advisory Markt im Aufschwung, Börsenzeitung (14 October 2017) <https://www.boersenzeitung.de/index.php?li=1&artid=2017198807&artsbm=bf>.
Having become an established player on the European market, the next logical step would be to expand globally ("globalisation stage"). To conduct business in other, non-EU and non-EEA jurisdictions, robo advisors need to apply for a licence with the respective national or federal authority. As regulatory requirements can differ significantly from jurisdiction to jurisdiction, this imposes significant cost and time. To begin with, robo advisors typically need to mandate a law firm in the respective jurisdiction to assess their product meets those regulatory standards and what specific adjustments are necessary. Obviously the influence of European agencies or ESMA is limited in this regard, since they are not able to intervene in foreign legal or regulatory matters. However, not being able to address those issues unilaterally does not mean that there is no room for a bi- or multilateral solution. A number of regulators have already taken this opportunity and entered into cooperation agreements with foreign regulators. Bilateral cross-border agreements between regulators have been around since already the 1980s, in regard of fintech the first one was agreed between the FCA and the ASIC in March 2016. Most notably, the FCA recently concluded such an agreement with the US Commodity Futures Trading Commission (CFTC), being the first agreement by the CFTC with a non-US counterpart. Existing agreements mainly consist of two elements, which are information-sharing and the referral of fintech companies from one regulator to the other. The latter element is typically accomplished through helping companies understand the regulatory framework of the respective jurisdiction, how it applies to their business and assisting them with the authorisation process. In some cases the referred fintech is being allocated to particular officers of the receiving regulator, who is

312 See Commission Action Plan (n 62).
313 To date, a majority of regulators that run regulatory sandboxes entered into such agreements. See for example the Australian ASICs cooperation at <https://asic.gov.au/for-business/your-business/innovation-hub/international-cooperation-and-referrals/>.
315 The agreement is available at <https://www.fca.org.uk/publication/mou/fca-asic-cooperation-agreement.pdf>.
then responsible for the guidance. Most of the agreements also stipulate guidance for the firm following the authorisation process. Whereas the referral directly intends to remove barriers to expand across jurisdictions, the information-sharing element is supposed to improve the learning-process on the side of the regulators. It primarily consists of exchanging experiences with innovative regulatory approaches, such as regulatory sandboxing and sharing information to advance their understanding of certain innovative firms, ultimately with a view to better construe their regulatory objectives. As soon as fintech services spread across borders, cross-border cooperation in supervision becomes a key requirement for ensuring the stability of the financial system. Both elements can be mutually beneficial for participating regulators. Integrating foreign regulators in the learning process increases the amount of information and data, which strengthens regulators' capacity to respond to future challenges. Meanwhile the simplified referral process enhances global competition, which can ultimately benefit consumers in the form of better, more convenient and cheaper products.

Against this backdrop, we (tend to) recommend supplementing the ‘guided sandbox’ with such cooperation agreements with other regulators. Particularly a simplified access to the US financial market, being the largest in the world, would be a great additional incentive for online wealth managers to start their business in the EU (respectively in one of its sandboxes). Extending existing bilateral to multilateral agreements would potentially further enhance the beneficial effects, ie advance information sharing and further reduce costs for robos seeking to scale up internationally. Being able to provide support and an appealing regulatory environment from ‘birth to adulthood’ would to a great extent contribute to the attractiveness of the EU as location for robo advisors. Most effectively such agreements should be concluded by ESMA and apply to robo advisors that are in possession of a European ‘passport’, rather than being negotiated by each and every national regulator. This

319 BIS (n 227) 34.
320 The mutual-learning aspect is also emphasised by Bromberg and others (n 317) 18.
321 In their consultation on a global sandbox (<https://www.fca.org.uk/news/press-releases/fca-collaborates-new-consultation-explore-opportunities-global-financial-innovation-network>), the FCA even considered transferring this idea to the early stage of sandboxing. This means that firms would be able to test their service in sandboxes of two or more jurisdictions without any additional efforts. Meanwhile regulators could exchange experiences and address problems already at this stage. The idea of a cross-order sandbox is also addressed by Bromberg and others (n 317) 82f.
322 See also Bromberg and others (n 317) 80.
not least because the EU has a much better bargaining position than one single Member State and would therefore be able to negotiate more beneficial agreements for all.

V. Conclusion
This paper has explored the phenomenon ‘robo advice’ – the automated provision of financial advice, typically based on algorithms, without human intervention. Robo advice holds the promise of cheap, convenient and fast investment services for consumers which would be free from human error or bias. However, retail investors have limited capacity to assess the soundness of the advice, and are prone to make hasty, unverified investment decisions. Moreover, financial advice based on rough and broad classifications may fail to take into account the individual preferences and needs of the investor. On a more general scale, robo advice and recommendations based on algorithms may be a source of new systemic risk.

At this stage, the existing EU regulatory framework is of little help. Neither does it adequately address these concerns, nor does it support the development of robo advisors. Instead, this paper proposes a regulatory ‘sandbox’ – an experimentation space – as a step towards a regulatory environment where such new business models can thrive. A sandbox would allow market participants to test automated services in the real market, with real consumers, but under close scrutiny of the supervisor. The benefit of such an approach is that it fuels the development of new business practices and reduces the ‘time to market’ cycle of financial innovation while simultaneously safeguarding consumer protection. At the same time, a sandbox allows for mutual learning in a field concerning a little-known phenomenon, both for firms and for the market authority. This would help reducing the prevalent regulatory uncertainty for all market participants.

In the particular EU legal framework with various layers of legal instruments, the implementation of such a sandbox is not straightforward. In this paper, we propose a ‘guided sandbox’, operated by the EU Member States, but with endorsement, support, and monitoring by EU institutions. This innovative approach would be somewhat unchartered territory for the EU, and thereby also contribute to the future development of EU financial market governance as a whole.
Address

European Banking Institute eV.
Mainzer Landstrasse 251
60326 Frankfurt am Main
Germany

For further information please visit our website www.ebi-europa.eu or contact us at info@ebi-europa.eu
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